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MENTAL DISEASES
PROFESSOR EUGENIO TANZI

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A TEXT-BOOK OF MENTAL DISEASES

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A TEXT-BOOK OF MENTAL DISEASES

BY

EUGENIO TANZI

PROFESSOR OF PSYCHIATRY IN THE ROYAL INSTITUTE OF HIGHER STUDIES OF FLORENCE

AUTHORIZED TRANSLATION FROM THE ITALIAN

BY

W. FORD ROBERTSON, M.D., C.M.

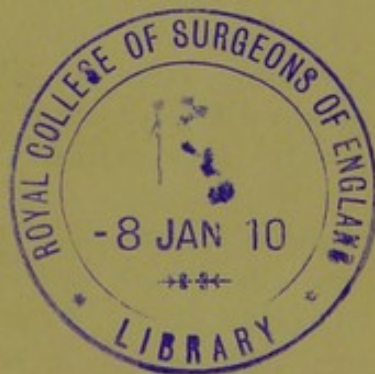
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TRANSLATORS' PREFACE

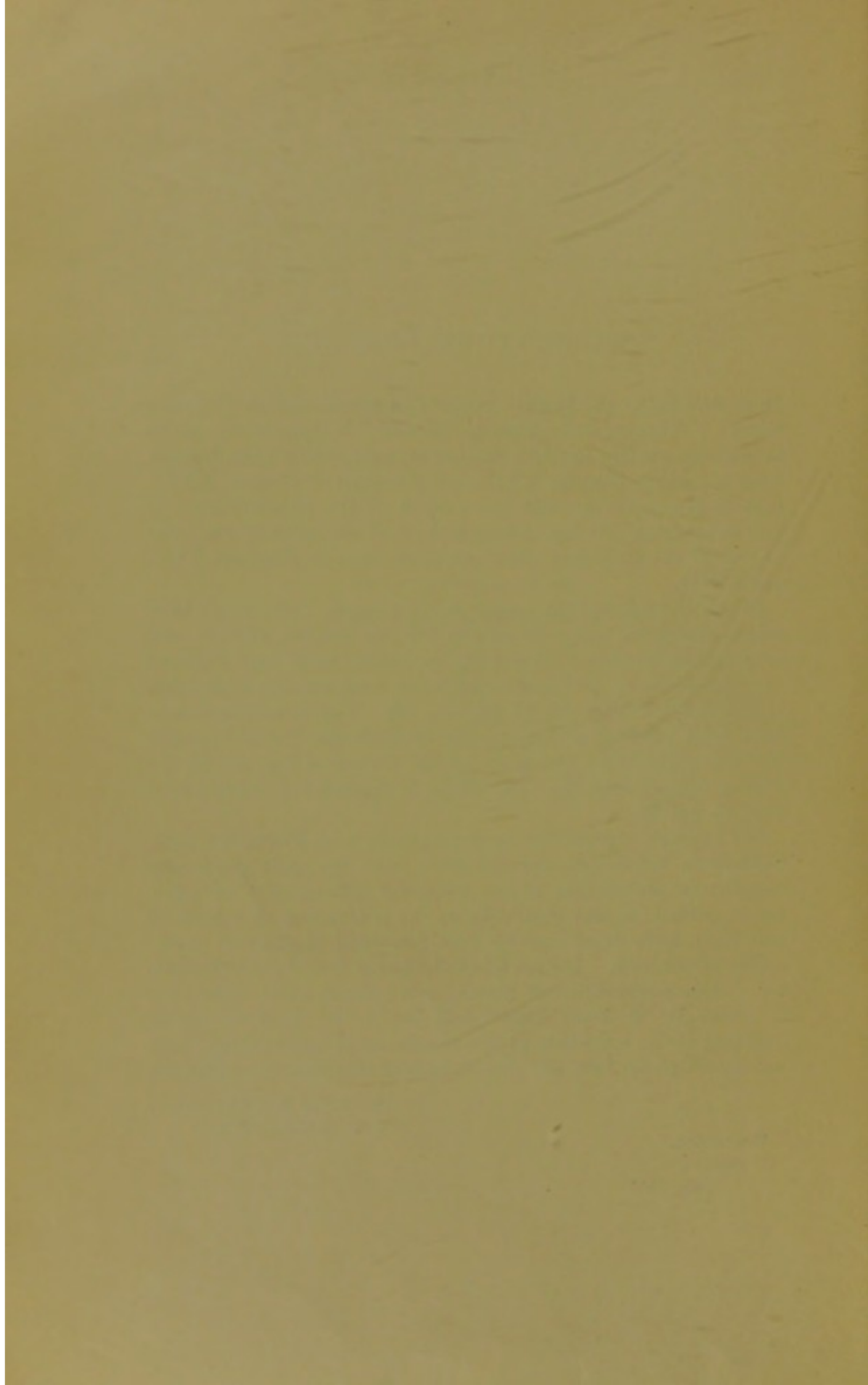
IN presenting to the English reader this translation of Professor Tanzi's "Tratatto delle Malattie Mentali," it is necessary for us to state that at the author's request we have omitted the descriptions of cases in Chapter XXII., and a section of Chapter XXVI. that deals exclusively with the subject of the administration of Italian asylums. It has also been deemed advisable to omit one or two of the numerous descriptions of cases in Chapters XVII. and XVIII.

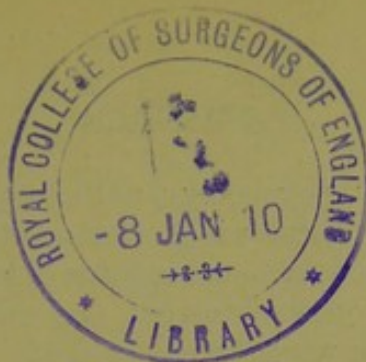
Of the 139 figures that appear in the original work, seven have been omitted as being unsuitable for the English edition, and four, representing the writing of the insane, have been replaced by reproductions of similar specimens obtained from patients in this country (Figs. 53, 54, 55, and 62). Two new illustrations have been inserted at the request of Professor Tanzi—namely, No. 77, which takes the place of the corresponding one in the Italian edition, and No. 75A, which is intended to supplement Nos. 74 and 75.

We have to express our deep obligation to a Florentine lady, resident in Edinburgh, Signora Ricci, who has most generously aided us in the solution of the numerous difficulties of interpretation, which, as was inevitable in the translation of a book of this kind, have from time to time presented themselves in the course of our work. We are also indebted to Mrs. Ford Robertson for a large contribution of literary and clerical work. We have to thank Dr. R. Dods Brown and Dr. A. W. Neill for kindly assisting in the collection of the specimens of handwriting, from among which the four new illustrations of this kind were selected.

W. FORD ROBERTSON.
T. C. MACKENZIE.

EDINBURGH,
INVERNESS,
July, 1909.





PREFACE

A KNOWLEDGE of mental diseases is obligatory upon students who wish to graduate in medicine, and it is obviously necessary for those who intend to become medical officers of asylums ; it is, moreover, a weapon of offence against the accused in courts of justice, and a weapon of defence against the prosecutors. All those who either fight in the ranks of alienists, or make professional skirmishes on their flanks, without the advantage of a special vocation, require to know the true position of psychiatry, and especially its useful applications, its ascertained facts, and its practical rules, shorn of redundancies and parade. They are professional and amateur alienists who need to have set before them, not a disjointed encyclopædia of mental disturbances, pathological rarities, biographical lists, historical accounts, psychological curiosities and anatomical freaks, but an organized, simple and truthful collection of clinical pictures that are clearly distinguished one from the other, which have the reason for their existence in a distinction deeper than that of mere outward appearance, and which therefore lead those who are acquainted with them to a scientific procedure in their management and treatment of the insane.

There is, however, another class of inquirers to whom psychiatry affords a speculative position, sometimes the only one available, from which they can view still more profound questions. Those who are interested in psychiatry as their vocation, among whom are included many asylum physicians, lawyers, writers, and politicians, do not ask for instruction in the practical methods of dealing with the insane, but seek the solution of deeper problems that perplex the human mind, of a biological, anthropological, psychological, ethical, and philosophical nature. Psychiatry, which as a practical speciality is so humble, becomes, notwithstanding its actual deficiencies, one of the most aristocratic of sciences on account of the position it occupies as a branch of biology. It is the advanced sentinel of biology in the speculative field, and although its arms are short, its vision is far-reaching. Although there are many things that it cannot see, yet the horizons to which it stretches are vast, the ideals at which it aims are high, and its points of contact with other sciences are very numerous. The views upon questions of anatomy,

cytology, physiology, psychology, pathology, and sociology, that the science of mental diseases is constrained to advance, to analyse, and to discuss in the neighbouring fields of knowledge, in order to enrich its own, are very numerous and varied, and among the most important with which it has to deal ; and perhaps the day will come when psychiatry will project upon these sister sciences, in still stronger rays, the light it has received from them.

In this book I have endeavoured to reflect in due proportions, and without emphasizing their antagonisms, the two tendencies that underlie modern psychiatry, the Martha and Mary into which they divide, inspiring on the one hand practical measures, and on the other the attainment of ideals. The practical man wants to know what psychiatry is ; the idealist strives to ascertain what it will become. The one requires facts, and only those that are certain, harmonious, and of genuine practical utility ; the other is interested in hypotheses, in the direction that is being taken by an advancing science, in its past, and in its future. As Richet has remarked, however, modern critics are indulgent to the man who collects facts uncritically, and unconsciously alters, exaggerates, and invents them, whilst they are implacable to him who guesses at truth, and naturally leaves his hypotheses undemonstrated, however rational, useful, and probable they may be. Tyros in criticism, who adopt positivism to the letter, many of these aristarchs of the Universities are led, without knowing it, to believe all statements to be true and all hypotheses false. There are, however, alleged facts that are illusory and hypotheses that become verified. It would be better if there were more rigour in the examination of facts and less precipitation in the condemnation of hypotheses.

In the chapters upon general psychopathology I have not avoided new and old details of anatomy and physiology, the claims of psychology, the inductions of pathological anatomy, and the exposition of conjectures already known, but still discussed, regarding the mechanism of thought, which form the cope-stone of the fundamental principles of biology. In regard to these matters it is necessary, however, to adopt liberal views. In the chapters in which special psychopathology is dealt with I have, on the contrary, preferred the guidance of experience, and have avoided all doctrinal systems. Heredity, degeneration, the biological factors in the causation of insanity, and the laws of association, cannot supersede clinical science, which is based mainly on the direct observation of the most common and evident facts. Psychiatry ought boldly to spread its wings when it flies in the domains of the general sciences with its wealth of principles and hopes, but it should avoid dispersion of its forces and use every precaution when it walks in the field of applied clinical science.



CONTENTS

CHAPTER I

THE SEAT OF THE PSYCHICAL PROCESSES

	PAGE
HISTORICAL NOTE - - - - -	1
THE PRESENT POSITION OF THE PROBLEM - - - - -	9
The Data of Physiology and Experimental Anatomy - - - - -	11
The Data of Embryology - - - - -	16
The Data of Human Pathology - - - - -	22
The Data of Normal Anatomy - - - - -	23
THE POSITIVE EVIDENCE OF THE EXISTENCE OF PSYCHICAL CENTRES - - - - -	32

CHAPTER II

THE CAUSES OF MENTAL DISEASES

EXTERNAL CAUSES - - - - -	38
Somatic Causes - - - - -	38
Psychical Causes - - - - -	42
Social Causes - - - - -	52
INTERNAL CAUSES - - - - -	54
Diathesis - - - - -	54
Psychical Degeneration - - - - -	56
Heredity - - - - -	59

CHAPTER III

THE ANATOMICAL SUBSTRATUM OF MENTAL DISEASES

I. MACROSCOPICAL APPEARANCES OF THE LESIONS OF THE CEREBRAL CORTEX - - - - -	68
1. Terminal Results of Early Morbid Processes - - - - -	69
2. Focal and Diffuse Lesions in the Adult - - - - -	78
II. ELEMENTARY LESIONS OF THE CEREBRAL CORTEX AND ITS ANNEXES - - - - -	83
1. Lesions of the Nerve Cells - - - - -	84
(a) Acute Processes - - - - -	84
(b) Subacute Processes - - - - -	91
(c) Chronic Processes - - - - -	93
2. Lesions of the Nerve Fibres - - - - -	95
3. Lesions of the Neuroglia - - - - -	97
4. Lesions of the Vessels and of the Meninges - - - - -	98
III. EXTRACORTICAL AND EXTRACEREBRAL MORBID CHANGES - - - - -	101

CHAPTER IV

SENSIBILITY

	PAGE
THE GENERAL PHYSIOLOGY OF THE SENSORIAL AND SENSORY PROCESSES - - - - -	108
THE PATHOLOGY OF SENSIBILITY - - - - -	113
Cœnesthesis - - - - -	113
Tactile Sensibility, Thermo-Sensibility, Sensibility to Pain - - - - -	116
The Genetic Sense - - - - -	118
Taste and Smell - - - - -	118
Hearing and Sight - - - - -	118
Hallucinations and Illusions - - - - -	119
Mechanism of Hallucinations - - - - -	122
Applications of the Theory - - - - -	129
Hallucinations due to Irritative Stimuli that act directly on the Brain - - - - -	129
Hallucinations occurring when the Eyes are Closed - - - - -	130
Repetition of Thought - - - - -	131
Figured Hallucinations - - - - -	132
Combined Hallucinations - - - - -	134
Hallucinations that present Themselves in the Form of Dreams - - - - -	135
Hallucinations of Peripheral Origin - - - - -	135
Unilateral Hallucinations of Hearing - - - - -	136
Illusions - - - - -	138
Conclusion - - - - -	138
Pseudo-Hallucinations or Psychological Hallucinations - - - - -	140

CHAPTER V

IDEATION

THE PSYCHOLOGY OF IDEATION - - - - -	142
PATHOLOGY OF IDEATION - - - - -	145
RAPIDITY OF THOUGHT - - - - -	146
PREVALENT IDEAS - - - - -	148
OBSESSIVE IDEAS - - - - -	149
DELUSIONAL CONVICTIONS AND DELUSIONAL DOUBTS - - - - -	157
THE QUANTITY OF THE IDEAS - - - - -	163
ALTERATIONS IN THE ARRANGEMENT OF THE IDEAS - - - - -	166
STATES OF SEMICONSCIOUSNESS - - - - -	170

CHAPTER VI

MEMORY

THE PHYSIOLOGY OF MEMORY - - - - -	172
THE PATHOLOGY OF MEMORY - - - - -	179
Agnesia of the Mnemonic Impressions - - - - -	179
The Obliteration of Mnemonic Imprints - - - - -	180
Disorders of Mnemonic Evocation - - - - -	184
Irregularities in the Act of Mnemonic Recognition - - - - -	190

CONTENTS

xi

CHAPTER VII

THE SENTIMENTS

	PAGE
THE PHYSIOLOGY OF THE SENTIMENTS	194
THE PATHOLOGY OF THE SENTIMENTS	200
1. Pathological Variations of Mood	202
Sentimental Depression	203
Sentimental Exaltation	205
Sentimental Indifference	206
2. Pathological Variations in the Sphere of the Emotions	206
3. Pathological Variations of the Affectivity and of the Habitual Character	207

CHAPTER VIII

MOVEMENTS AND OTHER EXTERNAL REACTIONS

THE PSYCHOLOGY OF MOVEMENTS	216
THE PATHOLOGY OF CENTRIFUGAL INNERVATION	220
1. The Conduct	222
Anomalies of the Will	230
Anomalies of the Instincts	230
(1) Conservation of the Individual	235
(2) Conservation of the Species	239
2. Motor Expression, Speech, and Writing	240
Anomalies of Expressive Movement	248
Anomalies of Speech	248
Acquired Defects of Articulation	250
Congenital Defects of Articulation	252
Forms of Dysphrasia	254
Anomalies of Writing	257
3. The Common Reflexes	257
Visceral Reflexes	258
Tendon Reflexes	260
Reflexes of the Pupils	260

CHAPTER IX

THE CLASSIFICATION OF MENTAL DISEASES

THE CLASSIFICATION OF E. MORSELLI	270
REVISED CLASSIFICATION OF KRAEPELIN	273
AUTHOR'S CLASSIFICATION	281

CHAPTER X

PELLAGRA

ETIOLOGY	286
THE MORPHOLOGICAL AND TOXIC CHARACTERS OF MAIZE AFFECTED BY	
MOULD	288
PATHOGENESIS	290

	PAGE
SYMPTOMS - - - - -	293
PATHOLOGICAL ANATOMY - - - - -	300
Cerebro-spinal Axis - - - - -	300
Visceral Lesions - - - - -	302
DEMOGRAPHICAL DATA - - - - -	303
PROPHYLAXIS AND TREATMENT - - - - -	306

CHAPTER XI

ALCOHOLISM

CAUSES - - - - -	309
EXTENT AND DISTRIBUTION - - - - -	313
FORMS - - - - -	313
PHYSIOLOGICAL DRUNKENNESS - - - - -	314
PATHOLOGICAL DRUNKENNESS - - - - -	316
SYMPTOMS OF CHRONIC ALCOHOLISM - - - - -	316
HALLUCINATORY DELUSIONS - - - - -	321
ALCOHOLIC PSEUDO-PARALYSIS - - - - -	322
DELIRIUM TREMENS - - - - -	323
PATHOGENESIS - - - - -	325
PATHOLOGICAL ANATOMY - - - - -	327
TREATMENT - - - - -	330
SOCIAL PROPHYLAXIS - - - - -	332
MORPHINISM - - - - -	333
Pathogenesis - - - - -	333
Symptoms - - - - -	335
Causes - - - - -	338
Treatment - - - - -	338
COCAINISM - - - - -	341

CHAPTER XII

AMENTIA

SYMPTOMS - - - - -	344
PATHOLOGICAL ANATOMY - - - - -	352
ETIOLOGY AND PATHOGENESIS - - - - -	355
TREATMENT - - - - -	358
URÆMIC PSYCHOPATHIES - - - - -	359

CHAPTER XIII

THE THYROID PSYCHOSES

MYXCEDEMA OF ADULTS - - - - -	365
ENDEMIC CREPINISM - - - - -	369
Symptoms - - - - -	369
Pathological Anatomy - - - - -	372
Etiology - - - - -	372
Pathogenesis - - - - -	374
Prophylaxis and Treatment - - - - -	376

CONTENTS

xiii

	PAGE
SPORADIC CRETINISM - - - - -	377
Pathogenesis - - - - -	382
Pathological Anatomy - - - - -	384
Treatment - - - - -	384
EXOPHTHALMIC GOITRE - - - - -	388

CHAPTER XIV

PROGRESSIVE PARALYSIS

SYMPTOMATOLOGY - - - - -	392
Signs and Course of the Demential Process - - - - -	392
Mental States and Delusions - - - - -	396
Crises and Seizures - - - - -	399
Motor Symptoms - - - - -	402
Disturbances of Sensation - - - - -	411
Visceral and Trophic Disturbances - - - - -	412
Clinical Varieties of Progressive Paralysis - - - - -	414
COURSE - - - - -	416
ETIOLOGY - - - - -	420
PATHOGENESIS - - - - -	422
PATHOLOGICAL ANATOMY - - - - -	426
Macroscopical Lesions affecting the Brain - - - - -	429
Microscopical Lesions affecting the Nervous System - - - - -	430
Changes in the Spinal Cord and Peripheral Nerves - - - - -	435
Changes external to the Nervous System - - - - -	437
DIFFERENTIAL DIAGNOSIS - - - - -	438
TREATMENT - - - - -	440

CHAPTER XV

INFANTILE CEREBROPATHIES (ACQUIRED IDIOCY)

ETIOLOGY - - - - -	447
PATHOLOGICAL ANATOMY - - - - -	449
SYMPTOMS AND CLINICAL FORMS - - - - -	453
Psychical Changes - - - - -	453
Motor Changes - - - - -	462
Hemiplegia - - - - -	462
Diplegias - - - - -	463
Cerebral Complications common to the Hemiplegic and Diplegic Forms - - - - -	466
Sensory Changes - - - - -	469
TREATMENT - - - - -	469

CHAPTER XVI

THE CEREBROPATHIES OF ADULTS

SENILE DEMENTIA - - - - -	473
Demential Symptoms - - - - -	476
Amential Symptoms - - - - -	478
Focal Symptoms - - - - -	478

	PAGE
CLINICAL VARIETIES OF SENILE DEMENTIA - - -	479
Course - - -	480
Differential Diagnosis - - -	481
Pathological Anatomy - - -	482
Pathogenesis - - -	485
Treatment - - -	486
CEREBRAL HÆMORRHAGE, EMBOLISM, AND THROMBOSIS - -	486
CEREBRAL SYPHILIS - - -	489
CEREBRAL TUMOURS - - -	493
SCLÉROSE EN PLAQUE - - -	495
HEAD TRAUMATISMS - - -	495

CHAPTER XVII

THE AFFECTIVE PSYCHOSES

MELANCHOLIA - - -	504
Symptoms - - -	504
Sense of Mental Pain - - -	504
Delusions - - -	509
Abulia and Dysbulia - - -	511
Other Symptoms - - -	514
Course and Clinical Varieties - - -	517
Differential Diagnosis - - -	518
Treatment - - -	519
MANIA - - -	521
Symptoms - - -	522
Course and Varieties - - -	527
Differential Diagnosis - - -	530
PERIODIC MELANCHOLIA - - -	532
PERIODIC MANIA - - -	534
CIRCULAR INSANITY - - -	536

CHAPTER XVIII

NEURASTHENIA

SYMPTOMS - - -	541
Lassitude - - -	541
Paræsthesias - - -	542
Localized Pains - - -	543
Objective Symptoms - - -	543
General State - - -	543
PSYCHICAL SYMPTOMS - - -	545
Agoraphobia - - -	548
Misophobia or Rupophobia - - -	549
Pathophobia - - -	550
Dysmorphophobia - - -	551
Fear of Responsibility - - -	552
Ereutophobia - - -	552
Obsession of "How?" and "Why?" - - -	554
Obsessive Ideas of Action - - -	554

CONTENTS

XV

	PAGE
DIFFERENTIAL DIAGNOSIS - - - - -	556
ETIOLOGY AND PATHOGENESIS - - - - -	559
TREATMENT - - - - -	562

CHAPTER XIX

HYSTERIA

SYMPTOMS - - - - -	566
ETIOLOGY AND COURSE - - - - -	588
TREATMENT - - - - -	593

CHAPTER XX

EPILEPSY

SYMPTOMS - - - - -	597
The Epileptic Fit - - - - -	597
Partial Fits - - - - -	600
Epileptic Equivalents - - - - -	601
Pre-epileptic and Post-epileptic States - - - - -	606
Permanent Psychopathic States - - - - -	606
Somatic Characters and Symptoms - - - - -	608
DIFFERENTIAL DIAGNOSIS - - - - -	609
ETIOLOGY AND PATHOGENESIS - - - - -	611
CLINICAL FORMS AND COURSE OF THE DISEASE - - - - -	620
PATHOLOGICAL ANATOMY - - - - -	621
TREATMENT - - - - -	625

CHAPTER XXI

DEMENTIA PRÆCOX

SYMPTOMS - - - - -	633
COURSE AND CLINICAL VARIETIES - - - - -	652
CAUSES AND NATURE OF DEMENTIA PRÆCOX - - - - -	663
TREATMENT - - - - -	666

CHAPTER XXII

SEXUAL PERVERSIONS

SEXUAL INVERSION (URANISM) - - - - -	673
FETICHISM - - - - -	676

CHAPTER XXIII

CONSTITUTIONAL IMMORALITY

THE ETHICAL CRITERION IN DIAGNOSIS - - - - -	682
EVOLUTION OF THE NOSOLOGICAL CONCEPTION - - - - -	688
CLINICAL MANIFESTATIONS - - - - -	694
TREATMENT OF THE IMMORAL - - - - -	701

CHAPTER XXIV

PARANOIA

	PAGE
CLINICAL MANIFESTATIONS OF PARANOIA - - - - -	724
Delusion of Persecution - - - - -	726
Ambitious Delusion - - - - -	729
Religious Delusion - - - - -	731
Erotic Delusion - - - - -	734
Querelant Delusion - - - - -	737
Impersonal Delusions - - - - -	739
Neologisms - - - - -	743
Hallucinations - - - - -	744
Behaviour of Paranoiacs - - - - -	744
TREATMENT OF PARANOIA - - - - -	746

CHAPTER XXV

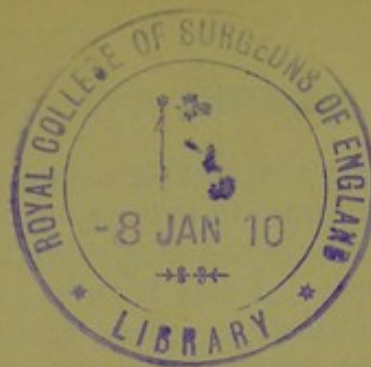
IMBECILITY

CLINICAL MANIFESTATIONS - - - - -	748
Appearance of Imbeciles - - - - -	748
Anatomical Stigmata of Degeneration - - - - -	749
Perception - - - - -	750
Sensibility - - - - -	751
Affectivity - - - - -	752
Intelligence - - - - -	755
Movements - - - - -	760
Pronunciation, Intonation, Language, and Writing - - - - -	761
CLINICAL VARIETIES - - - - -	763

CHAPTER XXVI

ASYLUMS

FURTHER DEVELOPMENT OF ASYLUMS - - - - -	775
OBSTACLES TO THE REGULAR HOSPITAL TREATMENT OF MENTAL DISEASES -	778
Legal Restrictions - - - - -	778
False Interpretation of Statistics - - - - -	780
Insidious Substitutes - - - - -	783
PRACTICAL ARRANGEMENT - - - - -	785
Observation Hospitals - - - - -	785
Separation of the Aged and the Anomalous - - - - -	787
Agricultural Colonies - - - - -	788
INDEX OF SUBJECTS - - - - -	791
INDEX OF NAMES - - - - -	799



A TEXT-BOOK OF MENTAL DISEASES

CHAPTER I

THE SEAT OF THE PSYCHICAL PROCESSES

Historical Note.

PSYCHIATRY consists, as yet, chiefly in a description of symptoms. Beneath an evident wealth of clinical phenomena it conceals gaps and uncertainties that leave its most essential problems unsolved.

It must not be forgotten that the study of mental diseases began to assume some degree of continuity only towards the end of the eighteenth century. Up to this time religious and philosophical prejudices, whilst they allowed the search (attended with but little success) for the seat of the soul in the body, had repressed every other tendency that seemed opposed to spiritualism. Consequently, the life of psychiatry, save for the luminous intervals of the Greek and Latin civilizations, was simply a prolonged lethargy, devoid of new acquirements, and without even the memory of those that had previously been made.

The awakening that occurred in the eighteenth century was due only in small part to scientific causes. It was a keener social sensibility rather than the ripening of medical opinion that enforced the establishment of asylums, and so created the alienists. It created them before the revival of psychiatry had actually taken place, that they might set themselves to the arduous task of bringing about such a revival. It was only natural that their premature studies should result in a psychiatry that was purely descriptive. The whole attention of these eager but imperfectly equipped observers was absorbed by the external manifestations of mental disease that abound in the speech and conduct of the insane, and these, being easy to understand even without the assistance of special knowledge, readily produced the illusion of a rich and co-ordinated science where there was really only a lengthy enumeration of superficial phenomena.

Left to their own resources, and without the guidance of

modern collateral knowledge, asylum physicians were led to abuse this facility of observation, and to multiply unduly the varieties of mental disease. There came to be a perfect kaleidoscope of psychoses and terminology, accepted by some, rejected and disputed by others, and destined to appear and disappear, or to change places, in the course of the fruitless succession of classifications and of schools.

A knowledge of symptoms, no matter how wide it may be, is sterile, apart from the study of pathogenesis. That a trauma, a poison, an infection, or a violent emotion, is capable of producing insanity, and of producing only certain forms of it, is recognized by the general public, as well as in psychiatry. The true problem does not consist in the identification of the causes of insanity, but in the analysis of the manner in which these causes operate on the cerebral organization.

In a case in which a painful emotion that ought to have been of a passing nature is succeeded by a condition of chronic depression, with typical features of melancholia, we can trace a causal relationship, which on first view seems extremely simple, for both phenomena are of a psychical nature, and in no way very different, excepting in duration. Yet between these two subjective phenomena, the physiological mental pain and the melancholic depression, there is interposed a third term of a different order that cannot be disregarded—namely, a pathological process taking place in the brain. How is it that out of the emotional experience there can be materialized an organic change? And how does this material reaction to an emotional stimulus, in its turn, become the source of subjective manifestations, such as those that constitute the various distressing feelings of the melancholic? We may have a fair knowledge of the symptoms and the remote causes of mental diseases, but the intermediate processes, which are the immediate effect of the operation of the pathogenic agents and, at the same time, the immediate occasion of the psychopathic symptoms, almost always remain obscure. It is true that, in regard to some forms of insanity, we know that there is a constant connection between a certain morbid agent and a definite pathological change, but even in these cases we are ignorant of how the anatomical conditions produce the symptomatic picture. In order to be able to comprehend how these heterogeneous phenomena are linked together, it would be necessary to understand—in some measure, at least—how mental operations normally take place in the various regions and structural elements of the brain.

The same degree of obscurity does not obtain in the pathology of other organs. In many instances, indeed, the relation between

structure and function is so clear that from the slightest functional disorder, such as a cardiac murmur, we can directly infer the material lesion that has produced it. This is frequently the case, not only in diseases of the heart, but also in those of other organs—as, for example, the kidneys and eyes. The functions of these organs are simple in comparison with those of the brain—so simple, indeed, that we may, with sufficient accuracy, compare the heart to a pump, the kidney to a filter, and the eye to a system of lenses. The biological significance of the brain does not permit of being adequately expressed in such ready formulæ. The brain distinguishes, beholds, hears, smells, tastes, touches, examines, excites, innervates, inhibits, speaks, writes, remembers, thinks, imagines, and reasons; it hesitates and wills; it suffers and rejoices. If we wished to sum up its activities in one or more metaphors, we should have to say that it is at once an observatory, an archive, a tribunal, and a government; and there would still remain unnamed other essential offices that cannot be expressed figuratively. Between what the brain really is and what it seems to be, between the indisputable complexity of its functions and the deceptive homogeneity of its structure, there is an abyss that is difficult in the extreme to bridge.

For these reasons, not only the lacunæ that still exist in cerebral physiology, but also the errors of the past, which in our scientific discussions we sometimes recall with an air of derision, deserve our kindly consideration and respectful indulgence.

To discover the seat of the soul in one or other of the viscera, or in the body as a whole, or in a single part of the brain, has been the great aim—indeed, almost the historical obsession—of those who have studied psychology from ancient until recent times. The certainty that the organ in question is the whole cerebral cortex was only reached within the last forty years. The credit of this discovery cannot be given to the alienists (Broca was an anthropologist, and Hitzig began his studies as a physiologist); but at the same time we cannot justly charge them with undue hesitancy. The problem is one that really goes beyond the limits of psychiatry, and extends into the domain of general biology.

So long as the arteries were regarded as channels filled with air, and the nerves were not distinguished from tendons, it was hardly irrational that the seat of the intellectual activity should by preference be sought for in the heart. This organ, being the anatomical centre of the arteries, connected with the lungs and with the peripheral sensory organs, and visibly under the influence of the passions, could very appropriately be looked upon as the viscus most evidently designed to be the place of interchange of the imponderable fluids, sound, light, heat, sensations, thoughts, and affections, for the transmission, for-

mation, and transformation of which there appeared to be required at least a medium of air, if not one absolutely immaterial.

When, therefore, the ancients spoke of the soul and endeavoured to assign for it a residence outside the brain, they did not, like the modern exponents of cerebral localization, have in view a special nidus of thought, but rather a centre of life in general. It was likewise only in this sense that naturalists, less inclined than most others to metaphysical explanations, ventured to assign a soul to plants. The soul had thus extremely varied anatomical localizations. The theories elaborated regarding this question are a part of history, and are capable of being grouped into categories more or less sharply marked off into epochs, schools, and tendencies.

1. *Extracerebral Localizations, without any Participation of the Brain.*

The theories composing this group are the most ancient. The early Greek philosophers were hylozoists. Losing sight of the subjective aspect of thought, they confounded not only thought with life, but also life with movement, and ended by believing that intelligence, like movement, is a universal property of matter. On the other hand, confronted by a precise problem of human physiology, they had, at least for a time, the good sense to put hylozoism aside. They did not endeavour to find intelligence elsewhere than in themselves. Unfortunately, they allowed themselves to be influenced by the preconception that the seat of intelligence must be an extremely active organ, and they therefore discarded the brain and devoted their speculations to the heart, blood, lungs, liver, and spleen. Each of these organs, either on account of its central position, its wide diffusion in the body, the prominence of its functional variations, or its size and apparent high temperature, appeared to be the seat of physical and chemical changes of a much more important kind than those that could be thought to take place in the cold and immobile mass of the brain, which current belief regarded as a gland that subserved the function of secreting the nasal mucus.

2. *Mixed Localizations in Various Organs, including the Brain.*

Theories of this nature flourished with Greek philosophy. The human mind was regarded from various points of view, according as it was concerned with the sensations, the passions, reason, bodily growth, etc. Each of these forms of mind was given a different residence. The most common classification was tripartite, and the highest office was almost always assigned to the heart.

The brain, although it could not but be allowed to take part in the division, was given a somewhat secondary office. Aristotle

held that it served to cool the blood, and that it therefore had a sort of antagonism to the heart. When the heart prevailed, vitality and thought were at their height; when the brain prevailed, vitality was lowered, the body became cooler, and thought was dulled. It was under the influence of this negative view that Aristotle, after having determined experimentally its insensibility to mechanical irritation, was led to maintain that the brain must be the organ of sleep.

At the beginning of the nineteenth century Bichat still held, as Plato had done, that the heart, and not the brain, was the seat of the affections. The definite transference to the brain of all the mental functions, including the affections, is somewhat recent. It was the meritorious achievement of Gall, who, notwithstanding the extravagant nature of his phrenology, succeeded in avoiding another error—namely, that of attributing to the affections a different localization (save within the limits of the cerebral cortex) from that of sensation and representation.

3. *Localization in the Whole Body.*

This theory of a diffuse and homogeneous localization, according to which there are not several psychical centres, but an absolutely decentralized psychical function, has both an ancient and modern origin and form.

Most of the scholastics, convinced that an imperceptible and perhaps indivisible functional action, such as that of thought, could neither be concentrated in a single organ nor shared by a few favoured and arbitrarily selected ones, adopted the maxim of Augustin: *Anima in toto corpore tota et in omnibus eius partibus tota*. This polypsychism of the scholastics is a first return step towards the Greek hylozoism, or towards panpsychism, which, in its strict meaning, excludes any serious attempt at anatomical localization.

By another path, not a few of the Darwinian evolutionists of the present day reach a panpsychism of a still more complete and unreserved nature. They trace back from the brain to the nervous system, from the nervous system to the corresponding primitive elements in ontogenesis, and from the organic world to the inorganic, through the ramifications of phylogenesis, and finally discover human intelligence in the chemical atom. These extreme evolutionists do not perceive that they abuse the law of continuity. According to their view, glimmerings of psychical functional activity exist in every part of the living organism; and, if so, why not also outside it? Haeckel, indeed, in his "Perigenesis of the Plastidules," without denying the pre-eminence of the brain as the evolved organ of intelligence, regards

even chemical affinity as an expression of will, or as a psychical phenomenon. If this view were correct, it would, *a fortiori*, be necessary to recognize a rudimentary intelligence in all organized beings, including even unicellular organisms. Thus the ancient *noûs* of Plato and Aristotle reappears, in modern dress, as the mind and motive force of the universe. But an intellect external to living and recognized organisms possesses no clear significance. This hypothetical force, the existence of which is improbable, and the idea of which only too evidently has its origin in the animism of savage and primitive peoples, helps in no way to explain that intelligence which we feel in ourselves, and which operates in beings similar to ourselves.

Recent researches upon chemotropism encouraged for a while the tendency to panpsychism. Since chemotactic movements are useful to the beings which manifest them, and since all living things seem to be endowed with chemotactic properties, it was concluded that intelligence, or at least consciousness, is a universal attribute of organized matter, and that it existed before the brain.

Fortunately, Verworn and all the more authoritative investigators of chemotropic movements very soon arrived at an opposite conclusion. It would appear that these movements are not the primary expression of intelligence, but a physiological and apsychical property of living things, which is merely included in the more complex mechanism of mental action. Thus, instead of employing intelligence to explain chemotropism, we can use chemotropism to explain many physiological phenomena, including—at least, in part and in their objective manifestations—those of intelligence, which perhaps result from a great complex of chemotropical actions, favoured by anatomical conditions of an altogether exceptional nature. These anatomical conditions are not completely fulfilled, except in the brain; the ganglionic automatism of invertebrates, like the chemotropism of unicellular organisms, resembles and precedes intelligence, but it is not actually intelligence.

The tradition of diffuse localization, limited, however, to the whole central nervous system, still persists with some biologists—as, for example, Pflüger, who holds that there is a spinal consciousness, on the ground that he has observed purposive and complicated movements on the part of the decapitated frog. It is preserved by all those—and they are numerous—who assign intelligence to invertebrates. According to Forel and Bechterew, the whole nervous system, including the sympathetic, was originally endowed with psychical functions; but in consequence of the gradual centralization (ontogenetic and phylogenetic) of these

functions in the cerebral cortex, the lower nervous organs were slowly deprived of them, whilst they continued to evolve in the direction of automatism.

4. *Intracerebral Localizations of Centralized Type.*

The concentration of the mental functions in one limited, definite, and single organ of the encephalon, or sensorium commune, in which the nerves would meet and the mental forces mingle, was the vain dream of the most illustrious anatomists and the most positive intellects of the eighteenth and nineteenth centuries. This organ, the existence and functional dignity of which was assumed in advance, and which was deemed to realize in its anatomical unity the assumed unity of the mind, was sought for everywhere, excepting in the open field of the cortex—as, for example, in the pineal gland (Descartes), in the caudate nuclei (Vieussens), in the corpus callosum (Willis), in the bulb (Rolando), in the cerebro-spinal fluid (Sömmering), or in a geometrical point (Kant).

In order to attain his purpose of confining the intelligence to one organ, Descartes became an anatomist, and made a large number of autopsies. Outside the limits of his thesis he made a contribution of definite facts to our knowledge of the anatomy of the brain. Willis based his contentions upon anatomy, a science the progress of which he had advanced. Rolando went still farther, carrying out experiments upon animals. Sömmering pointed to the arrangement of the cranial nerves, and argued that their activity always began and terminated in the walls of the ventricles, and that they were thus able to influence each other through the medium of the endocranial fluid. Lastly, Kant did not reach his conclusion by simple metaphysical deduction; he examined the various attempts to arrive at an anatomical localization, and refuted them by weighty arguments.

5. *Cortical Localizations.*

That the intelligence should not at first be sought for in the cerebral cortex was but natural. The macroscopical distinction of this portion of the encephalon from the rest is not very evident, and, as regards the knowledge of its microscopical structure, it is sufficient to recall the fact that the nerve cells were discovered by Purkinje only in 1840. There was no ground for supposing that the cerebral cortex is so richly provided with cell elements. Nevertheless, Gall, with clear and gifted intuition, when studying the course of the cerebral nerves (1799-1820), noted the homology of the cortex with the nervous ganglia, and observed that, of all the parts of the brain, the cortex attains the

largest proportions in man and in the most intelligent of the other vertebrates. The intellectual function of the cortex was fully demonstrated experimentally by Flourens in 1842, when he showed that the partial or complete destruction of the brain in lower animals is always followed by more or less marked loss of intelligence.

The ingenious arguments of Gall and the able experiments of Flourens, whilst agreeing with each other and with actual fact as to the general localization of the mental activities (which they assigned to a single organ, the brain), contained the germ of an extremely important controversy, which actually sprang up between these two pioneers, and which has been revived in recent times, and has not yet ended. According to Gall, mental activity is the sum of processes and special functions which have each their separate seat in the various convolutions of the cortex (theory of functional heterogeneity). This theory, founded upon quite proper considerations, was doomed to fail miserably in its applications through the immoderation of its author. The celebrated Viennese anatomist, a skilful logician, but an inept psychologist, thought that each inclination, instinct, or quality that was capable of being empirically isolated could be raised to the dignity of a true physiological or physio-pathological function, and that it ought, therefore, to possess its own organ in the cerebral cortex, sharply circumscribed and distinct from neighbouring organs. Concurrently with the predominance, or supposed predominance (based on extremely superficial observations or personal histories), of each function, tendency, instinct, or talent, there was, he held, hypertrophy of the corresponding organ, or, more precisely, of a particular convolution. As the cranium, in the course of its progressive growth, must passively follow the development of the brain, the external prominences of the cranium, so readily observed in the living subject were capable of being interpreted as the exact impressions and evidence of these organs, and therefore of the predominating functions. Similarly, the cranial depressions indicated deficiencies of function. In order to be able, by reasoning from the cranium to the cortical map, and from the individual to the species, to determine the positions (supposed to be constant) of the various mental organs, it was only necessary to collect and compare a large number of such examinations, which were extremely easy to make. In short, to every convolution of the cerebral cortex a fixed function was assigned. Thus originating, phrenology, or cerebral organology, became widely disseminated, and excited much interest. It has had apostles and teachers, as well as opponents, among the most illustrious thinkers of the time.

b. Diametrically opposed to these views, and triumphant over them, the theory of Flourens, which appeared to be securely founded upon the results of experiments upon animals, was brought forward in 1842. The cerebral cortex was declared to have but one function; one lobe was merely the repetition of another; and an isolated lesion did not determine the disappearance of a single functional power, but only a quantitative diminution of intelligence. Such negative conclusions seemed to leave psychiatry without hope of being able to gain, even from focal lesions, any help in the explanation of morbid mental symptoms; aphasia, amnesias, hallucinations, catatonic phenomena, etc., were incapable of being explained on the ground of anatomical changes, or, at least, of those of a macroscopical nature. Nevertheless, the macroscopical homogeneity of the cerebral functions, as understood by Flourens, did not of necessity exclude the possibility of a microscopical differentiation of them in the different tissue elements, or in the various cortical layers, which were then unknown. By means of his experiments, Flourens had divided the brain into macroscopical, not microscopical, portions; the functional differences which failed to manifest themselves when lobe was compared with lobe and convolution with convolution might still very well exist on the part of one stratum and another, or of one group of cells and another, independently of their macroscopical topography. It is, moreover, evident that the data possessed by Flourens did not make it possible to determine any psychical localization by means of animal experiments, or with the exclusive aid of macroscopical pathology.

This concludes the historical prologue regarding the controversies as to the seat of the mind, which are dear to theologians as well as to medical men, and we pass to the contemporary stages of the experimental investigations which have served to establish once and for all that the psychical processes are localized in the cerebral cortex.

THE PRESENT POSITION OF THE PROBLEM.

In 1862 Broca, corroborating in the most convincing manner the clinical observations of Marcus Dax, succeeded in demonstrating that the seat of a function so eminently psychical as that of speech is located within a fairly restricted but anatomically somewhat ill-defined area of the cerebral cortex, and that it is limited to one side. This observation seemed almost to justify the inference that other mental functions are similarly localized in distinct areas of the same vast organ, and that the theory of Flourens is erroneous; but the uniqueness of the exception,

which concerned a function peculiar to the human species, did not encourage a return to the views of Gall, and the discovery was never urged as forming an objection to what was regarded as the general rule.

A few years later the period of experimental localization was reached. Fritsch and Hitzig discovered the motor zones in the neighbourhood of the crucial sulcus of dogs (1870), and Hitzig localized the visual centres in the occipital cortex (1874). These localizations, which had escaped the notice of Flourens, although his experiments had been made upon the same animal, constituted a new fact which rendered it necessary to revise the theory of that observer.

In the present position of clinical, anatomical, and experimental knowledge, the controvertible questions are chiefly two :

1. Are there discharged in the cerebral cortex functions that are purely psychical—that is to say, distinct, as regards their nature and seat, from the sensory and motor processes? In other words, do we think by the reproduction *in situ* of direct images, or by means of symbols that are formed elsewhere?

2. The other problem is: Granted the latter hypothesis, how are the various categories of symbols distributed over the cortical map? Are they unilateral, as in the case of speech, or bilateral, like the ordinary sensations?

These questions are still unanswered by physiology. Experimental inquiry has not served to solve them, and practical psychiatry has not yet begun to consider them, even as an interesting subject of speculation, regarding which curiosity is still unsatisfied. We are bound, however, to recognize that to Flechsig and Ramon y Cajal is due the credit of having formulated and examined the problem with very great care, and of having taken it beyond the unprofitable field of macroscopical experiment. Discussion as to the existence of psychical centres has now been opened, and the approximate localization of such centres by indirect means no longer appears absolutely impossible.

The endeavour—certainly at present very bold, and, indeed, almost rash—to localize the psychical functions may be regarded from various standpoints. The experiments of the physiologists teach us the topography of the sensory and motor centres, but only up to the point to which the macroscopical divisibility of the cortex permits them to go, and in so far as there is the possibility of conducting physiological or other observations upon animals. The experimental methods of anatomical research, by which atrophies or degenerations are induced in the nerve fibres, indicate to us the limits of the individual tracts in regard to

length and size, the direction of the functional current, and the relation to the cellular centres of origin or of termination. Embryology, by teaching us the facts of myelogenesis in the various systems of fibres, which is considered to have a fixed chronology, supplies us with a new and very delicate test by which to judge of the functional value of these fibres in man—that is to say, to determine whether a system is sensory, motor, or associative. Pathology, by means of focal lesions, reveals to us in man the seat of the most delicate intellectual activities, for which psychology, notwithstanding the subtlety of its introspective analysis, was very far from suspecting that there exists a functional mechanism, so highly differentiated and complex, in specially adapted cortical organs. Lastly, normal histology, by comparing the differences of structure in the various cortical territories as regards the arrangement of the layers, the form of the nervous elements, and the proportions in which they are associated, suggests the general outline of an anatomical psychology.

The Data of Physiology and Experimental Anatomy.

Experimental physiology has localized the so-called motor and sensory centres in various cortical zones. It has not, however, succeeded in planting its flag throughout the whole territory of the cortex. There is a portion that remains unexplored, and there are other regions which, though they have been explored, are still unoccupied, or else the subject of dispute, owing to the fact that the information given by the various observers has not always been precise and unanimous.

There is little doubt as to the position of the principal centres ; it has, indeed, been very precisely determined. There still remains, however, some question as to their boundaries. The existing uncertainty upon this point leaves the way open for differences of opinion as to the total extent of the centres at present known. With regard to some of the secondary centres of motion and sensation, not only is their extent uncertain, but also their position.

Consequently, if we tried to construct a chart of the cerebral cortex, and to establish the exact line of division between the spheres of sensation, motion, and psychical activity, two great questions would still remain open—namely, (1) Is any portion concerned exclusively with psychical activity ? and (2) What extent of the cortex is concerned therewith ? With regard to a third question—namely, Are there specific centres for the various forms of psychical activity, and if so, what are they and what is their site ?—it may be said that its solution transcends the powers of experimental physiology. The experiments of the physiologist

are not carried out upon subjects higher in the animal scale than monkeys.

Answers to the two other questions have varied, according to the changes that have taken place in the doctrine of localization, which from 1870 until the present time have been considerable. To the earliest workers the cerebral cortex appeared to be a mosaic of sharply defined centres. This view is known as the *theory of juxtaposition*. According to more recent observers, each of these centres shades off into a marginal zone, in which the functional activity is less marked, and with which the neighbouring centres also blend. According to these observers, the cortex is a collection of areas, or centres, with intersecting or superimposed margins. This is the *denticulation theory* (Luciani, Exner). Other physiologists, such as Wundt and Munk, whilst not denying the existence of the denticulations, maintain that the cortical centres have an arrangement corresponding to that of the organs and peripheral areas which they innervate, and that in these centres the groups of sensory cells are mingled with groups of motor cells. This is the *theory of promiscuity*. It is not opposed to the denticulation theory. For example, if the occipital lobe contains the centre for vision, in it should also be found the motor centres for the eyes; if the Rolandic zone initiates the voluntary movements of the limbs, here also should be contained the centre for their tactile and muscular senses.

Those who support the view of the existence of denticulations and mixed zones (and now all do so) do not fix precisely the point of termination of a particular functional activity. They therefore leave more or less untouched the question as to whether we ought to recognize the existence of a specific function (or several specific functions) of a purely psychical nature in the zones which, being neither distinctly motor nor sensory, may be considered as untenanted areas, virgin soil, or *res nullius*.

These areas are of considerable extent. One comprises almost the whole of the prefrontal lobe, excluding the posterior ends of the first, second, and third frontal convolutions. The other, regarding which there is a dispute, embraces a large part of the occipital lobes, if, as the most recent pathological researches seem to indicate, we must regard the visual centres as occupying a much smaller space than we have hitherto regarded them as doing. This extensive dominion of unknown function (but thought by many to be psychical) may easily be extended farther by filling up the spaces left in the chart, or by rectification of the boundaries of the sensory and motor cortical centres.

It is almost certain that the motor and sensory centres do not extend throughout the whole of the cerebral cortex. Never-

theless, most physiologists, perhaps from gratification in being able, by means of their experiments, to make conquest of the whole cerebral cortex, and to allocate all its forms of activity, were inclined, until a few years ago, to maintain that there is neither a series of disseminated psychical centres nor a single indefinite zone of psychical activity. They taught that intelligence is capable of being explained as a product of sensory and motor representations, or as a mnemonic re-evocation, having its seat in the same centres as the sensations and original determinations of motion. Abstract thought, they also said, is formed by means of various representations, principally verbal, which in the last analysis are reduced to sounds, graphic signs, and muscular images, according as the individual is of the auditory, visual, or motor type—listener, reader, or speaker. Charcot has said that when we think of God we see the image of an aged person. Others give as an example the conception of goodness, which is an abstraction, but takes form in the image of a statue, of a good man, of a charitable act, or of a word, according to circumstances, but always in some sort of likeness.

Of experimental physiologists, the first to recognize theoretically a something beyond the motor and sensory centres, or a psychical zone, was Hitzig, who in 1874 assigned abstract thought to the frontal lobes. He pointed, very rightly, to their increasing development in the mammalian scale, the abundance of medullated fibres at the anterior poles of the brain, and the ruin which progressive paralysis, that implacable destroyer of the intelligence, produces pre-eminently in the cortex of this region.

The special localization of abstract thought to one portion of the brain excludes any other specific localization of the intellectual functions, and leaves us to believe that the more concrete and elementary forms of thought develop in the sensory and motor centres by simple mnemonic reiteration of sensory and muscular images. A cumulative centre of thought, properly speaking, represents a first degree of psychical localization; but by thus condensing the more elevated expressions of thought into one organ, any further partition into minor centres is proscribed. Further, this tentative suggestion of a first degree of psychical localization seems superfluous, trivial, and contrary to the discoveries that are from time to time being made of new motor and sensory centres in wide territories, and at some distance from the site of those first discovered. The voluntary movements were first interpreted as active representations of muscular efforts and postures, and the motor zone was likened to an organ of muscular sensibility (Munk, Schiff); and now all the psychical phenomena are reduced to images, a pure series of sensory centres

being recognized in the cerebral mantle. This may be called the theory of cortical panæsthesia. In short, the more the localization of the sensory and motor (or muscular) centres became further extended and divided up, so much the less was it possible to attribute exclusive psychical functions to the region in front of the pre-Rolandic sulcus, and therefore, in the controversy between the upholders of the theory of their localization in the frontal lobes, advanced only in a tentative and general way (Hitzig), and the theory of their exclusion from any particular seat (Munk, Schiff, and Wundt), the antilocalizing tendency prevailed. The search for psychical localizations was opposed, if not by a prejudiced denial of their existence, at least by a hostile silence, rarely broken by expressions of a vague and passing doubt.

In 1884 there was a revival of the localizing tendency. Goltz, who, with the authority due to extensive personal observations, had criticized the too narrow and literal prevailing conception of the sensory and motor centres, produced a brief but timely and very effective communication, in which he announced that dogs in which he had injured the frontal region of the brain manifested change of character, becoming ill-tempered and snappish; but he added that dogs deprived of their occipital lobes, whilst remaining quiet and affectionate, displayed a still more profound state of dementia. This observation, which was not entirely new, some of the phenomena having already been described by Boyer, was confirmed in the human subject by Leonora Welt by means of a very accurate study of a series of cases of cerebral tumour. It was also confirmed in the dog by Groszick, who carried out new experiments, as well as by Bechterew, who stated that lesions of the parietal and temporal lobes also have an influence upon character. /

The pre-eminence of the prefrontal lobes in relation to the psychical functions received experimental confirmation from Ferrier in 1892 and Bianchi in 1894. These observers, going beyond the narrow limits of the physiology of the dog, were able to obtain evidence of it in monkeys, in the region extending from the pre-Rolandic sulcus forwards. The monkeys operated upon by Ferrier lost the power of psychical concentration or attention. According to Bianchi, the animals lose much more—namely, the power of inhibiting movements initiated by other regions of the nervous axis (this is in harmony with the results obtained by Goltz), that of recalling the images of previous sensations in commemorative form, and, lastly, the power of associating these images in abstract synthesis. He observed the same symptomatology in the human subject in cases of tumour affecting the anterior portion of the brain.

As the study of experimental localizations would appear to have reached its limit of possible development, it is not now permissible to reserve any remaining regions of the cerebral cortex for sensory and motor centres to be still discovered, or to attribute unlimited extension to those already discovered. Therefore physiologists, in common with clinicians and those who investigate the question from other standpoints, have now no reason to refuse space (on the pretext that it is not available) for a psychical zone, the existence of which forces itself upon us, even apart from the testimony of experimental researches. A glance at the facts of comparative anatomy should suffice to make it evident that the cerebral cortex attains an enormous extent in man as compared with other vertebrates, including the apes. It is in the highest degree improbable that all this increased development of the cortex corresponds simply to a greater refinement of human sensibility or movement, and therefore to a multiplication of sensory and motor centres. Man is, indeed, in many respects less vigilant and less agile than other mammals and birds. On the other hand, it is legitimate and almost necessary to attribute the absolute and relative vastness of the human cortex to the intellectual superiority of man, which is beyond all dispute immense, although an excess of Darwinistic zeal has tended (gratuitously as regards the thesis) to minimize it. Just as a structural modification of the fore-limbs has served to produce in the bat the power of flight, so an increase, by no means small, of nervous elements and anatomical connections in the cerebral cortex of man is to be interpreted, not as the cause of slight physiological differences, but as the reason for the perfection to which abstract thought, memory, speech, and other functions, not manifested by other mammals, have reached in the human species.

The experiments of Ferrier and of Bianchi upon monkeys, in so far as they elucidate the purely psychical functional rôle of the prefrontal lobes, support a mode of view that is now becoming general. This localization possesses, however, a special interest, owing to the fact that it contains a negation, implied if not expressed, which is more important than the affirmation. Hitzig, Bianchi, and Ferrier, whilst they assign a psychical function to the prefrontal lobes, deny it to the other regions of the cortex, and especially to the occipital lobes, or, at least, they do not mention it. Thus the school of prefrontal localization sets itself up as the opponent, not so much of the antilocalizers as of those who, with Flechsig, maintain, as we shall see, that there are extensive and specific localizations of intellectual activity in multiple and disseminated centres.

The study of atrophies and degenerations experimentally produced in lower animals has resulted in anatomical confirmation of physiological localizations, and thereby removed many uncertainties and given increased precision to the boundary-lines between centre and centre. Similar researches upon human brains that had been injured by accident or in consequence of surgical operation have served to demonstrate, through the observations of Lloyd and Deaver, Bartholow, Sciamanna, Nancrede, and more especially Horsley, that the localizations established in monkeys are exactly applicable to man.

In brief, the evidence of experimental anatomy tends to restrict the extent of the sensory centres, and still more that of the motor centres (Monakow), pointing, on the one hand, to the existence of certain very circumscribed areas of functional condensation, and, on the other (by exclusion), to certain wide zones, which exhibit no changes either when sensory organs are suppressed, or when a limb or motor organ is destroyed. The motor centres, considered as the origins of centrifugal projection, can no longer be considered as simple organs of muscular sensibility, and consequently the doctrine that we have, for the sake of brevity, termed that of "cortical panæsthesia" becomes untenable.

Moreover, the elucidation of the relations existing between nerve cells and fibres has confirmed and left unshaken the conception, previously formed by physiology, of mixed zones—that is to say, of the intimate association of groups of cells that control the movements of a given peripheral organ with groups that receive sensory stimuli from that organ.

The Data of Embryology.

Human embryology, investigated by the method of Flechsig, has shown that the sensory functions begin to be organized gradually and before those of motion. After the central organs concerned with these two, a third series of cortical organs becomes matured and prepared for the performance of a function x , which is certainly neither sensory nor motor, but which is supposed to be associative or psychical.

The method of Flechsig, originally suggested by Meynert about thirty years ago, was applied with important results in the psychiatric clinic of Leipzig from 1880 to 1884, and afterwards, with fresh results and redoubled interest, from 1890 onwards. It consists in the observation of the first traces of myelination, demonstrable by means of Weigert's reaction, and in the exact registration of these initial data. The process of myelination, which coincides with the functional maturity of the paths of conduction, occurs at different times in each separate tract. It

begins in the cerebral hemisphere in the fifth month of foetal life, continues during the first year after birth, and follows a very definite chronology, both with regard to the order in which the various tracts are myelinated and the precise time at which each reaches maturity.

The first to become myelinated are the fibres of the olfactory tract, lemniscus, and optic and auditory tracts (the cortico-sensory fasciculi), which run in an ascending direction, and are projected in the sensory centres; next, at various intervals, the

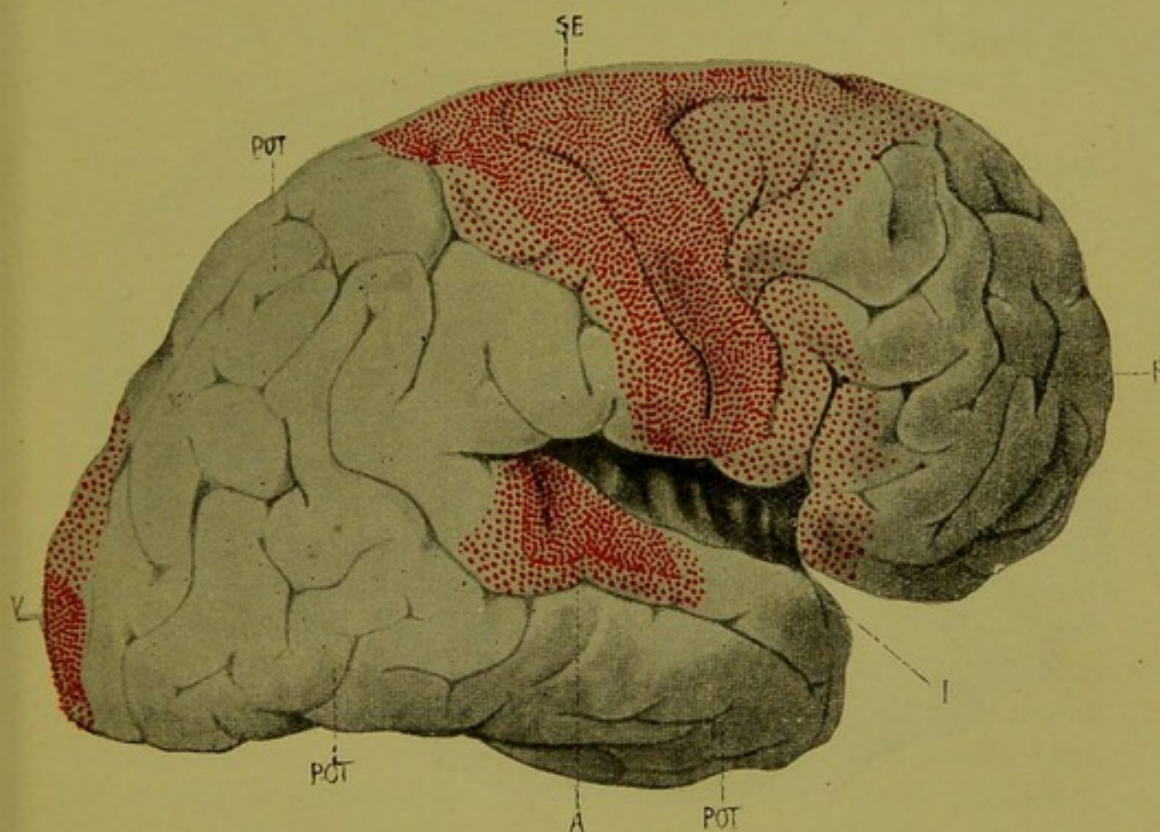


FIG. 1.—SCHEME OF THE CENTRES OF PROJECTION AND ASSOCIATION, ACCORDING TO P. FLECHSIG.

External aspect of the cerebral hemisphere. SE, somæsthetic zone; V, visual zone; A, auditory zone; F, frontal associative centre; I, insular associative centre; POT, parieto-occipito-temporal associative centre.

pyramidal fibres, or cortico-motor fasciculi, which run in a descending direction, projecting themselves from the motor centres; and, lastly, the fibres which we shall call cortico-cortical, which, as they appear neither to leave the brain nor to enter it from without, are considered to form a separate system, distinct from that of projection, being neither ascending nor descending.

These fibres, which both arise and terminate in the brain, are much more numerous than the others. They constitute the system of association. To this system of association there belong (1) all the fibres that pass from a centre of projection to

associative centres ; (2) all those that pass from associative centres to centres of projection ; and (3) all those that pass from one associative centre to another. They have this feature in common—that they connect centres with centres, cortex with cortex.

The topographical delimitation of the sensory and motor centres is as follows : (1) The hippocampal convolution and adjacent parts, or olfactory region ; (2) the posterior part of the first temporal convolution and its neighbourhood, or the auditory region ; (3) the cuneus and its neighbourhood, or the visual

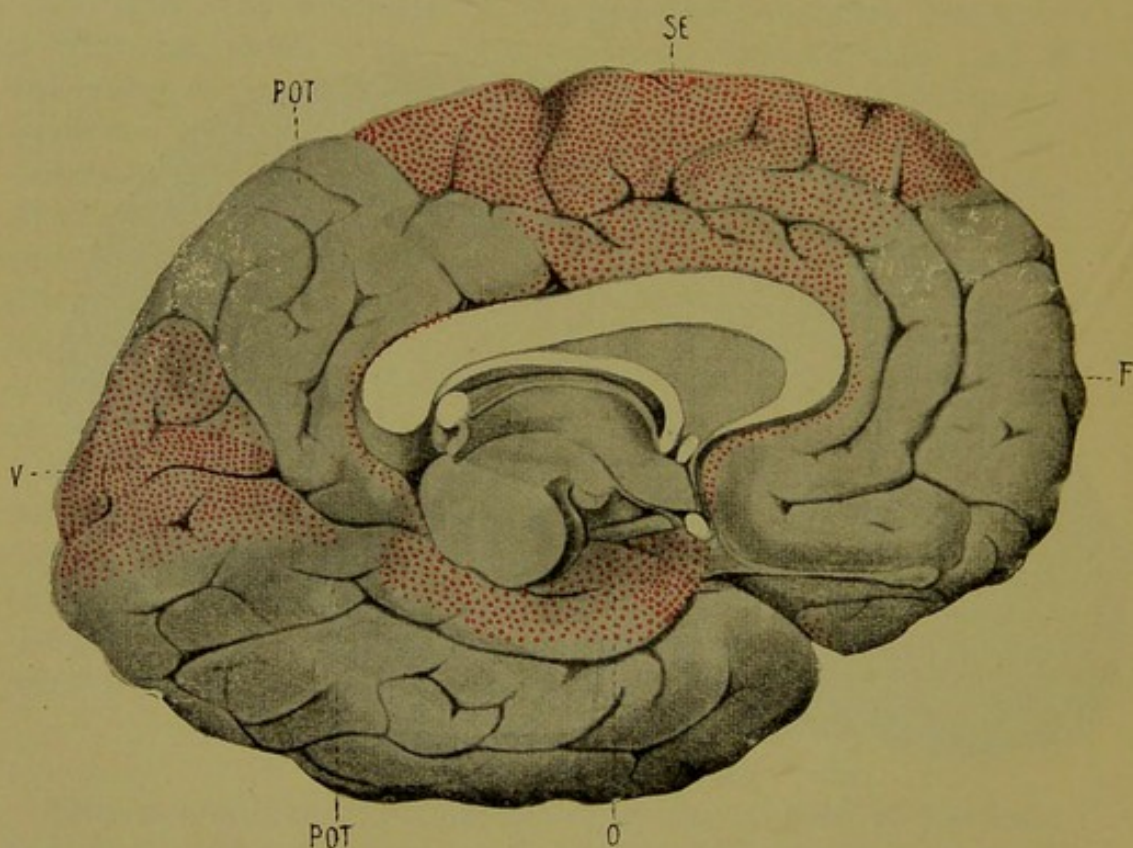


FIG. 2.—SCHEME OF THE CENTRES OF PROJECTION AND ASSOCIATION, ACCORDING TO P. FLECHSIG.

Internal aspect of the cerebral hemisphere. SE, somæsthetic zone ; V, visual zone ; O, olfactory zone ; F, frontal associative centre ; POT, parieto-occipito-temporal associative centre.

region ; (4) the central convolutions (ascending frontal and ascending parietal), the paracentral convolution, the posterior ends of the first and second frontal, or the somæsthetic region, which is the seat of sensory and motor activity as far as the limbs and trunk are concerned (Figs. 1 and 2).

All the rest—that is to say, about two-thirds of the cortex—is the psychical region. It is divided thus :

1. Prefrontal zone.
2. Insular zone.
3. Parieto-occipito-temporal zone.

The centres for speech are included in the psychical zone, because they are late in becoming myelinated. Their functions are of a purely psychical character.

The scheme of Flechsig (Figs. 1, 2, 3 and 4) has not been confirmed in all its details. Its fundamental conception has been opposed and impugned by all those (and they are not few) who are naturally filled with fear or repugnance at the thought of confining the mind in space, and, perhaps still worse, of depositing it in cortical pigeon-holes according to its various forms of activity. It was only to be expected that a scheme of so much import would be spared neither detailed criticism nor violent attack; nevertheless, the work of Flechsig has not been moved from its solid foundations.

The centres which, according to the data of myelogenesis, assume the dignity of an associative function, and figure as autonomous, are indeed very numerous (Figs. 3 and 4), and with the progress of investigation they will, in all probability, reach a still larger number. Hence has arisen the suspicion that an endeavour is being made, with the aid of the passport of embryological analysis, to introduce the contraband of a new phrenology. This suspicion is, however, unjust. In indicating the position and extent of the associative stations, Flechsig does not pretend to distribute among them the various functions of the intellect as they are classified by introspective psychology, or to designate the subjective aspects of the mental process that takes place at any single spot in the brain. He does not say, with Gall: Here is the seat of forethought, of the moral sense, of dialectic talent, of imagination. He merely says: Here there is developed a function which is embryologically late—presumably it is psychical. He adds: If the locality in question communicates with, for example, the special centre for vision, for verbal articulation, or for manual movement, it is probable that its function is that of controlling the mental images, or corresponding impulses, and elaborating the products of the subordinate centre.

Only very rarely do the inductions of Flechsig go so far as to indicate the exact form which this superior activity assumes. There is, indeed, only one such specification, and it is of the simplest kind possible—namely, in regard to memory. From it there can be deduced the general law that for every specific centre of sensation there is, in a neighbouring or communicating zone of the cortex, a corresponding mnemonic repository. It can hardly be rash to localize the memory of images, or, rather, of their psychical elaboration (whatever it may be), in a cortical zone which possesses the embryological and anatomical requirements to which reference has been made. In reality, it is only to

enunciate and answer an equation containing a single unknown quantity: the function sought for has its seat in a cortical centre, which embryology has already differentiated and classified; it depicts itself in anticipation as a condition of established functional relationship between the centre in question and a centre anatomically connected with it; the special function of this second centre is already known from experimental evidence. It is legitimate to infer that there is a relation between two terms, one of which is fully known (from embryological and physiological evidence), whilst the other is partially so (from embryological evidence).

Although it may seem doubtful if there are special centres for sensorial memories (it would appear that Flechsig himself does not believe very strongly in them), it is not therefore necessary to reject the essential parts of the theory. Two facts remain beyond dispute—namely, that there are associative stations, and that the anatomical connections by which these stations are united to the known centres of projection are of a specific nature. From the latter fact it is legitimate to infer that differentiated intellectual functions develop in the sphere of these connections.

It has also been urged against Flechsig's views that the associative centres are not entirely devoid of projection fibres. Flechsig was not slow to meet this objection, stating that his contention was that the associative centres are merely poorly provided with these fibres, not devoid of them. Similarly, it is to be noted that the sensory and motor centres in their turn are far from being devoid of associative fibres. Indeed, they contain more associative fibres than projection fibres (Monakow). The association is the fundamental adaptation whereby the brain undergoes development. There is, however, always a sharp separation between the centres of projection and those of association which enables us to avoid confounding them.

A more grave objection is one that is founded upon certain facts regarding the chronological order of myelogenesis. Certain association fasciculi develop very early, preceding the latest of the fibres of projection. It may be replied that this fact simply indicates that the fasciculi in question, although recently acquired, have attained a high physiological value in the human species. It has been shown that the phylogenetically more recent organs, when they have acquired anatomical bulk and physiological importance, tend to make their appearance at a more and more early period in embryonic development. In this way the parallelism of the chronological order in ontogenesis and phylogenesis tends to be disturbed. The human brain itself presents an example, too apt to be forgotten, of the operation

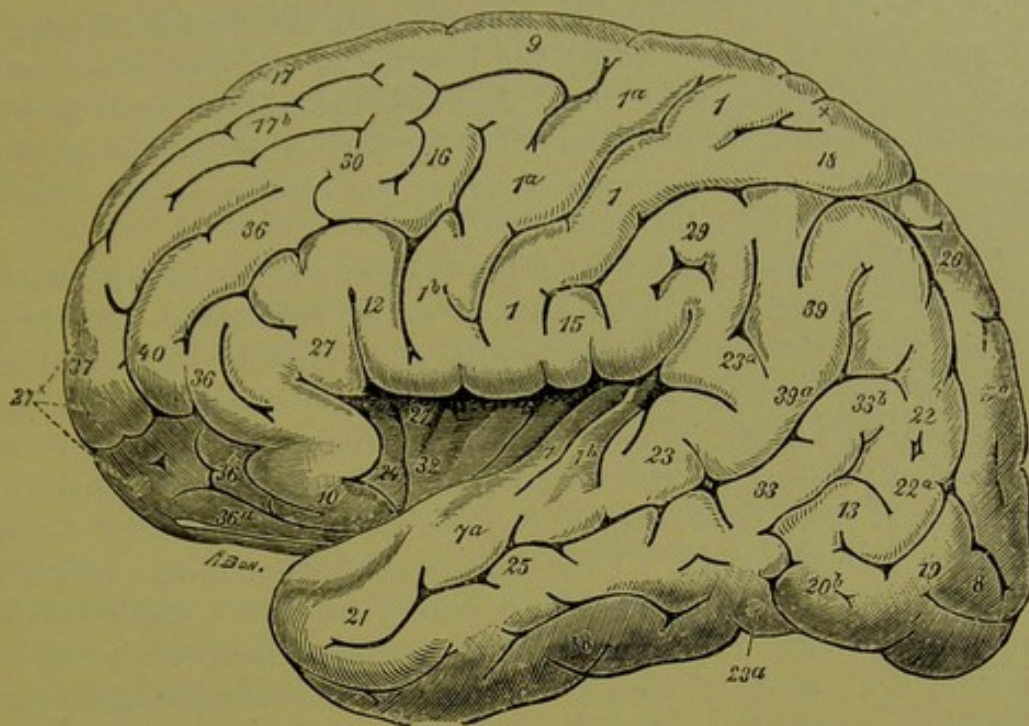


FIG. 3.

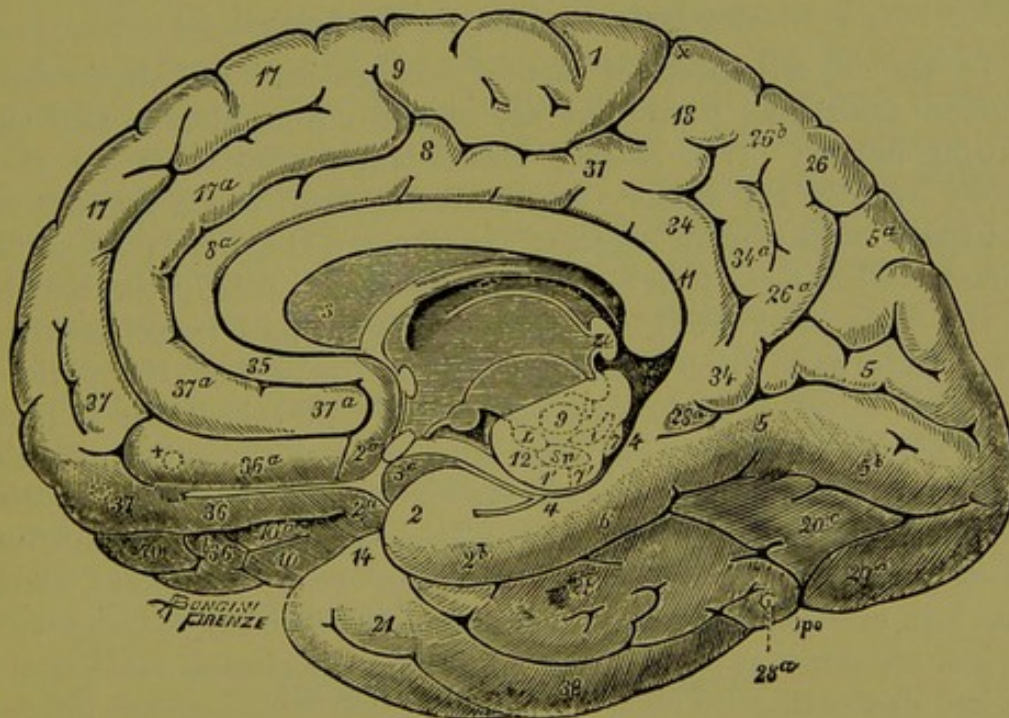


FIG. 4.

FIGS. 3 AND 4.—SCHEMES OF P. FLECHSIG, ACCORDING TO THE MOST RECENT CONCLUSIONS OF THIS AUTHOR.

FIG. 3.—THE HUMAN BRAIN SEEN IN PROFILE.

FIG. 4.—THE HUMAN BRAIN, SHOWING ITS MESIAL AND INFERIOR SURFACES.

The numbers indicate the order in which fibres are myelinated in the various cortical territories. The letters mark distinct parts of the same territory. From 1 to 8, *primordial* territories, which are myelinated before birth. From 9 to 32, *intermediary* territories, which begin to be myelinated after birth, within the limit of the first month. From 33 to 40, *terminal* territories, which become myelinated after the first month from birth.

of this law. It is convoluted, and presents the human or nearly human type at a time when the interior of the cortex has still only an embryonic structure. Another example is seen in the cerebral vesicles, which, though they appeared late in phylogenesis, reach an imposing size when the cerebro-spinal axis is little more than sketched out.

Flehsig has happily hit upon the basis of a sound classification, and has thus at least been able to avoid ambiguity. Keeping within the strict limits of embryology, he divides the maturing areas of the cortex into the primordial, the terminal, and the intermediary (Figs. 3 and 4). The primordial contain only centres of projection; the terminal are formed only of centres of association; the intermediary contain both, the one form being mingled with the other. Thus the law of correspondence between phylogenesis and ontogenesis is departed from to a slight extent only in the case of the intermediary zone, being replaced by another law—namely, that of acceleration of the development of centres of special importance.

The Data of Human Pathology.

In the investigation of mental localizations, we obtain from human pathology data that are of the most valuable and surprising nature. It is clearly demonstrated that there is a hierarchy even in the sensory and motor centres, which favours the existence of psychical centres. It appears that one part of the cortex *sees* objects (the cuneus, and more especially the bottom of the calcarine fissure), and that a different part *recognizes* them after they have been seen (the external aspect of the parieto-occipital lobe). Psychology had already perceived the importance of distinguishing between acts of pure sensation and the mental acts of symbolic representation. Clinical science has now supplied confirmation of this distinction by separating two entirely different symptomatic pictures—namely, mental blindness and cortical blindness (or simple loss of vision)—and pathological anatomy in its turn has confirmed the clinical and physiological distinction by showing that the two functions are located in different cortical centres.

The centres for speech (spoken, heard, written, and read), which have been brought into such prominence by pathology, and which, but for it, would have remained unknown, not only constitute a solid foundation for psychical localization, but at the same time reveal a fact of the highest importance that cerebral physiology had never suspected. These centres, which are eminently psychical, are situated, in contradistinction to the motor and sensory centres, in the left hemisphere, except in

cases of left-handedness, and are not represented at all in the right hemisphere. Thus, simultaneously with the law of the hierarchy in the various cortical centres, there comes to light, at the first revelation of the psychical centres, the law of unilaterality.

The psychical functions, arising gradually, become unilaterally developed in special centres, which go to augment the cerebral volume. This unilateral development is an adaptation, the utility of which is evident, and therefore also its cause. The peripheral organs of sensation and movement are double, the human body being divided into two lateral and perfectly symmetrical halves. Hence the duplication of their centres, whereby man is enabled to observe with accuracy the place and course of external events, as well as the objective and direction of his reactive movements. On the other hand, symbolic or abstract representations, not having a precise position in the environment, have no need of topographical collation in the body, and therefore they are not separated into right and left. Probably they gain advantage and acquire greater power of generalization and abstraction by dissolving their union with the paths of projection, which are hampered by the circumstance that they lead out to a material objective in the external world, or conduct from it. Hence the psychical centres, like their functions, emancipate themselves from the law of symmetry, which regulates sensibility and movement. They become asymmetrical and unilateral (Ramon y Cajal). This adaptation has the advantage of anatomical economy, because it saves the psychical functions from a cumbersome duplication of organs in the two cerebral hemispheres. To the anatomical economy corresponds a physiological economy, for in consequence of this law of unilaterality more psychical centres can become specialized in a given area of the brain, provided it is granted that they are in process of being formed also in the right hemisphere, as is now beginning to be believed, and not without good reason.

The Data of Normal Anatomy.

In its long macroscopical phase, normal anatomy remained impenetrable to the curiosity of psychology. Only once during this period, through the work of Gall, was the darkness pierced, but the vision obtained was a fallacious one, and merely the precursor of disillusion. As, however, microscopical analysis gained new methods and extended its sphere, normal anatomy became a favourable field for the study of psychical localizations. The relation between the brain and the intelligence, which had appeared to be inscrutable, has now begun to be

portrayed upon the canvas of anatomical data. During the last ten years many lacunæ have been filled up, and the facts and views that have been accumulated in such abundance have from time to time formed the subject of a lucid synthesis, for which science is especially indebted to Ramon y Cajal.

The various cortical regions have a characteristic structure, by means of which, in good silver chromate preparations, it is possible, up to a certain point, to identify them, or to tell their function apart from any topographical data whatever. For example, the limbic or olfactory cortex is distinguished by the thickness of its molecular layer, the absence of small pyramids, and the aspect of inverted plumes (descending) presented by the dendrites of its medium-sized and giant pyramids. The acoustic cortex is recognizable by the large fusiform and triangular cells lying horizontally in the middle strata, by the abundance and delicacy of the corpuscles, with bipinnate processes (*bipennachados*), and by the delicacy of the sensory plexus, which extends in the stratum of granules and small cells. The visual cortex is characterized by the stria of Gennari, by the dense arrangement of the granules, the regularity of their disposition, the presence in the midst of them of special stellate cells with long descending axon, by the large number of small elements with ascending axons, and by the paucity of the middle-sized and giant pyramids. The motor cortex is specially characterized by its greater total thickness, the extraordinary quantity of medium and giant pyramids, and the expansion in this stratum of a sensory plexus with thick branches, directed obliquely, and showing frequent dichotomous division.

With regard to the associative cortex, it presents a greater number of giant cells, not only in the stratum which takes its name from the large pyramids, but also in that of the medium pyramids, which is elsewhere not very rich in them. This unusual richness in giant cells in the stratum immediately subjacent to the so-called granular layer, which is the principal meeting-place of the fibres proceeding from other centres, serves very strongly to confirm and emphasize the highly associative function of the region.

The anatomical differences between the various sensory regions are not a special feature of the superior mammals. They are so evident, also, in the inferior that the passage from one zone to another can be recognized with certainty by means of the unaided eye (Figs. 5 and 6). Thus every great cortical region possesses up to a certain point an individuality of structure. If, then, we consider the special character of the communications that unite even the most minute divisions of the cortex with one

rather than with another of these great regions that are histologically differentiated, it is evident that, in addition to an individuality of structure, there is an individuality of position, which is absent from none of the circumscribed cortical areas hitherto designated "centres," and which suffices even of itself to establish the specific nature of their functions. The evidence of normal anatomy, therefore, very distinctly supports the view of the plurality of the psychical centres. Where the distinction between centre and centre is not due to a peculiarity of internal structure, it arises from the special nature of their external relations.

If the psychical regions, taken as a whole, present an individuality of structure which enables us to distinguish them from the zones of projection, we do not as yet know of any histological characteristic by which to distinguish the various psychical

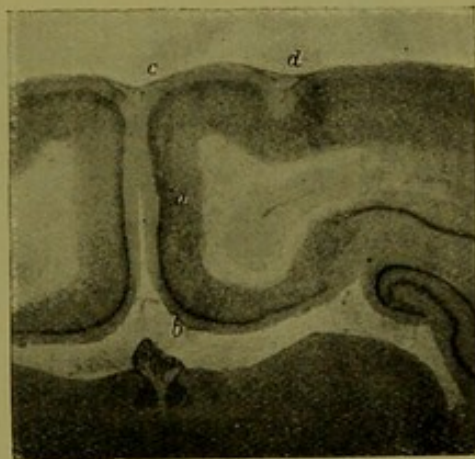


FIG. 5.—MEDIAN CORTEX OF RABBIT.

Frontal section a little behind the posterior end of corpus callosum. At *b* the cortex has characters different from those it presents at *c*; the transition occurs rapidly at *a*. External to *d* the cortex assumes a still more different type, the transformation occurring sharply at *d*. Nissl's method. ($\times 4\frac{3}{4}$.)

centres from each other. The presumption of their specific functional nature has therefore no other basis than that of the difference of their topographical relations, or of what we have defined as "individuality of position." If there are such differences, which must be entirely relative, the series of psychical centres would appear to correspond, not to an abstract and complete scheme of subjectively differentiated functions, but rather to the different categories of material upon which the associative process is exercised, or to the anatomical connections with the various sensory and motor foci. In other words, anatomy indicates in a general way the existence of suprasensory and supramotor centres, the subdivision of which corresponds to that of sensations and movements, but does not seem to admit of more exact specification.

Cerebral histology introduces into the conception of functional centres other ideas and other limitations, the great importance of which requires to be recognized. It shows that the sensory paths, whilst narrow at the periphery and in the first part of their course, are broad at their termination in the cortical centres, because the nervous wave, as it projects itself into the cortex, affects therein a much wider area than that from which it started. This can be seen, for example, in the case of the optic tracts. A rod of the retina, stimulated by a microscopically minute ray of light, transmits the excitation through various tiers of neurons, the number of which increases rapidly and steadily in its course from the periphery to the centre ; thus the nervous current, like an avalanche, invades a kind of imaginary cone, the apex of

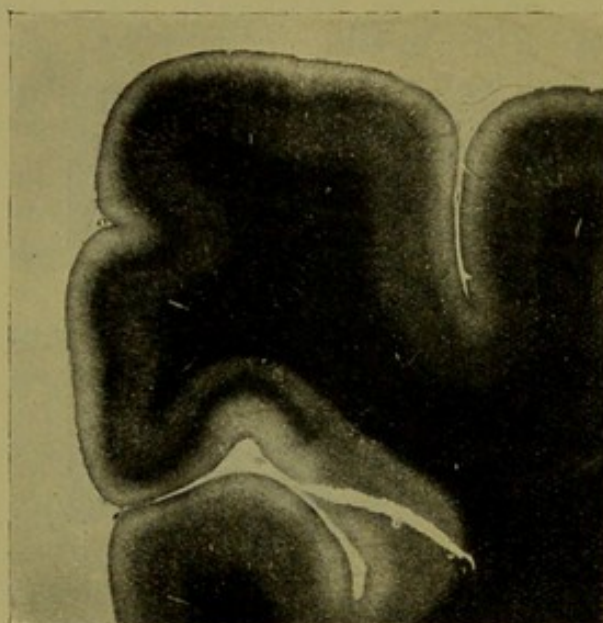


FIG. 6.—FRONTAL SECTION THROUGH THE GYRUS SUPRASPLENIALIS OF A DOG, 15 MILLIMETRES IN FRONT OF THE POINT OF THE OCCIPITAL LOBE.

This convolution belongs to the visual sphere, and presents the characteristic stria of Gennari, which, it may be observed, ceases sharply below. Weigert's method. ($\times 4\frac{3}{4}$.)

which is in a rod of the retina, and the base of which corresponds to the cortical projection (the law of the avalanche). In the supposed example the retinal stimulation is of imaginary minuteness, certainly less than that required for the slightest sensation that is perceptible. Its complexity in the case of an ordinary sensation may be conjectured. An immense number of cortical cells are really concerned in the reception of a visual image.

The cortical projection of a retinal image, however small this may be, is in fact the sum of many partial projections, and exactly corresponds to the number of the rods (and cones) excited. As, however, the retinal elements are very close together, the projections corresponding to each of them in the visual cortex

are partially superimposed, like the circles that broaden out on the smooth surface of water under the action of rain. Every drop forms its own circle on the water, and every circle blends in large part with its neighbours, without having a single point that does not communicate with the other circles (excepting the outermost circles). At the same time, every circle has its precise and mathematical individuality, and one could not take the place of another.

A still more marvellous example of the way in which the functional excitations as they traverse the paths of centripetal projection spread themselves out, though in a definite manner, and perhaps also with a certain pre-established rhythm, is that which is supplied by a careful histological examination of the olfactory organ (Fig. 7). The odorous stimulus which has been received by a peripheral element of the Schneiderian mucosa (not represented in the figure) meets, even at its first station in the olfactory bulb, a series of different elements which hand it on to the cortical centre, or return a part of it to stations already passed, or send it off laterally to other intermediate elements, thus interrupting its progress at every step, as if to widen and prolong its effects.

Every olfactory cell of the nasal mucosa sends to the bulb a fibre, *a*, which terminates by ramifying in the glomerulus, *b*. In the glomerulus and around it there are the external granules of Kölliker, *c*, which, by means of their dendrites, receive stimuli from the glomerular fibres with which they are intermingled, and transmit them to two or more contiguous glomeruli by means of an axis which has a horizontal course. To every glomerulus two other varieties of cell also carry stimuli—namely, the large mitral cells and the small pinnate cells.

The mitral cells, *d*, dip into the glomerulus by means of a large dendrite, *d'*, the primordial dendrite, so called because phylogenetically it is the oldest. This process represents the direct organ of olfactory transmission, whilst other dendrites, *d''*, of the same mitral cells, run horizontally for a considerable distance in the external plexiform zone (Fig. 7, 3), where they receive various kinds of indirect stimuli, which we shall enumerate presently. The axon of the mitral cells forms the true olfactory highroad; but, before entering the external root of the bulb, it sends out several recurrent collaterals, *d'''*, which carry indirect stimuli to the accessory dendrites of innumerable mitral cells. There are, therefore, precortical associations which determine dynamic exchanges between the mitral cells, as also between the olfactory glomeruli, and all these physiological processes occur in a region which is not yet the seat of consciousness.

The pinnate cells, *e*, possess primary and accessory dendrites analogous to those of the mitral cells; but the destination of their axons is not cortical. The axon crosses the internal plexiform zone (Fig. 7, 5), which lies just above the mitral cells, sends off numerous collaterals which cannot be traced farther, and then passes towards the centres, but crosses by the anterior commissure to the olfactory bulb of the opposite side. There it distributes collaterals throughout the internal plexiform zone, and terminates by forming arborizations around the bodies of the mitral cells. Consequently these axons, which are more delicate than the others, are seen in each olfactory bulb under two different aspects: some are leaving, *e*, whilst others are entering, *l*.

These likewise come from pinnate cells—that is to say, from those in the bulb of the opposite side.

This does not, however, exhaust the facts regarding the diffusion of the olfactory stimuli. In the internal plexiform zone there are three types of cells with short branching axons. Some—the cells of



FIG. 7.—SCHEME OF THE OLFACTORY BULB.

1, Stratum of the olfactory fibres ; 2, stratum of the glomeruli ; 3, external plexiform zone ; 4, line of mitral cells ; 5, internal plexiform zone ; 6, stratum of the granules and central fibres. *a*, Olfactory fibre ; *b*, glomeruli ; *c*, cell of association between the glomeruli or *external granule* of Kölliker ; *d*, mitral cell ; *d'*, primordial dendrite of mitral cell ; *d''*, accessory dendrites ; *d'''*, retrograde collateral ; *e*, pinnate cell ; *e'*, axis cylinder of pinnate cell ; *f*, cell of Golgi ; *g*, cell of Blanes ; *h*, cell of Cajal ; *i*, granule ; *k*, centrifugal fibre coming from the centres ; *l*, centrifugal fibre coming from the bulb of the opposite side (from a pinnate cell) by way of the anterior commissure.

Golgi, *f*—are provided with a small axon, which ramifies for a short distance in the plexiform layer itself. Others, of larger size—the cells of Blanes, *g*—possess an axon which similarly ramifies for a short distance, but somewhat more widely, within the zone in which it arises. Lastly, still others—the cells of Cajal, *h*—send their axons into the external plexiform zone, in which they ramify and convey supple-

mentary stimuli to the accessory dendrites of the mitral cells. These three types of cell receive the nervous wave from the collaterals which ramify in the zone in which they lie—that is to say, the excess and derivatives of the principal current—carrying it back to the mitral cells.

Even this is not all. The internal zone, which contains the bundles of centripetal and centrifugal fibres, 6, is densely packed with certain curious cell elements—the granules, *i*—which, like the amacrine cells of the retina, are devoid of a true differentiated axon. They have a small tuft of central dendrites and a long thick peripheral prolongation, which passes perpendicularly through the internal plexiform zone and the row of mitral cells, and ramifies in the external plexiform zone in the form of a plume of fine spinous dendrites. It is probable that these amacrine cells receive stimuli upon their bodies and central dendrites from certain fibres which run in a centrifugal direction from the olfactory cortex, *k*; that in traversing the internal plexiform zone they receive other stimuli on their trunk from the innumerable collaterals which occur in this position; and that all of these stimuli are discharged upon the accessory dendrites of the mitral cells by means of the terminal ramification.

We leave out of account all the deviations, the windings, and the progressive arborizations that are concerned with even the most insignificant of the olfactory stimuli in the labyrinth of the cerebral cortex. It is sufficient to have demonstrated that from a single cell of the Schneiderian mucosa there can be developed a nervous current capable of undergoing enormous diffusion, and that, before it has left the olfactory bulb, it has already been subjected to diffusions and transformations of the greatest significance. It is probable that, arising in this position from many peripheral cells, the physiological stimulus, whatever its strength and nature, ends by invading the whole of the olfactory cortex. Thus the olfactory avalanche may be imagined as a cone which, having its apex in a peripheral cell, extends its base over the whole olfactory region of the cortex.

From this it follows that, whilst a single olfactory sensation is collectively the work of innumerable, perhaps of all the cells of the olfactory cortex, stimulated thereto by the unconscious, but, nevertheless, highly complicated, activity of precortical cells, every cell of the olfactory cortex must take part in the sensation of every possible odorous stimulus, making different responses to each stimulus which is recognized as distinct.

[From these facts there arise certain principles of extraordinary importance.

1. The sensory processes (even though purely elementary—as, for example, the perception, if it were possible, of an isolated stimulus affecting a single retinal rod) and, for similar, if not, indeed, for stronger, reasons, the psychical processes are always pluricellular phenomena. In fact, the synergic activity of many neurons is a necessary condition of consciousness, and the isolated activity of a single cell (or of a few) constitutes only the fragment of a conscious phenomenon. Now, a fragment of a conscious phenomenon is something that cannot be represented—that is to say, it is a phenomenon of pure physiological mechanics; therefore a single cortical element is not by

itself capable of lodging or of producing a concrete image—not even that of a luminous point that has impinged upon a single rod or cone of the retina.

2. On the other hand, as every cell of the visual projection corresponds to many rods and cones of the retina, and not to one only, it is to be concluded that every central element (and especially those of the associative centres) has multiple connections with other elements, both peripheral and central, and may therefore be affected by a series of impressions different in origin and, to a certain extent, also in nature. The cortical cell is thus polydynamic. Its function is therefore very far from being limited to a single form of stereotyped activity; but at the same time it does not consist in an indefinite capacity to receive any kind of stimulus. It is simply impressionability by a certain number of minimal stimuli, subconscious and different from each other, but probably little dissimilar, which come from various parts by pre-established anatomical paths, sometimes along with others, sometimes in little processions, according to circumstances. Thus, there are produced fragments of sensations or symbolic images, which, blending with innumerable functional contributions from other central cells, give rise to the psychical act in its infinite varieties—that is to say, to sensations and images that are capable, because more or less complete, of asserting themselves as conscious facts.

3. Every cortical cell is both an organ of reception and an organ of discharge, inasmuch as it can pass on to other cells the stimulus it has received. If, as an organ of reception, the cortical element is able to receive various stimuli, and not merely one, it has the advantage of a certain versatility also as an organ of distribution, for, when once impressed passively, it can place itself in functional co-operation, now with one, now with another, of the near or distant cellular groups with which it is connected anatomically. These anatomical relations represent as many functional possibilities, which are realized or not, according to the circumstances of the moment.

The course of thought is, therefore, very precarious. Its variations depend not only upon external events, but also upon the intimate changes in innumerable cells, which form part of the system accessible to a given nervous current, and which are each independently able to attract or to repel this current. Thus the great communications between centre and centre, and still more the microscopical communications between neighbouring cells, become obligatory only partially, momentarily, and under certain physiological conditions. Theoretically the psychical process should be able to reach without limitation to

any point with which there is anatomical continuity ; but practically it encounters resistances and attractions, sometimes of a transitory nature, which do not allow it either to go beyond or to stop short of a given course. On account of this dynamic variability, the nervous currents (proceeding from the same point of origin) can assume an almost infinite number of material figures in the cortical space and of subjective figures in consciousness.

In the polydynamism of the cortical cells must be sought the principal cause of the variety of directions that the nervous currents of the brain are able to take. The polydynamism of the cortical elements is, in its turn, explicable as an effect of their position. In contact with so many other different kinds of cells, and exposed to so many forms of excitation, the cell of the cerebral cortex acquires the property of reacting in various ways, and little by little, through adaptation, even that of not reacting or of exercising a direct inhibitory influence. It is not improbable that it behaves towards the wave incidental to the functional process like an elementary organism under the influence of an external agent—that is to say, it displays positive and negative chemotactic actions.

According to the theory of the neuron, chemotaxis would be favoured by the discontinuity of the terminal expansion of the axon and the body of the succeeding cell ; but it is now seriously questioned if such discontinuity, though certain during development, persists in the adult. Be this as it may, such chemotactic action is capable of manifesting itself even between continuous neurons, and apart from their reciprocal union, by means of the closely-set spines which cover the protoplasmic prolongations, and which appear to be endowed with expansile and contractile powers that are exercised in connection with functional activity.

With the qualifications we have enumerated, the conception of psychical centres loses that flavour of phrenology for which it has been reproached somewhat too hastily. It has been said that the number and extent of the cortical centres, as also their topographical arrangement, being determined by the fixed order of embryological development, cannot present great differences in one individual as compared with another, and still less from time to time in the same individual, and that this renders inexplicable the infinite variety of ways in which images, ideas, and emotions follow one upon another, even under the same external conditions. The objection has, however, no value, because the anatomical invariability of the cerebral fabric is compensated for by the very great facility with which the dynamic processes of the brain can vary in virtue of the immense number and the multiple properties of the cortical cells.

Since, as we have seen, the psychical reaction, however simple it may appear, always concerns many nerve cells, and since each of these cells can only have a fractional share in the functional act, even though it appears very small and psychically indecomposable, it will suffice that a single cell of the synergic system, or, to use the expression of Cajal, of the isodynamic pleiades, alters, increases, or suspends its active co-operation in order that there may be determined a minute and most delicate modification of the complex of the psychical reaction. The difference, however small it may be, of a single thought will not be without effect on the development of the successive images, ideas, and emotions.

THE POSITIVE EVIDENCE IN FAVOUR OF THE EXISTENCE OF PSYCHICAL CENTRES.

If now we try to sum up in a few words what is taught us by experimental cerebral physiology, by the anatomy of atrophies and experimental degenerations, the chronology of myelogenesis, the pathology of focal lesions, and the normal histology of the brain, we must first of all recognize that the investigation of mental localizations has passed beyond the arid sphere of academic discussion. The attitude of determined and almost disdainful rejection that was until a few years ago adopted towards the results of this investigation has at length been completely abandoned. Not only is it now very generally held that the mental functions are concentrated in different zones from those of sensation and motion, but it is sought to discover if, in the vast area of these zones, psychical activity is not subdivided further among specific centres with distinct functions.

In what way distribution is effected is, without doubt, very obscure. It at least seems, however, that the psychical centres are the depositories of representations. Divided into groups corresponding to those of the sensations, and composed of their accumulated residua, the representations supply material to the memory, to the imagination, and to logical thought, and constitute a higher element of intellectual activity. Whilst, however, the sensations and voluntary movements have a twofold development in symmetrical and bilateral centres, the representations, not having any direct relation with the external world, become focussed in a single hemisphere, either in the right or in the left, according to their nature.

The sensory and motor centres are, therefore, concerned only with immediate and fresh reactions of which they are unable to preserve any trace. The permanent, though incomplete,

records of the events that concern the centres of projection are preserved in other centres ; and from this position, under certain physiological conditions, they give rise, when need be, to a facsimile of the original occurrence, or to the reproduction of a single detail, which, assumed in consciousness as a symbol, suffices to represent the integral complex. The passage of the recallable records from the double centres of sensation to the single centre of representation takes place along fibres of the same and of the opposite side, which run from the two hemispheres of the brain, and converge separately to one or other of the hemispheres.

This mechanism, although it may seem complex, enables us to understand, even anatomically, the rationale of the very great distance which, in ontogenesis as well as in phylogenesis, separates the highest grades of intelligence from its rudimentary forms. The representations, for the very reason that they mark the progress of intelligence from a purely projective to an associative phase of consciousness, which requires organs of its own, are the necessary and sufficient factor to secure that development to which the brain attains, beyond the sphere of the sensory and motor functions, in adult human beings, and in virtue of which it immensely surpasses the most fully developed brains of the new-born, as well as those of adult lower mammals, not excluding the apes.

The views that we have advanced have not yet been honoured by being made the subject of general discussion, but they have, nevertheless, given rise to a certain number of individual conjectures and conclusions, regarding which there is now a pretty wide, if not unanimous, agreement. The unilaterality of the representative centres has been recognized by several neurologists as far as regards facial expression and the performance of instrumental music. It appears that mental blindness is more profound, and involves a greater number of visual images, when the lesion is upon the left side. The centre for spoken language, now regarded as double, would, it is true, appear to be divided between the two hemispheres, but in such a way that the left centre is concerned with intelligent speech, and its homologue on the right side only with automatic speech (Hughlings-Jackson, Bastian, Byrom Bramwell).

Psychiatry cannot remain indifferent to a clinical tendency which asserts itself by such bold localizations, and which seems to be on the point of advancing beyond its present limits. It is necessary to know the motives, whether formulated or not, which have induced contemporary clinical science to separate the centres of representation from those of sensation, notwith-

standing the physiological axiom that they are identical. These motives are not founded upon isolated observations made at autopsies, but upon a complex of clinical and psychological arguments which do not deserve to be passed over in silence.

1. In blindness acquired from a cortical lesion (cortical blindness) visual records are not lost. As Nothnagel observed so long ago as 1882, the power of calling up the visual images remains unaffected. It is, therefore, more than probable that this power is localized in an area of the cortex distinct from that concerned with visual sensation.

2. When a certain area of the occipital cortex is destroyed, there is hemianopsia, or halving of the optic images, but not halving of the representations. The latter phenomenon is entirely unknown in the pathology of the mental functions. The mechanism that gives rise to the representations must therefore differ, not only topographically, but also intrinsically, from that concerned with sensations. The disparity is still more striking if we grant that, whilst the visual impressions are localized in the two occipital lobes, their representations, being able to divest themselves of the attributes of space, are situated upon one side only, either in the left hemisphere, or (in accordance with laws of selection still unknown) some in the left hemisphere and others in the right.

3. Between sensation and representation there is a true psychological contrast, which has been very clearly drawn by Ramon y Cajal. Representation is an incomplete, indistinct, and variable synthesis of similar images which are introduced into and mingled in the brain at various times. It has no assignable position among external objects. It can be renewed as the result of internal stimuli. On the other hand, sensation is an immediate and exact, but ephemeral and not renewable, impression of a given external phenomenon. It corresponds entirely to the external phenomenon without discontinuity or penumbra.

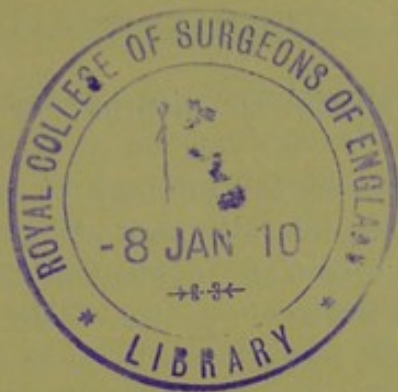
4. Finally, granting that images of things are perceived in one place and thought of in another, we can apply the fact to the pathogenesis of hallucinations (which form so large a part of psychiatry) in the field of cortical physio-pathology, as we shall endeavour to show in Chapter IV. On the other hand, the old view, according to which there is a single centre that serves in a general way for sensations and representations, gives rise to obscurities and contradictions which render it impossible to formulate any satisfactory or complete theory regarding the phenomenon of hallucination.

This being so, we should not recognize in the psychical centres so many stores of ideas ready to issue one by one from the

cell in which they are enclosed, as if they were mature embryos within the shell of the egg, but a simple localization of elementary tendencies, which, in order to pass to the actual state and become ideas, require a dynamic effort of synthesis. This synthesis is under the control of physiological changes, and it is effected, not within the limits of a single cell, but over great distances, and is concerned with a multitude of more or less independent cells, which are capable of being employed in various ways, according to circumstances, and of associating themselves in synergic activity, even though they belong to different centres. In short, the psychical centres do not contain ideas, but the ingredients of ideas, or, better still, they have the capacity of producing the ingredients that serve to compose the ideas or to symbolize them ; and the physiological division between centre and centre does not correspond to categories of ideas, but to categories of ingredients, or of symbols.

The sensorial centres of vision are a looking-glass, those of hearing a resonator, those of cutaneous sensibility an instrument for instantaneous signalling, and nothing more. The mnemonic representations of external phenomena and of our own bodies are built up in other centres (unilateral ?) in the form of symbols : these are direct symbols. From the centres of representation the direct symbols can pass to higher centres, in order to form more general and more abstract conceptions : these are symbols of symbols. The law that the functional processes are always pluricellular also holds, however, for these centres, as does also the law that every cell has the power of resisting or yielding to stimuli, and of reacting in various though similar ways. Further, the activity of a single cell never corresponds to an imaginable figure, whether it be of the most elementary or of the most vaguely symbolical nature, unless it is compounded with that of very many other cells, perhaps thousands, scattered here and there in the brain. For this reason the precise contents of the psychical treasure-house, as also the degree of intellectual capacity, will always be an enigma to the anatomist. Only the generic type of the intelligence, the enumeration of the functions that belong to the various cortical centres, and the feebleness or the extraordinary development of a psychical function, are problems capable of solution by anatomy, and of being made the subject of future corollaries through the clinical study of mental diseases. In this direction an anatomist, G. Retzius, has been able, without laying himself open to the charge of having adopted phrenology, to describe the brains of mathematicians possessing very great power of abstraction, and to perceive its equivalent in the anatomical structure. In like manner, it would be legitimate and

fitting to study the brains of orators and musicians endowed in an eminent degree with the very special natural gifts which are essential for the exercise of eloquence and of the faculty of musical composition ; and if from individual psychology we pass to psychiatry, it may perhaps one day be possible to find in the brains of idiots and of partial dementes the explanation of their anomalies and deficiencies, both as regards quantity and quality. On that day the outlines of a vast scheme of psycho-pathological anatomy will begin to be discernible, and psychiatry will have crossed the narrow strait which separates it from the other departments of clinical science.



CHAPTER II

THE CAUSES OF MENTAL DISEASES

THE causes of insanity are divisible into the exogenous and the endogenous. The exogenous causes proceed from the environment, and are not dependent upon the individuality of the patient, or, at least, are so only in very small part. They may be subdivided into somatic, psychical, and social, according as they emanate from the physical, psychical, or social environment. The endogenous causes are connected with the individual constitution, and are operative in any environment. They may be subdivided into diathetic, hereditary, and degenerative. If, however, they are traced back to their origin in the ancestry, it is seen that they also come from without, and that they are ultimately not essentially different from the exogenous causes.

In many instances mental diseases result from a chain of causes of which the empirical observer perceives only the more prominent. Alienists do not commonly fall into this error, but in cases in which several causes are associated it is difficult for anyone to appreciate how much each has contributed to the result. Even, however, when we do not know how a particular morbid process has developed, a study of the symptoms enables us to trace out by analogy the special cause that has produced it. There are indeed certain forms of insanity, clinically similar, which depend mainly upon the more or less changeable accident of external circumstances; in these cases environmental influences constitute a condition which, if not a sufficient, is at least a necessary, cause of the disease. There are other psychoses, also similar to each other in their symptoms, which arise only under the impulse of an internal predisposition. Between these two extremes there is a gradual and ill-defined series of mental diseases which are brought about by the operation of mixed causes. These act in such various ways in different individuals, notwithstanding the close similarity of the morbid pictures, that unless one is able to obtain an accurate personal history it is impossible to determine whether the patient is the victim of his

environment, of his special constitution, or of both influences combined.

The connection between the etiology of mental diseases and their clinical manifestations, although obscure and uncertain in this third group, is so direct and evident in the other two that it has been possible to utilize it as the basis of a nosographical classification, for which, indeed, in the opinion of many alienists, it is the fundamental criterion.

External Causes.

Somatic Causes.—Of the external factors in the causation of insanity, those that produce well-marked bodily changes are most easily investigated, for they do not require to be examined through the consciousness of the patient. Among these somatic factors, traumatisms are in their turn the most easily investigated, for we can almost always ascertain the exact moment of their occurrence, as well as the place at which they have exerted their action.

A fairly typical series of traumatic insanities is now known, having as a common feature impairment of the memory and character. The various clinical pictures that result, more especially in cases in which the trauma has affected the head, are as follows :

1. *Ephemeral or partial mental disturbances* immediately succeeding the traumatism, such as loss of consciousness, accompanied by inability to remember what happened at the moment, or for a short time after the accident (anterograde amnesia), or even shortly before it (retrograde amnesia).

2. *Chronic psychoses* (chiefly hysterical in nature), which manifest themselves after a longer or shorter latent period, and which are rarely recovered from.

3. *Special and irreparable perversions of character*, which sometimes lead to the development of secondary psychoses, either directly, or from idleness, distress, alcoholic disorders, and other consequences of trauma.

4. *Reflex psychoses, hypochondria, mono-hysteria and epilepsy*, consequent upon compression and irritation of the nervous tracts, or upon trauma affecting other parts of the body than the head and brain.

Hæmorrhagic effusions, abscesses, and tumours also act upon the brain as foreign bodies, irritating, paralyzing or destroying the functional substance in their vicinity. Therefore, whatever additional effects they may produce, they are equivalent to an external trauma.

Destructive and irritative cerebral lesions frequently result

from infections, intoxications, poisonings, and inflammatory processes, which destroy, suspend, or overexcite mental action, sometimes partially, more often totally, and at least disturb its harmony. The occurrence of such lesions is often favoured by a condition of anæmia or hyperæmia, by arterio-sclerosis, cachexia, previous syphilis, abuse of alcohol, overwork, and other pre-existing causes of internal origin. Be this as it may, both the lesions that actually determine the occurrence of the mental disorder and the conditions and events that have prepared the way for it act as external causes, for they have nothing to do with the natural development of the intelligence and character, and they would not occur without the co-operation of extrinsic circumstances.

Infective processes, which occasion mental disturbances in only a comparatively small number of those who become the subject of them, produce their effects through the toxins that are formed as a consequence of the vital processes going on in the special micro-organisms, or by means of toxic proteins formed as a result of the dissolution of the bodies of these organisms. Often, however, the action of toxins of bacterial origin is followed by the action of secondary toxins that are developed by the tissues of the host in the presence of the invading organisms and primary toxins. These secondary auto-toxins may be formed at an early stage—that is to say, during the time of the bacterial invasion, and almost simultaneously with the formation of the primary toxins—or at a late stage, after the febrile symptoms have disappeared, or actually at a subsequent and more or less remote period, in consequence of the fact that, although the original process has entirely subsided, a more or less permanent impression has been made upon the constitution of the patient.

Typhoid fever and pneumonia are, next to meningitis, the infective processes that most readily induce mental disturbances. These may occur even at the initial stages of the physical disorders. They have always the characters of hallucinatory amentia, although they may also take the form of post-febrile amentia. Of the various infective diseases, influenza is the one that most readily opens up the way for the development of secondary mental disturbances, especially in the form of neurasthenia with fixed ideas, melancholia, and sometimes amentia. Smallpox, measles, scarlet fever, erysipelas, acute rheumatism, diphtheria, and puerperal infection, may be accompanied by febrile delirium or followed by apyrexial amentia, but not so commonly as typhoid fever and pneumonia. Syphilis is not exempt from psychopathic complications. They occur somewhat rarely in the second stage in the form of acute confusion or amentia; in the third stage

gummata may cause systematized amnesia, hallucinations, and any of the other symptoms of focal lesions; cerebral syphilis, in its turn, is accompanied by psychical disturbances, which sometimes simulate the picture of progressive paralysis. Malaria is capable of determining the occurrence of conditions of severe amentia and consecutive neurasthenia, similar to those which may follow influenza. None of these mental disorders that accompany or follow an infective process is absolutely incurable. Though the occurrence of delirium during the febrile stage of an infective disease certainly constitutes a grave complication, the forms of simple amentia that follow the febrile state are, on the other hand, very generally recovered from after a few weeks. It is only in some cases of acute amentia which develop suddenly in association with fever and severe general disturbances that death within a short period is the inevitable result. These cases of mixed origin, which are similar to the others in their symptoms, and which in all probability are due to infections, severe intoxications, uræmia, etc., constitute the so-called acute delirium.

The symptoms that accompany secondary auto-intoxications do not necessarily correspond to the simple clinical picture of the toxo-infective process. They may, indeed, be so far different as to have nothing in common with it. Not infrequently the secondary toxins have a psychopathogenic power not exhibited by the primary toxins, or they possess it in high degree, and hence cases of post-infective insanity which are not accompanied by fever are no less common than those of febrile insanity. As regards their curability, they are as unfavourable as cases of primary delirium. An example of post-infective psychosis, occurring only after a very long interval, and having absolutely characteristic symptoms, is that of progressive paralysis, which follows syphilis after a lapse of five, ten, or even twenty years. Whilst the primary toxins of syphilis do not, as a rule, give rise to any mental disturbances, its secondary toxins, accumulating with extreme slowness, finally overcome the resistance of the nervous elements, and, perhaps assisted by a predisposition and by accompanying debilitating influences, produce the well-known and incurable disorders which constitute progressive paralysis.

The immediate and remote consequences of infections, more especially the condition of amentia, may be almost exactly reproduced, apart from the action of any infective agent, by simple processes of auto-intoxication, or even of poisoning. Of the various forms of auto-intoxication, the most important are uræmia, glycæmia, acetonæmia, and the disorders, for the most part transitory, but sometimes very acute, which affect the

blood as the result of habitual constipation. Congenital or acquired insufficiency of the thyroid function determines a state of auto-intoxication which produces a clinical picture that is quite characteristic. The forms of poisoning include those by alcohol, morphia, cocaine, lead, and carbonic oxide. Even a febrile disturbance of gastric origin, a certain degree of constipation, and a state of slight alcoholic intoxication, suffice to determine mental confusion, especially in persons exhausted by hæmorrhage, venereal excesses, fasting, chlorosis, etc. Indeed, in cases of amential disorder in which definite signs pointing to a toxic cause are absent, it cannot be altogether excluded that the symptoms are in some way dependent upon simple exhaustion. The psychoses associated with lactation, profuse or repeated hæmorrhage, and chronic starvation, seem to arise in this way. At the same time, it is difficult to exclude entirely an auto-toxic influence in patients who exhibit anæmia, imperfect nutrition, emaciation, and other signs of organic exhaustion. Even in the least marked of such cases the exhaustion is always associated with some alteration in the metabolism.

The two etiological factors of mental confusion are constantly associated in pellagra, which is due to poor nutrition and poisoning by bad maize. It is for this reason that so many of the subjects of this disease become insane and afflicted by the most severe forms of amentia. The proportion of those who become insane is much less in infections and other forms of intoxication, no matter how severe they may be, because these act for the most part suddenly, and upon robust persons who are in a much better state of nutrition than those who are exposed to the conditions that produce pellagra.

The inconstancy of psychopathic complications in morbid conditions resulting from the action of toxic and virulent substances shows that amentia, as well as other forms of infective, post-infective, and toxic insanity, has a distinct relationship to the individual constitution, and that, though it certainly depends upon the quality and quantity of the poison, it does so only in part. There is, therefore, an internal coefficient which remains latent in normal conditions, but which manifests itself upon the occurrence of any derangement of the normal chemical conditions of the organism, adding the complication of mental disturbance to the ordinary clinical picture of the infection, post-infective period, or poisoning. This constitutional element may be of a transitory nature. Often it is dependent simply upon age. In infancy, indeed, slight illnesses, more especially those of an infective character, which may pass unobserved, and even fright itself, are capable of determining cerebral disturbances which

sometimes irreparably modify and arrest the development of the intelligence. In these instances the morbid action is one that is harmless to a fully developed brain, but seriously affects the future of an organ that is still immature. At birth the myelination of the nerve fibres is not complete, and the nerve cells have not developed all the dendritic ramifications that they are capable of forming. When they are injured at this period of their development, the nervous elements in part succumb and in part remain atrophic, failing to contract all the anatomical connections that they would normally have formed.

Lesions of the special sense organs and neuralgias, especially neuralgia of the fifth nerve, are capable of producing psychopathic states in predisposed persons, acting as external, though purely occasional, causes. Intestinal worms disturb the cerebral functions, not only by the production of toxic substances, but also reflexly. Cardiac diseases induce disorder of the cerebral circulation. Nephritis, inasmuch as it leads to uræmia, is one of the most serious causes of very severe mental disturbance. When it occurs as a terminal condition in psychopathic diseases of some standing, it very frequently causes aggravation of the disturbances and death.

Psychical Causes.—That mental diseases are capable of being induced by causes of a purely psychical nature is proved by what occurs in certain cases of fright. In the conspicuousness, rapidity, and gravity of its psychopathic effect, fright is closely comparable to trauma, being even capable of producing shock. Thus, railway spine is a special, but a commonly occurring, instance of shock from railway accident. Even in persons who are bodily sound shock may give rise to amnesias, hysteria, epilepsy, hypochondria, chronic neurasthenia, amentia, and moral perversions no less profound than those that result from physical trauma. Its action has, therefore, been justly compared to a psychical traumatism.

Prolonged emotions, even when not of a violent nature, lead to disturbances of the mental functions, although they do so in a less simple way than is generally supposed. It is probably true that they weigh upon the brain and exhaust it, little by little, producing effects and setting up processes that do not essentially differ from those occasioned by unusual emotions, such as fear, that act suddenly. It is not, however, to be believed that a psychical phenomenon, although violent and prolonged, can directly affect the chemical equilibrium of the nervous elements so severely as to render them incapable of physiological repair, or that it can produce in them irreparable structural lesions by its own force or by its own insistence—that is to say, dynamically. This too simple theory of psychical shock and of the passions

in general, although it has long been widely held, is a physiological preconception which the most recent researches have demonstrated to be erroneous.

The chemical importance of the mental processes is not very great. They are carried out economically, without commotion, violence, or waste, no matter what their nature and their rapidity may be. Indeed, the quiet exercise of the mind, even though continuous and vigorous, produces neither psychopathic disturbances nor signs of fatigue, and the cultivation of a studious and unimpassioned habit is one of the best means of attaining pleasantly a certain measure of longevity. Likewise the lower nervous processes—for example, that of vision—precisely because they can be carried on without stimulation of the emotions, do not give rise to exhaustion or fatigue, even though long-continued. So also intellectual idleness, though detrimental to rich mental acquisition, does not modify the potentialities of intelligence. At the end of a long holiday, or after any dissipation, thought is neither less nor more active than before. Similarly, a person may have been blind for several years in consequence of cataract, but after operation the retina and the nervous centres, which have continued to be nourished, and which have preserved their anatomical structure, quickly recover all the functional activity of which they had been capable.

The nerve cell is, therefore, incapable of being fatigued. It cannot be exhausted by work, and it is indifferent to repose. Neither excess of functional exercise nor abstention from it is able, even momentarily, to diminish its capacity; much less should either be capable of affecting it in a permanent manner by producing mental diseases. Only the emotions, either when they manifest themselves violently and briefly, or when they are quiet and prolonged, form an exception to this rule, for not infrequently they exhaust and endanger the intelligence and determine the onset of true psychopathic processes.

The reason for this exception is to be sought in physiology. Emotions and passions are psychical phenomena, but it is one of their characteristics that they overflow widely into the whole neuraxis far beyond the limits of the areas concerned with consciousness. When the mind is agitated by emotions or torn by passion, the result is a disturbance of the vasomotor and trophic processes which, initiated by the brain, regulate the nutrition of the tissues; the assimilation of anabolic substances is suspended, and the accumulation of catabolic products increases. Thus there are developed here and there in more or less circumscribed areas, as far as the disorder of the innervation extends, so many rudimentary diseases. These are brief and

acute if the emotions are sudden, but prolonged and comparatively mild if the emotional disturbances are protracted. The brain does not become injured so much by what it sees and hears, by what it suffers or fears—in short, by that which forms the psychical content of emotion and passion—as it does by the reflected action of the visceral disorders which alter the cœnesthesis, and still more by the chemical and non-mental action of the auto-toxines that are developed as a consequence of these disorders, and which, when they have once entered into the blood-stream, implicate the nervous system and disturb its functions.

Physiological experiment confirms this opinion. The work of Hitzig, Lépine, Bochefontaine, Danilewski, Eulenburg and Landois, Richet, and Bufalini, upon the effects of electrical stimulation of the cerebral cortex has served to demonstrate that from certain definite points (in the somæsthetic zone) there proceed influences, excitatory or inhibitory, according to the case, which act upon a large number of organic functions, such as those of circulation and respiration, and the salivary, gastric, pancreatic, intestinal, biliary, and urinary secretions, the peristalsis of the stomach and intestine, and the contractions of the bladder and uterus. More recently François-Franck has defined these localizations precisely, and added to them the centres for the sweat secretion, and a number of observers—among whom Bechterew is especially to be mentioned—have enriched our knowledge of the subject from the results obtained by experimentally destroying the various visceral centres. For example, Trapesnikao, in 1897, discovered the centre for deglutition, and Ducceschi, in 1898, that for the anal sphincter. It may therefore be said that an emotion, after having conveyed to these generally unconscious visceral centres a violent and unusual dynamic impulse, induces throughout the body arrests and dispersions of organic activity which are in their turn felt in the brain either as cœnesthetic impressions or as toxic agents that are formed at the periphery of the body and mixed with the blood-stream.

If, then, emotional excesses are almost always confined to the sphere of subjective manifestations, and very rarely become materialized in the form of true organic diseases of the viscera or of the brain itself, the contradiction is to be explained on the ground of the special sensibility to poisons which is at once the characteristic and the misfortune of the nerve cell. Although the brain is not sensible of fatigue from its own work (perhaps owing to the absolute paucity of the regressive products formed, or their innocuousness, or to the also relatively limited amount

of cerebral metabolism), it is, nevertheless, exquisitely sensitive to the physiological and pathological poisons which are formed in the other viscera in much larger quantities, and which have probably much greater virulence. According to the calculations of Thompson and H. Donaldson, based upon the accurate data furnished by Hammarberg, the whole of the nerve cells of the human cerebral cortex do not weigh more than 27 grammes. In short, the intellectual capacity may be affected by visceral diseases which are so slight as not to disturb objectively the functions of the viscera that are disordered or fatigued, and it is sometimes more injured or weakened by diseases and overwork of other organs than it is by disease or overwork of the brain itself. If the brain was not in danger of auto-poisoning—that is to say, by toxins produced in the course of psychical activity—and possessed a circulation of its own (to illustrate the point by a somewhat fanciful supposition), it would be secure against injury by all toxic substances derived from without, including those that are formed secondarily in consequence of emotions and passions.

A form of physiological auto-intoxication which is the result of the general activity of the body throughout the day, but which does not cause a suspension of the function of any organ excepting the brain, is that which manifests itself as sleep. Though sleep produces loss of consciousness, its duration and depth are quite independent of the intensity of previous mental activity, as is evidenced by the fact that it reaches its extreme in the newly-born, in lower animals, and also sometimes even in imbeciles and demented. Another form of cerebral poisoning, also external to the brain in its origin, is that which is due to the regressive products formed by the muscles when thrown into forced contractions, and which manifests itself subjectively as tiredness. The exhaustion of the muscles is felt in the brain, not merely as the result of impulses conveyed by sensory fibres, but also in consequence of the direct action of toxic products which pass into the circulation, and so reach the nervous centres. The chemical instability that characterizes the nervous elements renders them also extremely liable to alterations outside the somæsthetic and motor centres. Hence a long walk or violent gymnastic exercise serves not only to make one tired, but also unfit to do good mental work.

For similar reasons, whenever there occurs any disease accompanied by a pathological alteration of metabolism, one of the very first symptoms is mental lassitude, which may extend to unconsciousness or coma, though it is the case that, on the occurrence of a morbid process, the brain, in common with the muscles

and digestive tract, generally enjoys the benefits of an exceptional degree of rest. On the other hand, if the blood circulation is free from poisons, either pathological or physiological, and contains only those that result from mental activity, as is the case in healthy persons who lead sedentary and studious lives, not only are absent all signs of muscular fatigue, of drowsiness, or of mental lassitude, but the intellectual processes become the more active, quick, and perfect, the more they are protracted; only after a long period do they become clogged, not by the products of the activity of the brain, but by those that come from other organs, and in course of time collect, though only to a small amount, in the blood-stream.

Experimental evidence supports these views. According to Philippen, the respiratory quotient of an animal terrified by tracheotomy is raised by the tying down and operation alone. It is raised because the innervation of the viscera, heart, and muscles is disturbed; the auto-intoxication that affects them is reflected upon the brain in the form of shock. If the animal is curarized, so that its muscles are rendered inert, and if then the central ends of important nerves are stimulated with the Faradic current, neither the respiratory quotient, organic oxidation, nor the general temperature of the body, undergoes the slightest appreciable alteration, just as they do not undergo diminution as the result of inactivity of the brain. The metabolism of the nervous system is not, as a rule, so considerable as to exercise an influence upon the bodily chemistry as a whole. That shock is a product of an auto-intoxication is shown by its symptoms, which range from coma to furor, and include red coloration of the venous blood, slowing of respiration, and lowering of the internal temperature. It is true that death sometimes occurs suddenly during a surgical operation, in which case one hesitates to conclude that so instantaneous an effect can be due to auto-intoxication. Such sudden deaths are not, however, really the result of poisoning, and hence of a true condition of shock: they are due to cardiac syncope.

According to Bernstein, a nerve fibre is much more resistant to fatigue than a muscle. In order to demonstrate separately the exhaustibility of each of two organs, such as a nerve and a muscle, which perform associated work appreciable in the muscle, but not in the nerve, one proceeds as follows: The sciatic nerves of a frog are stimulated bilaterally; but whilst, on the one side, the nerve is left free to transmit its tetanizing action to the gastrocnemius, on the other side, by the application of a galvanic current, a state of electrotonus is produced, so that, provided the current is sufficiently intense, the nerve is rendered impervious

throughout the portion that is under the influence of the positive electrode (anelectrotonus), and the muscle remains at rest. After some time the tetanus on the side on which the nerve is free begins to subside, owing to the commencement of fatigue; but on the other side, on which the muscle has remained inactive, it is seen that the sciatic, although it has continued to receive the same stimulus as its companion, is still capable of being excited, as evidenced by the tetanic contractions that occur when it is liberated from the electrotonus, and so restored in its conductivity. It is thus evident that the muscle becomes fatigued before the nerve. If one could prolong the so-called physiological section of the nerve by means of electrotonus without making it permanently lose its power of conduction, it would not be difficult to calculate, from the comparative duration of excitability, by how much the resistance of the nerve exceeds that of the muscle.

This calculation was actually made by Ioteyko. The spinal cord was included in the sphere of the experiment, and the excitations were applied either directly to it or by way of the sensory nerves. In order to obtain physiological section of the nerve, the experimenter had recourse to etherization, and thus succeeded in establishing that the spinal cord, when slightly under the influence of strychnine, possesses a capacity for work a hundred times greater than that of muscle. The exhaustion that leads to the cessation of the tetanus does not, however, as a matter of fact, begin in the muscle itself, but in the motor end-organs. Indeed, if the nerve is paralyzed by electrotonus, and if the Faradic current is applied to the gastrocnemius, which has become relaxed after tetanic contractions, idio-muscular contractions occur again for some minutes. Therefore the scale of exhaustibility descends in the following order: motor end-organ, muscle, spinal cord. Probably the motor terminations scattered throughout the muscles become intoxicated by the poisons that are produced by the muscles themselves during their contractions. In any case, however, the spinal cord, both as a reflex centre and as an organ of transmission, has a much greater power than a muscle has of resisting fatigue, and it is probable that the brain does not fall short of the cord in this respect.

The great power of resistance of the nervous centres is shown more directly in the scantiness of distinct changes to be observed in ganglia that have been exposed to more or less prolonged stimulation. The experiments of Vas, Mann, Lugaro, Pergens, and Demoor show that slight diminution of the chromatic part follows only stimulation protracted beyond an ordinary limit.

What is the reason for the nerve elements being so inexhaustible? Is it that they hold a large quantity of nutritive

material in reserve, and thus comport themselves as so many accumulators of chemical and functional energy? Or, on the other hand, is it that their metabolism is small and their function easily performed? In other words, is it because they are rich, or because they spend little? All the facts favour the conclusion that the latter is the true answer to the question.

The amount of chemical exchange that takes place in the brain has been ascertained by both direct and indirect methods. It has been estimated directly by means of a comparative analysis of the carotid and jugular blood, by experiments (attended with but little success) in which an artificial circulation was employed, and by estimation of the gases of the blood before and after its passage through the brain. It has been estimated indirectly by the thermometric and calorimetric methods, and also by the examination of the excretions. The final result of these experiments is as follows. The brain is not an exclusive fabricator of cholesterin, as Flint has maintained; convulsive seizures, however violent, never determine in the cerebral blood (jugular vein) a production of carbonic acid comparable to that which occurs in the muscular blood (femoral vein), and they are unable to raise the temperature of the brain; pigeons deprived of their cerebral hemispheres give off an amount of heat not less than that given off by normal pigeons (Corin and van Beneden); though the loss of weight and the excretion of nitrogen during prolonged fasting are less in pigeons deprived of their cerebral hemispheres than in normal pigeons made to fast in the same way, the differences are not dependent upon non-expenditure of mental energy, but upon the cessation of the trophic influences which the brain exerts upon the viscera and muscles (Belmondo); the oscillations of cerebral thermogenesis do not correspond to psychical work (A. Mosso); when such oscillations do occur, they are not dependent upon the autocthonous metabolism of the brain, but upon circulatory disequilibrium, and upon the special slowness with which cerebral heat is dissipated, not only in the living subject, but also in the cadaver under isothermic conditions (Heger); with regard to phosphoric acid, intellectual activity tends on the whole to diminish it slightly, owing to the fact that it decreases the quantity of alkaline phosphates, although it has no influence upon that of the earthy phosphates (Mairet); phosphoric acid similarly diminishes in the insane only when denutrition commences, even though the patient suffers from excitement (De Boeck and Slosse); lastly, melancholics, even when the energizing of the brain expresses itself in intense torture, present no irregularity of any kind with regard to either the urea or phosphates they excrete, provided their nutrition is normal (Birt and Zulzer).

The association of a very small amount of chemical change with an exquisitely fine chemical sensibility is what constitutes the dominant character of nervous metabolism. The brain serves for the redistribution, not for the production, of energy ; it has been fittingly compared by Belmondo to a commutator. Its function, though capable of attaining a high intellectual value, is always insignificant as measured by the amount of associated chemical change, and its exercise, either in the profound thinker or the commonplace individual, is associated, not, as it were, with thunder and lightning and enormous consumption of phosphorus, but with a slow and silent co-ordination of delicate relations which require only the smallest expenditure of energy.

Although the brain is not readily fatigued by its own efforts, and is not the seat of an intense metabolic activity, it is not thereby prevented from exercising a powerful influence upon extracerebral work and metabolism. This influence, as exerted upon the viscera and non-striped muscles, is involuntary and unconscious ; it is voluntary in regard to the striped muscles, with the exception of the heart. Now the action that the brain exercises upon the viscera may be accompanied by emotions, and emotions, though far from supplying exact information with regard to the actual state of our viscera, constitute a psychical phenomenon of external origin, since they assume characters and proportions equivalent to an objective occurrence taking place external to us. In this sense emotions and passions are capable, as we have shown, of being a cause of mental diseases, inasmuch as they provoke extracerebral disturbances that are reflected upon the brain. This is the only way in which mental diseases can have a strictly psychical origin.

Educational overpressure, so often alleged to predispose to insanity, no doubt does favour it, not, however, because of the great mental fatigue entailed, but on account of the bad hygienic conditions to which the pupils are subjected in consequence of the improper nature of the school arrangements. Enforced bodily inactivity, fasting, and insufficient heating of rooms, endured for several hours, fatigue the brain much more than any intellectual effort is capable of doing. The irksomeness of useless and antiquated teaching and the dread of unmerited punishment, or of too severe examinations, add to the somatic factor an emotional one. The latter, however, affects the intelligence only indirectly ; it is the exciting cause of organic disorder which affects the whole body, often for a considerable time, and is reflected upon the brain, impairing its functions long after the feelings of irritation and dread have subsided.

Among the passions, love, jealousy, and avarice—in themselves

particular forms of obsession closely allied to psychopathic states—are perhaps sufficient to account for certain conditions of neurasthenia and melancholia, and perhaps also the simple affective disturbances in general, but they can hardly be regarded as causes of the more severe forms of mental disorders, unless associated with the coefficient of a very special predisposition. However this may be, it is certain that in most instances psychopathic processes begin with disturbance or simple exaggeration of the emotions. These first symptoms may also represent the cause of the mental disease, and may be dependent upon external stimuli, such as threats, alarming experiences, and painful occurrences, to which the brain has the misfortune to be exposed, and which exceed the normal limit of its emotional power of endurance. No great public calamity is without some victim of simple emotion. Disasters at sea, great fires, earthquakes, rebellions, and the like, always give rise to cases of insanity, either immediately, in the form of amentia, or in the course of a little time in the form of neurasthenia, which are to be looked upon as the result of psychical traumatism, aggravated by the sight of emotional distress in others.

In some instances the pathogenetic mechanism of moral causes is quite evident. Worry, fear, and excitement of the passions cause insomnia, and loss of sleep allows toxic products to accumulate in abnormal amount. These toxic products, which in ordinary conditions, and when present in normal amount, act merely as hypnotics, not only keep up the insomnia, but induce states of disordered excitement which manifest themselves as confusion. This results either from increase of the normal poisons, from modifications in their nature, or from abnormal reactivity of the brain, which in consequence is affected by them in greater measure. Undue prolongation of the hours of work may cause an artificial insomnia, the consequences of which do not differ from those of passional insomnia, for they may ultimately reach the degree of a process of amentia (Agostini).

Insanity may sometimes be transmitted by imitation. Imitation is a natural instinct that is strongly developed in certain animals—as, for example, the apes. It manifests itself in an automatic manner in children, and is systematically used by teachers. It acquires a pathogenic character when isolated from other factors and overstimulated. In such instances imitation suggests to the imitator harmful, ridiculous, or useless actions, and, though it may not spontaneously cause mental disease, it at least determines the external manifestations of it. As a matter of fact, only in cases in which there is a pre-existing state of imperfect consciousness or mental weakness is overexcitement of

the instinct of imitation capable of leading to irrationality of conduct. When there is grave disturbance of consciousness or a weakening of the critical faculty, passive attention comes easily into play, and perceptive processes, becoming very acute, are transformed into acts before they have undergone that psychical elaboration which ought to have inhibited reaction, or to have modified it in such a way as to render it more rational. The hysterical seizure and the hypnotic state, in which communications from the external world are excluded, with the exception of a few which are exaggerated owing to the suppression of the others, are fruitful ground for the development of disorders of imitation. Imbecility, which limits the field of consciousness, though often associated with lively and quick reactivity to certain external stimuli, also favours excesses of imitation. *Latah* and jumping, both of which, it is said, produce irresistible imitation of meaningless gestures and actions, probably develop only in conditions of imperfect consciousness.

In this way there arise the communicated insanities, forms of collective psychoses that affect two, three, or even four persons living together, and the psychopathic epidemics which involve larger groups of individuals—as, for example, a school, a village, or part of a hospital. There is an hysterical contagion and a paranoiac contagion, which form the two opposite poles between which oscillate all the psychical epidemics and all the varieties of communicated insanity. Hysterical contagion is carried by blind imitation from one grand hysteric to other lesser ones who come under the power of a presence and conduct that harmonize with their state of emotional tension, and who are influenced the more strongly thereby the greater is the number of affected persons who present themselves as models for imitation. Paranoiac contagion is exercised by a lucid, intelligent, energetic paranoiac upon imbeciles, simple-minded persons, or candidates for paranoia, who have not sufficient imagination to become affected by delusions on their own initiative, but who display sufficient credulity to become so under the influence of others.

Russia presents in *skopzki* numerous contemporaneous examples of sects composed of persons who from pure fanaticism practise mutilation of the genitals, suicide, and homicide; and religions in general are not different in their origin, except that, being handed down with the halo of tradition to intelligent persons, they become idealized and codified and utilized for social ends. The suggestion of the mistaken ideas, like that of the expressive attitudes of hysterical subjects, is so powerful that a number of persons living together, or a crowd assembled in the

street, in a theatre, or elsewhere, manifest a complete agreement, not only in their enthusiasm, but even in respect of hallucinations ; for example, if one person first declares it, all will assert that they have seen the Devil or the Madonna. A somewhat recent hysterical epidemic was that which occurred about 1860 at Verzegnis in Friuli. The paranoiacal epidemic of Arcidosso is well known. It was brought about in 1879 by David Lazzaretti, a man who was subject to hallucinations, but who was intelligent and more cultured than his fellow-countrymen ; he believed that he was inspired by God, and even to this day, though more than twenty years have elapsed since his death, the prophet has his faithful followers. A comprehensive history of the principal psychical epidemics, which raged especially in the Middle Ages, was written by Calmeil.

Social Causes.—It is said that civilization favours insanity. If by this it is meant that greater intensity of study and wider diffusion of learning, higher and bolder ideals, and the weakening of religious belief, dull the intelligence and render the mind more prone to insanity, the statement is one that is not proven, and for the most part is not disinterested. On the other hand, that economic crises and intensification of the struggle for existence are causes of insanity is very probable. These social evils ought not, however, to be attributed to the progress of civilization, or to a particular system of civil life, but rather to the imperfections which are unavoidable in every form of civilization, and which are more severe, frequent, and prolonged in conditions of barbarism and in savage life. Famine, slaughter, misfortune of every kind, and distress, which occur as the exception in civilized countries, are elsewhere a common phenomenon of daily life. True civilization, which has not yet been realized, is one exempt from crises and from those odious disequalities that exaggerate instead of minimizing the natural differences between one individual and another.

At the same time it cannot be denied that the number of persons in asylums increases with the increase of public culture and prosperity. The truth of this is made apparent when we compare the North and the South of Italy. The ten Italian provinces that have the greatest number of insane in proportion to the population are all in the North ; the proportion varies from 25.3 to 16.9 per 10,000 inhabitants. The twenty-two Italian provinces that show the smallest number of insane in proportion to the population are all in the South (with the exception of Alessandria), the proportion varying from 1.3 to 6.6 per 10,000 inhabitants. The remaining thirty-five Italian provinces show intermediate proportions, but those of the South still tend to

occupy the lowest part of the scale, and those of the North the highest.

The fact is that education and prosperity intensify the sensibility both of the community and of the individual to the painful spectacle of insanity, and this increased sensibility gives a stimulus to the sending of the insane to suitable institutions. In the South of Italy the level at which the people live is low ; mingling of the insane with the sane is easily tolerated by a people accustomed to the horrors of poverty ; the rich classes have no repugnance to contact with the common people ; and populous cities are nothing more than large villages. Consequently, asylums are few in number, widely scattered, and not easily accessible, or, indeed, visible, excepting to the contractors, purveyors, and their hangers-on, who derive material benefit from them. The small proportion of patients does not, however, indicate scarcity of the insane. Vagrancy, begging, prisons, and family seclusion account for an immense number of insane persons not recognized as such, and represent so many automatic expedients for asylums. Further, starvation, phthisis, and innumerable other diseases specially affect these derelicts, and death decimates their scattered ranks, which, however, are silently and continuously being filled up again. If the North specially suffers from alcoholism, the South is not spared in regard to epilepsy ; pellagra, energetically combated in the extreme North of Italy, is now most prevalent in the centre of the peninsula, from which it readily tends to pass, coincidently with the use of maize, towards the South ; and the primitiveness of civil arrangements, with its sustained influences, added to temporary crises of a much more serious nature than those that occur in the commercial and industrial parts of the country, though it helps to conceal cases of insanity, certainly is not capable of diminishing their number.

In short, in the more highly civilized countries the insane are collected into asylums, whilst, in the less highly civilized, insanity is a dreadful and nameless misfortune which evades diagnosis and escapes inclusion in statistics, and which does not figure in the Government schedules, but which nevertheless weighs indirectly upon the material and moral state of the people, affecting harmfully the conditions upon which public security and collective well-being depend.

With regard to the state of barbarism, although statistical tables cannot be brought to bear on the subject, one can infer that it is not exempt from the most terrible of mental diseases, for under such conditions there are frequently to be found cases of imbecility, idiocy, epilepsy, hysteria, and paranoia, which history records under the erroneous names of demoniacs, possessed

persons, witches, heretics, and saints, and which it sometimes recognizes in their true light in the epidemics of insanity, which were once so frequent, but are now so rare.

Other social causes of insanity are to be sought in the nature of the patient's occupation, his place of residence, food, family relations, customs, sexual habits, etc. These special conditions the poor man has forced upon him, sometimes against his will and at the cost of his mental health, by the unconscious selfishness of the crowd, whilst, on the other hand, the rich man is led into them by idleness and lack of restraints. An essential for the exercise of the baneful influences of all these factors of insanity is evidently to be found in the existence of social conditions which result in an excessive disproportion in the distribution of wealth. Thus certain occupation-psychoses are rendered inevitable, such as the alcoholism of cabmen, who are for long periods exposed to the weather, the pseudo-general paralysis of printers from lead-poisoning, and of laundry workers from poisoning by carbonic oxide, as well as certain endemic psychoses, such as cretinism in Alpine valleys, the mental disorders associated with ergotism in Poland, ether-drinking in Ireland, poisoning by bad maize in Italy, Spain, and Roumania, and opium-eating in China. In this category there are also to be included certain forms of hysteria, of neurasthenia with fixed ideas, of erotic perversions, of crime and of paranoia in persons who have been educated in too monastic a fashion, exposed to the degrading influences of the streets, thwarted in their love affairs, or forced into a *mariage de convenance*, or disappointed in their hopes.

In short, the causes of insanity that can be termed "social" are simply those somatic and psychical causes of which we have previously spoken when they act upon the individual from without with the regularity of a social phenomenon.

Internal Causes.

Diathesis. — There are diseases, infirmities, imperfections, anomalies, and weaknesses that do not constitute a mental disease, but simply predispose to mental diseases, or even to a definite form of mental disorder. Under the same conditions of environment there are those who become insane and those who do not. The delirium of typhoid fever and of other infective processes is not merely an expression of the severity of the infection or the degree of the fever; it is also in part dependent upon the manner in which the brain reacts, or upon the physical and psychical personality of the patient. Among the constitutional peculiarities, sensibility to poisons is perhaps that which is liable to differ most in one person as compared with another. The same amount

of poison is capable of producing the greatest disparity of effects, both in degree and in quality, in different individuals, as may readily be observed in alcoholic intoxication. This disparity may range from extreme intolerance to almost complete immunity.

Most diathetic predispositions have their origin in the organism as a whole—in other words, they are dependent upon constitutional anomalies of metabolism. The brain is in much larger measure the seat of mental diseases than it is of simple predispositions. One would, at least, hardly regard cerebral arteriosclerosis, which predisposes to softenings, as a diathesis, or attempt to localize in the brain that unknown organic condition which is a precursor of apoplexy, and which is often hereditary.

The uric acid diathesis is also often hereditary, and from it there would seem to arise, in addition to uric acidæmia and gout, several mental diseases (Crocq). Other diatheses are, on the other hand, acquired during life, sometimes gradually, sometimes as a consequence of other diseases. These acquired diatheses, like those that are hereditary, may disappear or persist in different cases. The injury that is done by syphilis, although it may remain latent for many years, gives origin to tabes or to progressive paralysis, and so constitutes a predisposition to metasymphilitic processes, or a sort of consecutive diathesis; but whether the metasymphilitic process will manifest itself or not, and whether it will be localized in the cord as tabes or in the brain as progressive paralysis (or in both organs as tabo-paralysis), depends probably upon a primary diathesis of which no external manifestations have been observed, and which may have no direct connection with the psychical functions.

Some diatheses assert themselves only at a certain age. In these cases, unless there is this coefficient of age, the diathesis is not displayed and the mental disease is not manifested. Hence it is that every age has a certain psychosis to which it is specially prone. Diffuse cerebroplegia occurs in infancy, hebephrenia afflicts adolescents, progressive paralysis attacks healthy people between the ages of thirty and fifty, the classical dementia with amnesia and confusion is peculiar to the aged. The factor of age is probably added to other factors, of themselves insufficient and of a more or less obscure nature. This combination of causes may suffice to create a diathesis where none existed, and thus there sometimes develops at fifty a circular insanity or climacteric paranoia which indicates a constitutional change in the individual. It may, on the other hand, happen that age corrects a defective constitution, and leads to the disappearance of a constitutional psychosis, such as hysteria, or a periodic psychosis, or a hemicrania that had afflicted the patient during youth,

Boys who have been intelligent and well balanced up to puberty sometimes then suffer arrest of development; they may retrogress, deviate from their normal course of development, or suffer arrest of development so as to remain below the common level. It is indeed a question if there is not also a diathesis connected with mild forms of juvenile dementia, often a family disease, and whether this diathesis, which is sometimes associated with great and capricious oscillations in the weight of the body, may not have origin in the minute processes of general metabolism, or in the chemical influences that are exercised upon it by the development and continual renewal of the sexual elements.

Psychical Degeneration.—This term is applied to certain anomalies of mental constitution which may be regarded as a sort of diathesis in respect to ulterior and contingent mental disturbances, but as one of a more pronounced and acute character. Where this abnormal mental constitution exists, it is probable, though not absolutely certain, that sooner or later, even without the intervention of an external cause, or as the result of one of a very trivial nature, an attack of mania, melancholia, or mental confusion will occur, or that isolated hallucinations will be experienced, or a form of systematized delusion developed. In many instances these attacks, to which degenerates are liable, recur, and tend to assume a periodic character. This degenerative diathesis, or psychical degeneration, in contrast to the preceding, is distinctly cerebral, for, prior to the development of true psychical disorders, and even in cases in which these never develop at all, certain defects of intelligence and character betray themselves, constituting, if not actual disease, at least mental infirmity. The mental diseases of degenerates, if occurring in the form of distinct attacks, are, to a certain extent, only a continuation, or rather an epiphenomenon, of the anomaly upon which they depend and to which they have a resemblance.

Associated with the constitutional imperfections of degenerates there are irregularities of the bodily form and of the viscera, which, however, are also met with in normal individuals, although more rarely. Some of these abnormalities are of the nature of atavistic reversions, and are without doubt to be interpreted as degenerative stigmata. They include the Darwinian lobule of the ear, hare-lip, bicornuate uterus, polymastia, hypertrichosis, and the pithecoïd hand. The frequency with which they occur in persons who are mentally normal seldom, however, allows of their being used in the diagnosis of individual cases. Nevertheless, it cannot be denied that certain imperfections of an intellectual and ethical nature, with or without somatic stigmata, denote a state of anthropological inferiority.

The anthropological inferiority of degenerates is, for the most part, hereditary, but it may also have origin in diseases that affect the organism during foetal life and in early infancy. In many instances psychical degeneration manifests itself merely in ill-defined, partial, or latent imperfections, such as eccentricity, diffidence, moral insensibility, erotic perversions, and unsociableness, which are not inconsistent with the development of a fairly high degree of intelligence; in other cases, however, the degenerative diathesis, whilst still predisposing to more distinctly marked psychoses, shows itself primarily in the form of imbecility, paranoia, or criminality. As in the less sharply definable forms of degeneration, so also in cases of imbecility, paranoia, and criminality, there may be added attacks of mania, melancholia, and periodic and circular insanity, which complicate, but do not hide, the clinical picture of the primary disorder. The simple diatheses form the preliminary qualification for insanity; ill-defined degeneration and the specific forms that have been named, though they are not actually insanity, certainly indicate something more than is involved in the simple diathesis. Amentia, febrile delirium, and all the other forms of acute psychoses, also attack degenerates more frequently than normal persons; but it must not be forgotten that of the two elements necessary for the production of these acute insanities, toxæmia and a special reactivity of the organism, the first may depend upon causes external to the individual constitution, and the second may be connected either with an extracerebral diathesis or with a special sensibility of the brain to a single pathogenic agent, without the responsiveness and the ordinary functional powers of the brain as an organ of intelligence being in any way injuriously affected. In other words, every diathesis that leads to psychosis or to a delusional state does not necessarily imply psychical degeneration. For example, a certain intolerance of alcohol is common in normal persons of high intelligence.

Regarding the importance to be attached to degenerative stigmata, there is always apt to be much difference of opinion. Comparative statistics, compiled from authentic examples of normal and of degenerate individuals, show, as already indicated, only serial differences, of which the degrees are very slight. Certainly, anomalies of the skeleton and viscera, even though they have their seat in the cranium or in organs intimately connected with the brain, are a sign and not a cause. They imply that some disturbance has occurred in the development of the individual, and make it permissible to assume that the development of the intelligence or of the character has suffered parallel alterations dependent upon the same cause. In short, even as a simple sign

of mental diseases, or of predispositions thereto, they have only a very limited value. Italian psychiatry has collected millions of measurements, made with the most minute care, of the crania of the insane. The study has been a laudable one, even though it has not yielded positive results. Cranial measurement only serves to define with exactitude that gross irregularity of structure which any expert physician perceives with the unaided eye, and which constitutes, not an index of a problematical anthropological inferiority, but the symptom or the result of a clinical process, for the most part of accidental origin. Of such nature are hydrocephalus, plagiocephaly, microcephaly, and the anomaly of Kelp.

According to Lombroso, degeneration is almost always an accompaniment of epilepsy; this clinical stigma is the most important of the anthropological stigmata, and assumes the importance of a cause; more especially criminality and genius are simply forms of psychical epilepsy. This conception involves an unwarrantable amplification of the limits that may legitimately be assigned to psychical epilepsy, an entirely mystical idealization of what is called genius, and a one-sided interpretation of criminality, which is rarely constitutional.

There is really nothing that is monstrous, pathological, or marvellous about genius, except the wonder of simple-minded people who bow down and worship it. Men of genius are merely intelligent persons who have been capable of great constancy in their efforts, and who have been fortunate in the judgment, not always just, that posterity has passed upon them. The ideas of such persons are not so intuitive or spontaneous as we are apt to think from such examples as that of the too-famous apple of Newton, and for their maturation it is not essential to have romantic surroundings or a psychopathic emotional nature. Just as the genesis of many other human variations can hardly as yet be said to constitute a scientific problem, so also there is no problem of genius, and much less a theory; and still less tenable is the disastrous conception that likens genius to epilepsy and the flash of genius to a convulsive discharge.

As to criminality, it is almost always the product of existing social conditions, or of external influences that could in large measure be avoided. Only a small number of obstinate criminals, who commit crime in spite of the education they have received and irrespective of their environment and of their own interests, display a moral insensibility that has a truly degenerative character, and is often associated with or derived from epilepsy. It is right that these born criminals, notorious for such acts as theft, assassination, rape, or highway robbery, should be regarded as degenerates. In the majority of criminals, however, no

degeneration of any kind is demonstrable, and this view is supported by the fact of the very great prevalence of male criminality over female. As crime is almost always a reaction to a social anomaly, injustice, or prejudice, the male sex, which stands in the vanguard in the struggle for life and happiness, is guilty of law-breaking much more frequently than the female sex; women, who are the slaves and dependents of man, are in much less degree exposed to dangers and to temptations to crime. On the other hand, as regards exposure to the causes of epilepsy, there is no difference between the two sexes, and statistics show an equal incidence. If crime were a variety of epilepsy, the statistics of crime should show a corresponding equality, which, however, is far from being the case. It is, moreover, evident that no connection with epilepsy can be attributed to the fairly numerous cases of crime that are dependent upon imbecility, paranoia, juvenile dementia, hysteria, mania, raptus melancholicus, and alcoholism. Epilepsy is thus a factor in criminality, and degeneration accompanied by moral insensibility is another factor, but the great majority of crimes are a result of existing social conditions. This is indeed the reason why crime is tending to diminish at a rate that would be impossible if it were the inevitable product of hereditary degeneration.

Heredity.—Studies on the subject of physiological heredity have served to show how great an objection there is to accepting the view that acquired characters are transmissible, notwithstanding their evident utility to the individual and to the species. The supposed examples of such transmission are so rare and of so doubtful a character that biologists of unquestionable authority, such as Naegeli and Weismann, have concluded that there is no such thing as epigenesis, and that the facts point to the occurrence of an evolution in the restricted sense of a progressive attainment of powers, functions, and organs potentially preformed. If there is such difficulty in the way of the inheritance of new functional characters that increase the fitness of the organism without disturbing its harmony, what can we say regarding disease? All the ordinary bodily processes unite against disease, not in favour of it, and the descendants of those who have suffered from any disease inherit rather the power of resisting the intruding agent, which is new and, as it were, devoid of any organic tradition, than the faculty of adapting themselves thereto in the course of one or more generations.

Genuine pathological heredity—that is to say, the transmission of the same disease—is much more rare than is generally believed. For example, tuberculosis, and, in certain instances, syphilis, are spoken of as hereditary diseases, but the transmis-

sion takes place by contagion, not by heredity. Instances are also cited of families in which alcoholism and suicide have been frequent, but education, example, and the suggestion derived from precedent create a psychical contagion that ought not to be confounded with heredity. It is alleged that pellagra is, or may become, hereditary; but this is not an instance of organic heredity, with its inevitable consequences, but of an external inheritance of poverty, domestic environment, and agricultural conditions, from which relief is obtained by the operation of the law of resistance, by emigration, or by legislative enactment. In a similar way, from continuity of external conditions—such as those regarding water, habitation, and food—goitre and cretinism are also hereditary. Another error consists in the confusion of generic heredity, which is simply the transmission of weak powers of resistance, with specific heredity, which is the transmission of disease. When Brown-Séquard induced an artificial epilepsy in guinea-pigs, and observed spontaneous epilepsy in the second generation, he merely debilitated animals extremely prone to convulsions, and, indeed, liable to take fits during any illness, and placed them under conditions in which they produced enfeebled offspring, which, in all probability, would have manifested their own organic insufficiency in the same way—that is to say, in epileptic convulsions.

Dissimilar heredity of disease is merely the effect exercised by the morbid process in the parent upon the germinal elements or upon the embryo, which is injured thereby, and consequently develops with various defects. This is the very simple mechanism by which an alcoholic begets a dipsomaniac, but he is just as likely to procreate an idiot or an epileptic. Similarly, a syphilitic produces a syphilitic, but his offspring may instead be a juvenile paralytic or blind, a deaf-mute, rachitic, or a dwarf. Agostini has observed that the children of pellagrous parents sometimes present typical forms of dystrophic infantilism and of cretinism (Fig. 8). In the latter case the action of the pellagrous poison has merely injured the thyroid of the offspring, and so initiated the usual process of myxœdema. The transmission of weakness of any kind from father to son by means of a germ injuriously affected by any external force has nothing in common with the mysterious process of organic heredity which repeats with precision forms, tendencies, and very special developments through a germ charged with active potentialities.

Similar heredity of diseases is the only form in which transmission of true organic characters can be recognized. Alienists see it in paranoia, juvenile dementia, and the affective psychoses

—namely, melancholia, mania, and periodic insanity. There is also sometimes similar heredity in imbecility; but care must be taken to exclude cases of infantile cerebroplegia, which, for the most part, are dependent upon accidental causes, although in a great number of instances they assume the appearance of hereditary imbecility. The clinical characters that are transmitted by similar heredity are always deep-seated and intimate, causing an impression upon the individual constitution, and having an



FIG. 8.—INFANTILISM WITH MYXEDEMA IN A BOY OF FIFTEEN, WHOSE MOTHER WAS PELLAGROUS.

Height, 0'98 metre (from Agostini).

organic character. For this reason the comparison with biological heredity, arbitrary in the case of the dissimilar heredity of diseases, becomes legitimate for similar heredity.

The percentages of heredity among the insane are not very high. To succeed in making them large, it is necessary to take into account metamorphoses from a nervous disease, or even from any disease, to a mental disease, to consider anomalies as morbid processes, and to allow all cases of dissimilar heredity to pass as true heredity. It is thus that statistical tables have been con-

structed that have reduced psychiatry to a register of incurable and fore-ordained monstrosities.

Dissimilar heredity does not manifest itself only in a general and capricious fashion, but also in a narrow cycle of mental disorders presenting common elements. Thus in a single family there may commonly be observed cases of melancholia, mania, and circular insanity, all of which belong to the group of affective psychoses, and which sometimes combine or alternate with each other in the same individual by reason of their affinity of origin. As, however, these various forms of psychosis are very different, both as regards their symptoms and their course, and as between mania and melancholia there is a divergence amounting to an antithesis, it is evident that what is inherited is not a specific predisposition to melancholia, to mania, or to circular insanity, but merely a general predisposition to the affective psychoses; and it is not improbable that the cause of such a predisposition lies in a special form of imperfect balance of metabolism, rather than in a hereditary alteration of the mental functions, which could hardly assume such varied morbid forms. The degree of instability of metabolism and the disturbance of metabolism provoked by the nutritive and psychical state of the individual produce the multiplicity of reactive states—melancholia, mania, or circular insanity—according to the individual reactivity of the patient and the circumstances of the moment. In short, in these instances we have to deal with a diathesis that has no direct relation to the intellectual mechanism, and which is, therefore, able to modify its clinical expression within the limits that we have indicated. Perhaps the solidarity of the affective psychoses extends even beyond the confines of psychiatry to some alteration of metabolism which does not affect the intelligence, and therefore comes under the comprehensive title of a general diathesis.

The conception of polymorphism in the hereditary psychoses was developed with vigour by the Belgian alienist Morel, who made use of it in 1862, in order to deduce from it his theory of mental degeneration. The hereditary psychoses, according to Morel, are communicated to the offspring always at an earlier age in each generation, and in a more severe form, and end by manifesting themselves at birth in the form of congenital idiocy. Idiocy is frequently associated with sterility; and thus the process of degeneration, though it may not be fatal to the individual, exterminates the degenerate stock by preventing its continuation.

The law of mental degeneration is valid, provided it is held to indicate by preference as hereditary certain psychoses which are, in fact, more constantly transmitted than others, and affect

more profoundly the personality of the patient, and which can, therefore, be fairly contrasted with the psychoses acquired from external causes. It cannot be denied that paranoia, juvenile dementia, and periodic insanity are more hereditary than other mental diseases. It is likewise true that in the transmission of mental diseases there is a tendency to the incidence of disease at an earlier age. Pieraccini has demonstrated this fact by means of statistical tables, in which this law of acceleration is shown with singular constancy and regularity. It is, however, by no means demonstrated that the decadence of psychopathic families is progressive; the forces tending to regeneration are much more potent than those that determine degeneration, and they display themselves much more widely. With regard to idiocy, it is almost always a disease of external and accidental origin. Lastly, it is not to be entirely believed that the process of degeneration leads by a fatality inherent to itself—that is to say, by sterility—to extinction of the degenerate family. It might be said to the apostles of the degenerative theory, "*Les gens que vous tuez se portent assez bien*"; the extinction of many families is a very common phenomenon, which occurs without having degenerative heredity as a cause.

All the researches that have from time to time been carried out upon morbid heredity, and especially upon the heredity of mental diseases (which are sometimes assumed from vague and scanty evidence), err on account of incompleteness and inexactitude. In compiling genealogical trees, writers generally confound the race with the family, which comprises only the parentage in the direct paternal and maternal line; and, except in the living generations, this line is not gone beyond. Now, the true family is very much larger than this conventional family. Whilst the genealogy of an individual appears heraldically as a tree spread out upon a plane surface, beginning at the utmost with four grandparents, and ending with a certain number of brothers and sisters, it ought to be presented biologically as a network, extending as far as the eye can carry in three directions—namely, towards the ancestors, towards the descendants, and towards the collaterals of all the generations. Every individual has a number of ancestors, reaching to 1,022 in the tenth generation, and to 1,048,574 in the twentieth, provided that there is no consanguinity among the ancestors. A direct descendant of Dante Alighieri or of Philip le Bel would contain in his own idioplasm, besides "the blood" of the head of the family from whom he inherited his name, that of 1,048,573 other persons contemporaneous with this head, and of innumerable less remote, but unknown, ancestors, scattered and free from any relationship of

reciprocal kindred, who, all the same, have contributed in an equal degree to his birth and also to that of an immense family with nearly the same progenitors. This extraordinary number of ancestors is generally somewhat diminished in consequence of the occurrence of consanguineous marriages which simplify the ascending ramifications, as occurs, for example, in the population of a small island in which the same surname recurs with great frequency. This attenuation does not, however, invalidate the general rule.

On these grounds we must conclude that it is impossible to make any study of remote heredity that is in the least complete, or even not one-sided, and that to ascertain accurately even in a simple way the recent heredity is extremely difficult. In any case, the extinction of many family lines is a demographical phenomenon that does not betoken any special sterility of the degenerated family, but only the social necessity of an obstacle (psychical, economical, or fortuitous) that restrains and regulates the increase of the population. With regard, then, to the heredity of mental diseases, if anything can be deduced from our present knowledge, there is not a supposed law of progressive degeneration, but rather a much more general law of psychical regeneration. It is probable that, in virtue of this law, the number of the insane increases at a less rate than the total population.

If all these reservations are duly taken into consideration, we arrive at the conclusion that, among the causes of insanity, the external act more widely than the internal; and among the external causes, somatic disorders and social inequalities are more to be feared than intellectual overstrain, which has no harmful effect if it is not accompanied by hygienic errors and depressing emotions, and, therefore, also by trophic disturbances of the entire organism.

CHAPTER III

THE ANATOMICAL SUBSTRATUM OF MENTAL DISEASES

THE anatomical study of mental diseases concerns itself chiefly with the cerebral cortex, which is the necessary and essential seat of the psychical processes, and therefore of every pathological alteration that they are capable of manifesting. From the clinical standpoint it is, however, necessary that post-mortem examinations and investigations subsequent thereto should be extended to other organs. Extracortical and extracerebral lesions have, indeed, very considerable interest, both because they may serve to reveal the origin of the morbid action that has disordered the brain, and because they present demonstrable signs of collateral morbid processes. In many instances the origin of a mental disorder is to be traced to the kidneys, the thyroid, or the vessels. In other cases the occurrence of evident changes in the intestine, heart, kidneys, liver, or spinal cord, serves to explain the less evident or entirely obscure alterations in the cerebral cortex—as, for example, in some cases of pellagra, alcoholism, epilepsy, and amentia, the psychical symptoms of which, notwithstanding their gravity, are due to disturbances of a functional nature, or to slight and reparable lesions.

For a long time psychiatry was almost entirely devoid of any pathological anatomy. It possessed only the facts learned from post-mortem examinations upon cases of progressive paralysis, and its data were confined to the complex and gross lesions of the terminal stage. The problem of the pathogenesis of the disease and of the anatomical nature of the morbid process was neither solved nor formulated, for this disease, which constituted the one field open to the alienist for anatomical study, was assumed to be an inflammation. At the present day, although we are still unable to make use of the corresponding material in cases of paranoia, dementia præcox, periodic psychoses, melancholia, and many other clinical syndromes (which, moreover, are the subject of continual dispute with regard not only to their limits, but also

to the very question of their existence as syndromes), there is the compensating fact of an equal, and perhaps even greater, number of well-defined psychoses, which can take their place in a special psychiatry, and which have their special pathological anatomy, as will be seen in the chapters upon Progressive Paralysis, Senile and Apoplectic Dementia, and Cerebroplegic Idiocy, and to a less extent in those upon Epilepsy, Amentia, Pellagra, and Alcoholism.

The facts of pathological anatomy now definitely ascertained in cases of mental diseases, considered in the light of those of experimental pathology, enable us to say whether certain lesions are diffuse or circumscribed, reparable or irreparable, recent or congenital, and hence also to connect them with some of the symptoms manifested during life, although they are very far from serving to reveal the psychical phenomena to which they correspond. It is true that questions as to the relation between mental disturbances and their physical substratum cannot be settled in this way. Such questions are perhaps of insuperable difficulty. Nevertheless, we are enabled to arrive at a synthesis which makes it possible to regard a considerable number of asychoses from a common point of view, and to refer their stages and clinical features to a definite series, anatomically co-ordinated and approximately parallel, of material processes.

Nissl's method, by revealing certain structural features of the nerve cell, has enabled observers to complete and to rectify the observations made with the older methods, and at the same time it has opened up the way for new researches, more especially in the field of experimental pathology. It is to be borne in mind that the insane upon whom we make autopsies in asylums almost always die in states of advanced dementia, or in consequence of intercurrent diseases, which, it may be only in their terminal stage, produce severely marked ante-mortem changes in the brain. These terminal alterations, often entirely different from those connected with the psychosis, wholly or in part obscure the original and characteristic changes. Now, the experimental results that it has been possible to obtain in abundance in lower animals present indisputable and close analogies with the morbid changes which, with great labour, it has been possible to recognize in the human subject, and more especially with those found in cases, so rarely capable of being utilized, which correspond to the primary phases of toxic, infective, traumatic, and exhaustive processes. With the knowledge gained from these studies it is possible to fill up the gaps, and to define the uncertainties that are so frequently encountered in the course of autopsies upon the insane.

Golgi's method, by demonstrating the morphological complexity of the normal neurons, as well as certain anatomical and functional relations that normally subsist between the cells and the fibres, has also indirectly aided pathological anatomy, which is able to borrow from its data much that is suggestive and helpful in dealing with its own difficult problems.

Indeed, it was for some time thought that the applications of this very valuable method to pathological tissues might be more direct and simple. Special importance was attached to conspicuous deformities of the dendrites and fibres, more particularly to moniliform swelling. Experience has, however, shown that such deformities occur also as functional modifications, ordinary morphological characters, post-mortem changes, and artificial products. In the field of experimental research there is still uncertainty as to the importance and origin of various types of change. It is natural that this uncertainty should be still greater in regard to such changes occurring in the human subject, for the etiological factors may be numerous and difficult to determine, either beforehand or retrospectively. At the same time, certain forms of severe atrophy of the nerve cells and of their prolongations, and of proliferation and extraordinary morphological alteration of the neuroglia, are beyond any such criticism.

For the investigation of the nerve fibres, in addition to the much used and very valuable method of Weigert, there is also that of Marchi. Whilst by the former the destructive processes are revealed only in negative form, with the aid of the latter we can detect the process of secondary degeneration in a positive form and at an early stage, for the myeline of the degenerating fibres breaks up into droplets, which become altered chemically in such a way that they blacken with osmic acid, notwithstanding the previous impregnation of the tissue with salts of chromium. The occurrence of this change is a certain indication that during life the current of trophic influence, which continually emanates from the cells of origin, was either interrupted or weakened.

In 1896 Weigert described another of his histological methods, which leaves invisible the nerve fibres and the nerve cells, excepting the nucleus and nucleolus, and selectively stains the fibres and cells of the neuroglia, or, more exactly speaking, the nuclei of these cells (Fig. 14). In preparations by this method the neuroglia stands out sharply and completely in a clear field in the form of smooth, long, and independent fibrils. The method allows of an estimate being made of the density and distribution of the neuroglia in various strata of the brain, and especially in pathological cases in which this tissue is so often in active

antagonism with the specific element, which it replaces and perhaps destroys.

The pathological changes that have to be taken into account in autopsies upon the insane may be divided, according to their situation, into three groups. The most essential are those that affect the cerebral cortex and the parts immediately connected with it—namely, the corona radiata and corpus callosum. Analogous lesions are to be observed in the rest of the nervous system—namely, in the basal ganglia, pons, bulb, cerebellum, spinal cord, sympathetic, peripheral nerves, and sensory organs. Lastly, we must not exclude the examination of the cranium, muscles, viscera, and blood, and of the organism as a whole.

I

MACROSCOPICAL APPEARANCES OF THE LESIONS OF THE CEREBRAL CORTEX

In the cerebral cortex, corona radiata, and corpus callosum, as well as in the other portions of the nerve centres, there may occur focal lesions, and also lesions of a more or less diffuse character. The focal lesions are easily recognized, because they occupy a considerable space, and are more or less sharply circumscribed. Sometimes they are of very large extent, and in these instances the morbid changes, of whatever nature they may be, destructive or proliferative, manifest themselves by conspicuous physical characters. The smaller focal lesions are often multiple, especially when they are of vascular origin, so that they likewise do not readily escape observation. They have, indeed, long been recognized.

The diffuse changes are of greater variety, and hence of greater histological and cytological interest. In some instances they present to the unaided eye no sign of their existence. Disease tends for the most part to affect the various tissue elements and cortical zones very unequally. Tissues of the same kind, though in the vicinity of each other and even contiguous, often present various degrees of alteration. It may even happen that a single cell shows traces of the primary morbid process, together with evidence of the reactive processes that have been superadded during the last phases of the disease. Hence the anatomical description of the diffuse lesions is necessarily a compilation, an extensive and laborious critical analysis, and such as can rarely be based upon the results of the examination of any single case.

The morbid changes that affect the brain may also be regarded

from another standpoint—namely, that of the period of life at which they occur, and hence as early or late. Other organs of the body, the sexual organs excepted, grow during adolescence only, in volume, but the brain continues to undergo slow development in its minute structure, and to acquire the power of performing new functions, the number of which is large and apparently indefinite. It is for this reason that morbid processes commencing early in life are so important. They affect an organ that is still a long way from having reached anatomical and physiological maturity, and hence produce a complex of distinctive features, not only in the symptoms of the disease, but also in the anatomical lesions.

The pathogenic agents and morbid processes are of the same nature as those that affect adults, but owing to the earliness of the period at which they act, they produce very different effects. Sometimes a local and originally circumscribed morbid process induces irritative reactions that spread to an entire lobe. In other instances the primary process is of foetal origin, and parts that have not yet attained their full development, although unaffected by the pathogenic agent, are deprived of the trophic influence of the parts that have been injured or destroyed, and even at a great distance from the affected area undergo rapid degeneration, or arrest of development, or exhibit monstrous deformities, such as have no counterpart in the pathology of the adult. For example, the optic thalamus stands in a relation of developmental solidarity to the cerebral hemisphere of the same side, and to the half of the cerebellum of the opposite side.

Not uncommonly the secondary atrophies that affect the nervous elements during infantile or foetal life stimulate the still-developing neuroglia to extreme proliferation, and thus by an almost physiological process give rise to tertiary structural irregularities that could not occur—at least, to such an extent—in the adult. These complementary hyperplastic processes are in character reparative and adaptive, and hence sometimes manifest themselves in what seem like simple anomalies of development; the atrophies are so slow, gradual, and generalized that the brain, instead of appearing to be affected by pathological change, may show uniform and almost harmonious changes which look like spontaneous deformities, as is the case in certain morbid conditions classed as agenesis or aplasia.

1. Terminal Results of Early Morbid Processes.—Most of these pathological processes, notwithstanding their original diversity, lead to a common result—namely, total or partial atrophy of the brain, accompanied by more or less distinct residual focal lesions.

The most characteristic alterations, which are often associated with each other, are the following :

1. Microcephaly.
2. Microgyria.
3. Macrogyria.
4. Lobar sclerosis.
5. Absence of the corpus callosum.
6. Porencephaly.
7. Chronic hydrocephalus.
8. Chronic meningo-encephalitis.
9. Tuberous sclerosis.

Microcephaly is distinguished, in accordance with its origin, as pathological or (in the absence of evidence to the contrary) spontaneous. In cases of pathological microcephaly there are evident signs of antecedent morbid processes that have caused a more or less uniform aplasia, or secondary atrophy. The smallness of the brain is merely the crude expression of the destructive process ; it is commonly associated with porencephaly, sclerosis, microgyria, hydrocephalus, and various focal lesions, in which we have to recognize the fundamental and often accidental cause of the microcephaly. From the list of these causes there should be excluded premature ossification of the cranial sutures, which post-mortem investigations have proved to be rare, and which, in any case, is never a primary phenomenon. In pathological conditions, as well as in normal development, it is always the cranium that adapts itself to the brain, and the microcephalic brain is so independent of its osseous covering that it may sometimes occur even in cases of hydrocephalus in which the head is enlarged. Microcephalic brains, resulting from pathological causes, are almost always asymmetrical, sometimes extremely so, and their weight in the adult varies from 300 to 1,000 grammes (10½ ounces to 35 ounces).

True microcephaly (Giacomini), the classical, idiopathic, or spontaneous form, which is distinguished from the pathological form or the so-called pseudo-microcephaly, is not very common, and the possibility of its occurrence has even been doubted by some pathologists of high authority, such as Virchow and Meynert. Notwithstanding the absence of any distinctly pathological residua, it is probable that such seemingly simple and spontaneous agenesis are dependent upon morbid processes that have occurred early in foetal life, the exact nature of which is still unknown, or even upon simple disturbances of nutrition which, extending throughout the medullary canal, have sufficed to cause a simultaneous and uniform retardation of development of the

whole nervous axis. As a matter of fact, in these cases there is always associated with the smallness of the brain a corresponding condition of the spinal cord, or micromyelia, which affects not only the pyramidal tracts (Steinlechner), as it must, but also the endogenous tracts, and those that come in from the periphery. Moreover, there is a strict bilateral symmetry of the hemispheres, a parallelism of development which accords with the view that the pathogenetic factor operates uniformly throughout the nervous centres.

It would at least seem that the classical microcephaly (Fig. 9), by reason of its external symmetry and of its having certain pithecoïd characters that do not affect its regularity, is of a very different nature from spurious or secondary microcephaly. The cranium is always small, the frontal part receding, and the sutures normal. The weight of the brain varies within the same limits as in the other variety, and in this respect true microcephaly also merges with the normal at the one extreme, and with anencephaly at the other. The convolutions are coarser and less contorted, the secondary and tertiary sulci are few in number, anastomotic ridges are absent, and the surface of the brain shows a paucity of lines comparable to what is to be observed in the fœtus of eight or nine months. This fœtal appearance of external structure persists throughout life, even in cases in which the cerebral mass, continuing to grow, attains in course of time a weight scarcely inferior to that of the brain of the normal adult—for example, 1,100 grammes (39 ounces), or a little less.

Microgyria is a defect in the conformation of the cerebral cortex, in which the convolutions are crowded, numerous, small, curiously irregular in form, and sometimes actually lamellar, with multiple and extremely atypical sulci (Fig. 10).

It is due chiefly to a disproportion between the cortical surface and the subjacent white substance. The cerebral cortex, having to adapt itself to a reduced area, is compelled to shrink. Irregularity in the proliferation of the cortical neuroglia may also contribute to this result. *Microgyria* is a very conspicuous abnormality; it is often unilateral, and limited to one or a few areas in the cortex. Around these, and sharply separated from them, there is tissue of normal appearance. As a rule, however, the condition is not limited to one locality, but involves extensive areas of the convexity and of the base, two, three, or more in number, causing a considerable degree of retraction of the affected hemisphere, and, if bilateral, producing well-marked pseudo-microcephaly.

By *macrogyria* is meant a special conformation of the convolutions, which are broad, devoid of their normal curve, and separated

by only shallow sulci, as in the brain of the foetus of six or seven months. The condition is often partial; adjoining convolutions which exhibit macrogyria there may be others of normal appearance, or even showing microgyria. Where the convolutions are

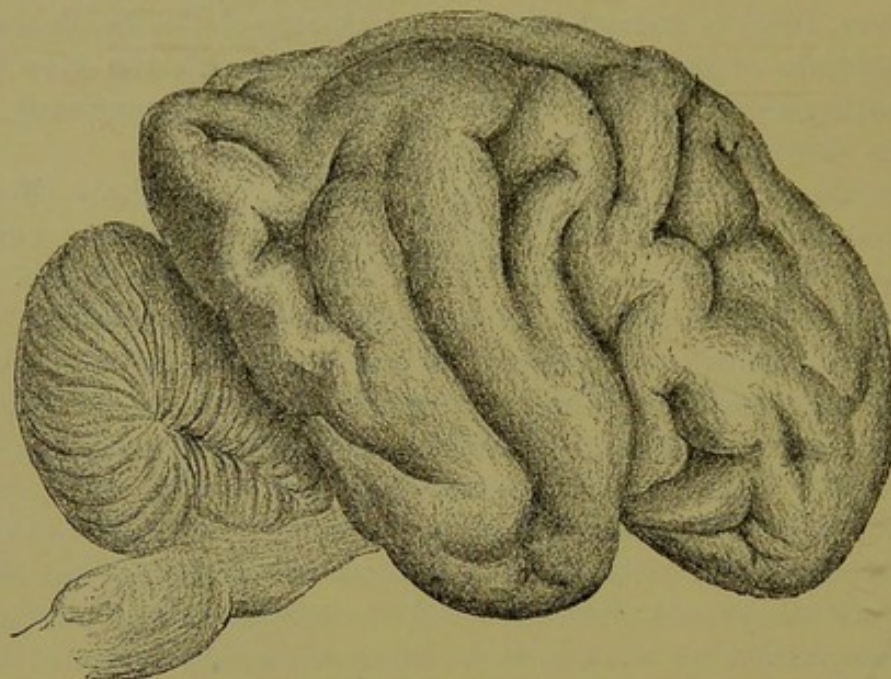


FIG. 9.—MICROCEPHALY, WITH CONVOLUTIONS OF SIMPLE FORM.

Natural size. Weight, 323 grammes. Death occurred at the age of six years and seven months. (From *I Cervelli dei Microcefali*, Turin, 1890, by C. Giacomini.)

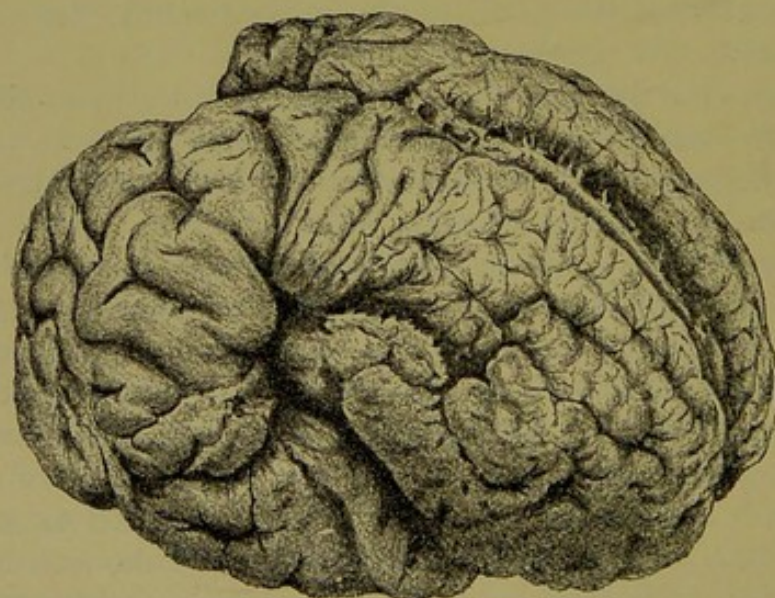


FIG. 10.—MICROGYRIA, AFFECTING ESPECIALLY THE FRONTAL LOBE.

Half natural size. (Bresler, *Archiv für Psychiatrie*, Bd. xxxi., H. 3.)

large, the thickness of the cortex is increased, but its inner margin is less distinct than usual, because a certain number of the cortical cells, including some of the pyramidal, are displaced below the normal level and incorporated with the white substance, and the

normal arrangement of the cortical layers is considerably disturbed. This derangement may be so extreme as to amount to heterotopia or metaplasia of the grey substance, in which cells of a certain type occur in groups in a situation in which there ought to be grey matter of another type.

Lobar sclerosis is a condition that has its origin essentially in morbid changes during infancy. It affects the whole or a part of a cerebral hemisphere or lobe. The sclerosed portion is always extensive; it is shrunken and hard. The cerebellum is often uncovered, and the pons and basal ganglia may be involved in the process. The convolutions are small, but they preserve their ordinary form and arrangement; the meninges are almost always normal. Histologically, lobar sclerosis consists in hypertrophy of the neuroglia, accompanied by atrophy of the nervous elements. The part which is the seat of this twofold alteration is always sharply separated from the normal tissue—a fact which renders it possible to diagnose the condition, even with the unaided eye.

Not infrequently the sclerosed area contains more or less old residua of focal lesions, more especially of hæmorrhages, embolisms, or thromboses, traces of which reveal themselves in the form of hæmorrhagic cysts, softenings, yellow patches (Cotard), and cellular infiltrations. These focal lesions are to be regarded as the centres from which the sclerotic process radiates. Whilst in the brains of adults affected by apoplexy or by obliteration of a vessel, both neuroglia and nervous elements perish, and the area in which a reparative process can be recognized is microscopical in extent, the contrary would appear to happen during foetal and infantile life. Lobar sclerosis represents the more or less complete cicatricial residuum of a spent morbid process originally of small extent, though in many instances affecting multiple areas.

Included in the sclerosed mass there are sometimes one or more central nodules of denser sclerosis, from which the morbid alteration shades away in all directions. These nodules represent perivascular foci of an inflammatory nature, very probably caused by an infective agent which has affected a whole lobe, or even a whole hemisphere, inducing regressive and destructive processes in the nervous elements, but at the same time stimulating the neuroglia to progressive growth, and ultimately to sclerotic changes (Marie).

Absence of the corpus callosum is frequently associated with atrophy of the corona radiata, and therefore with microcephaly, accompanied or not by microgyria (more often not). This very gross lesion does not entail motor paralysis, and, more remarkable still, it has been found in the post-mortem room in persons who were not idiots. Instead of complete aplasia, the corpus callosum

may be affected by arrests of development, which simply render it shorter or thinner, but are always reflected upon the surface of the brain. The two cerebral hemispheres sometimes remain united, owing to non-development of the great longitudinal fissure (syncephaly); or they exhibit microgyria; or, more frequently, they preserve their primitive arrangement, recalling the so-called period of the transitory fissures. In this case the superficial markings of the cortex remain of the simplest nature.

Porencephaly, a name proposed by Heschl in 1859, implies the formation, always at a very early period, of breaches or lacunæ in the thickness of the cerebral substance, which take the form of hollows, channels, or clefts, and which sometimes extend from the cortex even to the lateral ventricles. These anomalies result, in most instances, from morbid processes that have occurred during intra-uterine life, but they may also be produced after birth in consequence of occlusion of vessels or of injuries to the skull. Very similar conditions can be produced in young animals by means of experimental lesions (D'Abundo).

Porencephalies are often multiple, but they are rarely symmetrical. Even when they occupy corresponding positions—as, for example, the two regions of the middle cerebral arteries (Kundrat)—they are unequal in form and depth, and thereby show their accidental and pathological origin. Although it is impossible to explain porencephaly as the result of a single morbid process, it is evident that various morbid processes lead to a single terminal result—namely, circumscribed necrosis of the cerebral substance, both grey and white. On the other hand, the multiplicity of causes explains its association with various other serious lesions, such as microcephaly, absence of the corpus callosum, hydrocephalus, and lobar sclerosis.

According to Schultze, Strümpell, and Hösel, there are sometimes to be observed signs of old inflammatory processes, which are to be regarded as having a pathogenetic importance at least equal to that of embolism and traumatism, and which serve to show that the disease was post-natal in origin. The almost constant regularity of the primary fissures in porencephalic brains favours the view that the morbid process, whatever it may be, begins by preference between the fifth and eighth month of foetal life.

Chronic hydrocephalus cannot be regarded as dependent upon a morbid process peculiar to itself. Clinically, it is merely a symptom, and it may even pass unobserved. Pathologically, it is often a collateral effect of various lesions. When, in consequence of destructive lesions in the cerebral substance, the ventricles dilate and the subarachnoid spaces sink in, it is natural

that there should be produced *ex vacuo* a condition of combined internal and external hydrocephalus without evident enlargement of the head, as probably most commonly happens. In other instances, the accumulation of cerebro-spinal fluid is secondary to compression of the vein of Galen, and consequent stasis in the choroid plexuses.

Internal hydrocephalus may be limited to a single hemisphere and even to a single ventricle. It is often extreme, and there is then a progressive thinning of the cranial walls, so that the skull becomes monstrous. Much more rarely the cranium retains its normal dimensions (Fig. 11), but the brain is so greatly compressed that it is reduced to a simple layer as thin as a sheet of



FIG. 11.—INTERNAL HYDROCEPHALUS WITHOUT MACROCEPHALY.

The child lived to the age of eleven months. He died from pneumonia. During life the light of a candle could be made to shine through his head, owing to the fact that the brain was reduced to a delicate parietal layer, as may be seen in the succeeding figure.

paper (1 or 2 millimetres in thickness), in which the structure of the cortical strata is unrecognizable (Fig. 12).

The increase of cerebro-spinal fluid is often due to ante-natal diseases, but, as a rule, it continues for one or more years after birth, and does not become apparent for some months. In many other instances hydrocephalus arises in consequence of diseases that commence after birth. The most frequent cause of this form is serous meningitis, which in its turn is the consequence of an acute meningitis (Quinke).

Inflammatory hydrocephalus of chronic form is often the consequence of obliteration of the normal communication between the ventricular cavities and the subarachnoid spaces, or of special lesions of the choroid plexuses.

The *chronic meningo-encephalitis* of children is recognizable

on post-mortem examination by the existence of adhesions between the cortex and the pia mater (Bourneville, Marie). It generally affects both hemispheres. It is a morbid condition that is only rarely associated with the foregoing, excepting lobar sclerosis and porencephaly.

According to Vizioli (1880), the infective agent that is capable of causing anterior poliomyelitis, or the spinal paralysis of children, may affect the motor cells of the brain, and produce cerebral paralysis of spastic type associated with idiocy, dependent upon the occurrence of polioencephalitis, or simply the acute encephalitis of children.

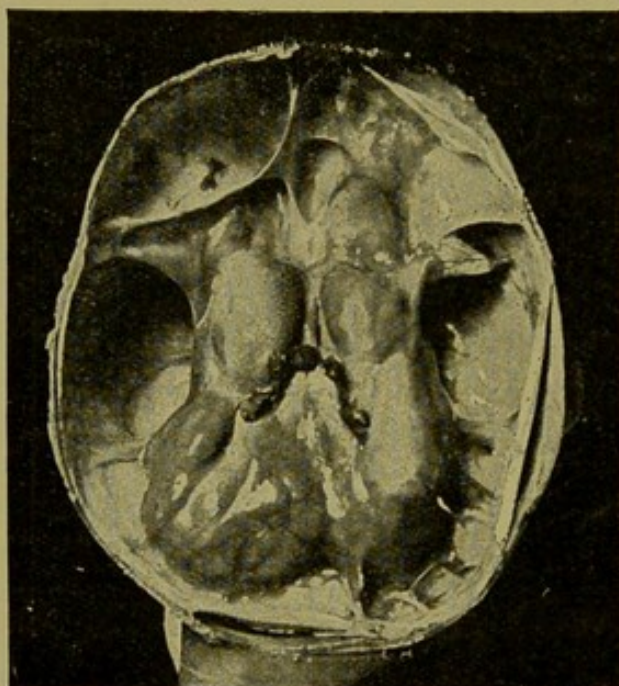


FIG. 12.—CRANIAL CONTENTS IN THE CASE ILLUSTRATED IN THE PRECEDING FIGURE.

In the anterior fossa there are visible the edges of the parietal membrane that represents the cerebral hemispheres. The middle fossæ are lined by the same membrane; the corpora striata and the fornix are exposed; in the posterior fossæ are to be seen the remains of the occipital lobe, the only part of the hemisphere that preserves a degree of normal structure.

This view was endorsed by Strümpell (1884), who, however, applied it too widely, and his views were promptly corrected by Marie (1885). It is not the case that encephalitis is a systemic disease, limited to the motor centres. It is likewise inaccurate to include under acute encephalitis all cases of infantile meningo-encephalitis, and still more so those of cerebroplegia. It seems, however, beyond question that there are forms of post-natal encephalitis of infective origin, with or without paralysis, which are dependent upon the action of the same factors as those, widely different in nature, that determine the occurrence of anterior poliomyelitis. Indeed, the two forms of infantile para-

lysis—the spinal and the cerebral—may occur in epidemic form simultaneously, or they may even coexist in the same individual, who consequently displays atrophies and paralytic conditions of a flaccid character along with spastic paralysis and imbecility. Both forms of paralysis manifest themselves more in their late results than by the gravity of the symptoms associated with the short invasion period. More especially in cases of cerebral paralysis of children, the initial acute stage may indeed be passed through insidiously without the occurrence of any marked rise of temperature, and may even escape all notice.

These facts establish a great difference between the encephalitis of children on the one hand, and the hæmorrhagic encephalitis or suppurative encephalitis of adults on the other. The difference is even greater between these rarely fatal inflammatory processes and the fatal cases of acute meningitis, due to the meningococcus of Weichselbaum, or to other similar infections. Though infantile encephalitis is not a systemic disease, the fact does not in the least tend to destroy its analogy with spinal paralysis, for neither is this strictly systemic.

Cases of recent infantile encephalitis, of which too few have been studied, show the following characters: The grey substance is abnormally soft; the surface of a section is smooth and shining, and studded with bright red punctiform hæmorrhages, lying in a pinkish or greyish yellow ground; under the microscope there are no granular cells visible, but drops of myeline and débris; the vessels are dilated; in the white substance the inflammatory change is more evident; the lymph spaces are distended, and the vessels are surrounded by leucocytes; the neuroglia is everywhere prominent. In cases of old standing, which certainly form the majority of those that come under observation, the morbid changes merge with those that characterize lobar sclerosis.

Hypertrophic or tuberos sclerotic, so called by Bourneville (1880), who was the first to describe it, does not lead to a true hypertrophy of the brain, but merely to a circumscribed proliferation of the neuroglia, with great increase in the number of its fibres and alteration and destruction of the nerve cells. The term "hypertrophy" serves to emphasize the difference, which is certainly considerable, between tuberos sclerotic and lobar or atrophic sclerosis. Here and there at the base, but more commonly on the convexity of the hemispheres, there are seen numerous prominent nodules of firm consistence, distinguishable even through the pia mater, and of about the breadth of a half-penny or a little larger. These nodules are pale, and do not extend very deeply; as a rule, they affect only the cerebral cortex.

In the central part of the area the sclerotic change in the

neuroglia is more pronounced, and may extend to the white substance; at the borders, or towards the healthy part, some healthy nerve cells may be found, but the pyramidal cells have lost their normal disposition, and the cortical strata appear disordered.

Tuberous sclerosis is constantly accompanied by idiocy. In all of the cases that have been recognized there was also epilepsy, and in many instances there was at the same time spastic paralysis. A precise diagnosis is, however, only possible on post-mortem examination.

2. Focal and Diffuse Lesions in the Adult.—In the cerebral pathology of the adult the traditional distinction between diffuse and focal disease is still maintained, whereas in early life the two forms are often associated, and tend so to overlap one another as to lose any special distinguishing features, of which, however, they were not devoid at their origin.

The localized morbid processes that affect the completely developed brain produce changes less varied in character than those that have been described as occurring in the course of infantile and foetal life. At the same time they are much better known, more especially as regards the gross changes they produce, and notwithstanding their number; for they affect the general structure of the brain to a less degree, and they develop within a smaller circle of well-defined changes. They have, indeed, long had their place in ordinary pathology. A brief account of them will therefore suffice here, more especially in view of the fact that the cerebral lesions of adults, owing to their being commonly so limited in their extent, very often leave the psychical functions intact, or disturb them in so definite and partial a way that the symptoms produced fall within the province of general medicine as much as within that of mental disease. Nevertheless, some of these lesions—for example, apoplexies with or without aphasia—affect the intelligence and character much more profoundly than it is affected in many pure psychoses—as, for example, in a case of simple obsession with fixed ideas, or even in a case of mild melancholia.

Focal cerebral lesions are in origin hæmatogenous, traumatic, or propagated from local morbid processes in the meninges or cranium. They affect the mental functions more often than is generally thought.

Capillary and Arterial Hæmorrhages.—Capillary hæmorrhages are readily produced in any part of the brain by arterio-sclerotic occlusion of the larger vessels by which the capillaries are supplied, or in consequence of compression, active hyperæmia, or infections. In size they vary from that of a millet-seed to that of a pea. Arterial hæmorrhages are the result of degenerative and inflam-

matory processes in the vessel walls, or of aneurismal dilatation, which predisposes to rupture upon any occasional and even momentary increase of blood-pressure.

These dilatations are sometimes very small and multiple, and are then referred to as miliary aneurisms. Apart from traumatism, the regions that suffer most from arterial hæmorrhage are the basal ganglia and the internal capsule and their neighbourhood. Next in order come the pons, cerebral peduncles, cerebellum, and centrum ovale. The superficial portions of the hemispheres are only rarely implicated, owing to the small pressure within the arterioles of the cortex (derived from the pia mater), in comparison with that in the large collateral branches that come off directly from the middle cerebral artery.

The smallest capillary hæmorrhages act merely as a foreign body, causing compression of the surrounding tissues, but the larger hæmorrhagic effusions destroy considerable portions of the cerebral substance. The rupture of a large artery may, for example, lead to the destruction of a corpus striatum, or of the basal ganglia of one side, or of the white substance of an occipital lobe. The changes that occur in the clot, the formation of apoplectic cysts and cicatrices, and also the very limited reactions that occur in the adjoining compressed parts, are too well known to require mention here.

Softenings, or *encephalomalaciæ*, result from the occlusion of arteries, owing to the occurrence of thrombosis, embolism, or thickening of the intima. In the last instance, the focal lesions, being dependent upon more or less diffuse arterio-sclerosis, are almost always multiple, and therefore, even though small, have in mental diseases an importance greater than that of embolic softenings, which are generally single. The larger foci may occupy a convolution, a ganglion, or an entire lobe. Often, though isolated, they may occupy a position superficial enough to affect the cortex or the intercortical nerve tracts, and therefore to disturb seriously the cortical functions.

The brains of aged people (beyond sixty years), and especially the basal ganglia, often present multiple lacunæ in the nervous tissues (Fig. 13, A), varying from the size of a millet-seed to that of a small pea. These are the so-called lacunæ of cerebral disintegration (Marie, Ferrand). The cavities always contain a small artery, which is pervious, but much altered by the common arterio-sclerotic processes. The space between the wall of the cavity and the vessel is occupied by scanty débris of softened nervous tissue and by lymphocytes. In the more advanced stages the wall is composed of a dense layer of neuroglia. Its inner stratum, in preparations by Weigert's method, is seen to be

composed of compact bundles of fibres, among which no nuclei are discernible. More externally, the fibres diminish in numbers, and there are small dark nuclei, as in the normal tissue, but more abundant, and also pale granular and larger nuclei, still larger and paler nuclei possessing an eccentric nucleolus (Fig. 14), and here and there giant astrocytes, or *Monsterzellen* (Fig. 15).

The lacunæ of cerebral disintegration must not be confused with the so-called *état criblé* (Fig. 13, B), which is due to a retraction of the nervous tissue caused by reagents, and which may be observed even in normal brains. Still less must it be confounded with what has been termed cerebral porosis, which consists in the



FIG. 13.—SENILE BRAIN, FLECHSIG'S SECTION.

A, Lacuna of disintegration in the central nuclei ; B, *état criblé*. (From J. Ferrand, *L'Hémiplégie des Vieillards*. F. Rousset : Paris, 1902.)

occurrence of cavities of various sizes with sharp outlines, and with walls devoid of any sclerotic or inflammatory changes. These cavities are of post-mortem origin, and are caused by gas which is sometimes produced in the cerebral substance of the cadaver (Marie).

Cerebral abscesses vary considerably in size. They are not absorbed except when very small. More commonly they grow very slowly, involving the surrounding tissues, which degenerate and atrophy. Sometimes cerebral abscesses are multiple, and derived from a distant purulent focus by metastasis ; or they extend from contiguous suppurative foci—as, for example, in

cases of otitis, caries of the petrous temporal, or of the bones of the orbit, head traumatism, etc.

The most common tumours of the brain are the gliomata. As a rule, they are not visible until a section is made, being deeply situated. Often they are of great size. They are composed of neuroglia, which undergoes progressive development in the midst of the nerve cells and fibres, and afterwards shows various partial metamorphoses, accompanied by destruction of the specific elements. Many varieties are described, according to the prevalence of the fibres or the cells. By the name neuroglioma is implied a tumour in which it is alleged that not only the neuroglia, but also



FIG. 14.—THICKENING OF THE NEUROGLIA AT THE MARGIN OF A LACUNA OF CEREBRAL DISINTEGRATION.

a, Layer of fibres entirely devoid of nuclei; *b*, nuclei of granular dark glia cells; *c*, large nuclei of pale glia cells with nucleoli. Weigert's selective method (from an original preparation).

the nerve cells, undergo proliferation. According to recent researches, however, the actual occurrence of such tumours is doubtful. It is known that, generally speaking, the nerve cells of the adult have completely lost their proliferative capacity; and, moreover, Weigert's method often shows that the supposed nerve cells in proliferation are merely giant neuroglia cells. Gliosarcomata are those neuroglia tumours in which, in consequence of proliferation of the cells of the vessel walls, some sarcomatous portions are formed. Sarcomata are also fairly common; they take origin from the pia mater or from the vessel walls. Carcinomatous nodules may also be formed in the brain by

metastasis. Among the granulomata, there is to be mentioned tubercle. The nodules are almost always multiple, and localized much more frequently in the membranes than in the brain, in which they are situated subjacent to the pia, near the vessels, and along the fissures. They may also occur singly, and attain considerable dimensions (solitary tubercles). Gummata develop during the tertiary period of syphilis, and affect the cerebral cortex and pia mater, giving rise sometimes to a single mass, sometimes to several more or less large nodules. The smaller nodular masses may be absorbed, and thus become exempt from the regressive processes of induration and caseation, by which the more voluminous gummata are transformed. These tertiary syphilitic lesions occur at the expense of the cerebral substance,



FIG. 15.—GIANT GLIA CELLS ("MONSTERZELLEN") IN THE WALL OF A LACUNA OF CEREBRAL DISINTEGRATION. (From an Original Preparation.)

and, at the same time, induce in their vicinity processes of anæmia, softening, and hæmorrhage.

To the tumours and granulomata must be added cysticerci and the echinococci, which affect the brain in a similar way. Cysticerci sometimes increase in number by fresh emigration; the echinococcus is single, but increases in size.

In the brain of the adult, the more or less diffuse lesions capable of being recognized with the unaided eye are only very few in number, and as they affect, for the most part, only one kind of tissue element, they are best described and analysed from the histological point of view. These lesions are the following :

Sclérose en plaques, which is generally disseminated throughout the interior of the cerebro-spinal axis.

Ependymal sclerosis or *ependymitis*, commonly characterized

by roughness of the walls of the ventricles, though if the condition is uniform the surface remains smooth, but altered in colour.

Diffuse sclerosis, which, like the preceding, depends upon proliferation of the neuroglia, but which is met with in the adult only as the result of a destructive process.

Primary and secondary atrophies of the nerve tracts.

General atrophy of the cerebral cortex, recognizable with the unaided eye, and accompanied by flattening of the convolutions and widening of the sulci.

Hæmorrhagic encephalitis, following influenza, pneumonia, endocarditis, meningitis, and other infections, and giving rise to more or less numerous hæmorrhagic foci. Some of these are minute, and recognizable only upon microscopical examination, which reveals aggregations of small cells around the vessels, whilst others are punctiform and dark red, more rarely large and suppurative.

Purulent or suppurative encephalitis, which, if of metastatic origin, may occur in the form of multiple abscesses no larger than a pea or a hemp-seed. In other instances it is to be included in the group of focal lesions. The smaller abscesses cause inflammation and œdema in their vicinity; the larger may become encapsulated and remain inactive even for years, though they are always liable to sudden rupture—as, for example, into one of the ventricles.

II.

ELEMENTARY LESIONS OF THE CEREBRAL CORTEX AND ITS ANNEXES.

The morbid changes hitherto enumerated are merely the sum total of more minute lesions, the various steps in the production of which form the individual morbid processes. These elementary lesions in part differ, and in part are repeated with slight variations sufficient to determine distinct differences in the appearances produced. The external differences are, however, dependent not only upon the nature of the elementary processes, but also upon their site, extent, and duration, and thus they do not in every instance correspond to prominent histological or cytological differences. Further, the microscopical changes, including some of the most characteristic of them, show themselves even in brains that seem normal to the unaided eye, and therefore they could not be included in any of the foregoing categories; or they present different forms in brains that appear similar macroscopically.

For all these reasons histological and cytological examination supplies important and indispensable data for the pathological

anatomy of mental diseases. It is not merely supplementary ; it is also a means of revision, which, notwithstanding that its application has been only recent, enables us to view the problems of psychiatry in a light that is different from that of macroscopical anatomy, and at the same time clearer.

The lesions which are more or less well known to be represented in the morbid changes recognizable with the unaided eye may be divided, according to the histological elements involved, into those affecting the nerve cells, the nerve fibres, the neuroglia and ependyma, the vessels, and the leptomeninges.

1. Lesions of the Nerve Cells.—The results of the researches, more especially the experimental, carried out during the last few years make it possible to distinguish clearly acute processes from subacute and chronic, although in many instances they are added one to the other, and tend here and there to overlap. Further and more delicate distinctions are also possible in accordance with the nature of the morbid agent.

(a) *Acute Processes.*—In the acute morbid processes affecting the nerve cell various distinct classes of causes are recognizable, the effects of which to a certain extent differ, but for the most part are the same. The most typical example of these acute processes is to be found in the changes produced by hyperthermia ; the chromatic substance of the cell-body undergoes disintegration and progressive diminution in quantity, which may result ultimately in its complete disappearance. This change is termed “diffuse chromatolysis” (Fig. 16). At the same time the achromatic substance, which is normally invisible, displays its special reticulo-fibrillar structure. Except for these changes the cell and its nucleus preserve their normal structure and relations, but a characteristic feature is that the chromatolysis affects all the cells with almost the same intensity, thus displaying a degree of uniformity that is not observable in any other morbid process, either acute or chronic. As the change is confined to chromatolysis, it is thought that the chromatic substance may be renewed, and that the nerve cell may again become capable of performing its function, the cause of the change having ceased to act. It is probable that the specific functions are only weakened by diminution in the amount of chromatic substance, and temporarily suspended by its complete loss, if this occurs, and for so long as it continues, but that the arrangement of the chromatic particles has little influence on the activity of the cell.

Other causes of the acute cellular changes to be added to hyperthermia are the toxins and poisons that act powerfully upon the nerve cell, also sudden local arrest of the blood circulation, and external traumatisms and hæmorrhages, which—at least, if they are

of any considerable size—produce in the parts affected the same consequences.

Toxic actions of external or internal origin produce lesions that are either reparable or irreparable in different cases. Among the reparable lesions are swelling of the cell-body, more or less complete chromatolysis, swelling of the nucleus, diminution in the size of the nucleus accompanied by increased depth of staining, and chemical modifications of the achromatic substance, which render it visible owing to the fact that it has acquired a new affinity for basic colours. The irreparable lesions include shrinking and dis-

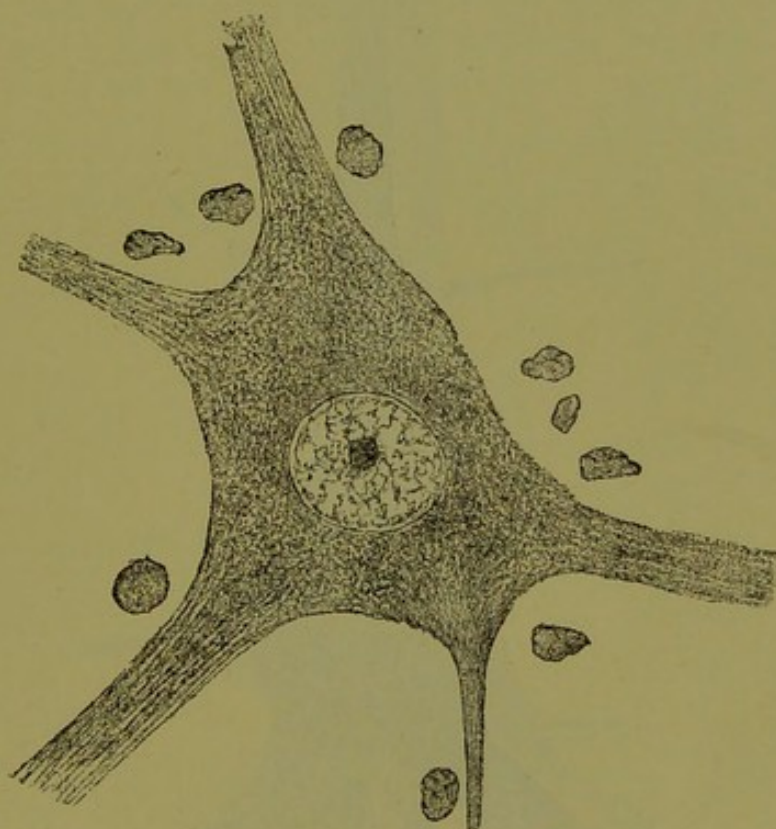


FIG. 16.—NERVE CELL OF THE ANTERIOR ROOT OF SPINAL CORD OF RABBIT.
Experimental hyperthermia. Diffuse chromatolysis. Nissl's method. (From Lugaro.)

integration of the nucleus, progressive dissolution of the achromatic part following upon vacuolization, and perhaps also upon phagocytic action of the neuroglia.

As the result of sudden arrest of the local circulation similar changes take place, but the morbid process is more rapid, and irreparable lesions, ending in complete disappearance of the nerve cells, are the rule. When the abdominal aorta is temporarily occluded (Stenson's experiment), the cells of the grey substance of the lumbar cord undergo necrosis and disintegrate, and may even completely disappear in the course of forty-eight hours.

Acute changes may frequently be observed in acute mental

diseases, and especially in those febrile or afebrile psychoses that are consequent upon acute infections and intoxications of internal or even external origin. The severity of the changes varies considerably in different cases, and certainly is not exactly proportionate to the symptoms manifested during life. In many cases of amentia there is diffuse chromatolysis of very many cells, especially those of the cortex, but those of other centres, even the spinal cord and spinal ganglia, are also sometimes affected. In the cortex the alteration is most conspicuous in the cells of Betz



FIG. 17.—GIANT PYRAMIDAL CELL IN A CASE OF AMENTIA FOLLOWING INFLUENZA. (From Camia.)

(Fig. 17), which in a greater measure than any other cells in the same situation show the characteristic tigroid appearance of the cells that are most rich in chromatic substance (Fig. 18). In the medium and small pyramidal cells complete chromatolysis is often accompanied by diminution in size and deep staining of the nucleus, which may be so dark that the nucleolus is entirely obscured (Fig. 19).

The changes that result from traumatism differ greatly, according as the cell-body is injured directly or only indirectly through

its axone. The axone, on account of its length, is liable to be injured, apart from the cell-body. This applies not only to traumatic injuries, but also to those resulting from the action of toxic substances which happen to have a selective action upon the nervous prolongation.

Since the cell-body is the trophic centre of the neuron, any traumatic or toxic action that alters it irreparably induces a rapid

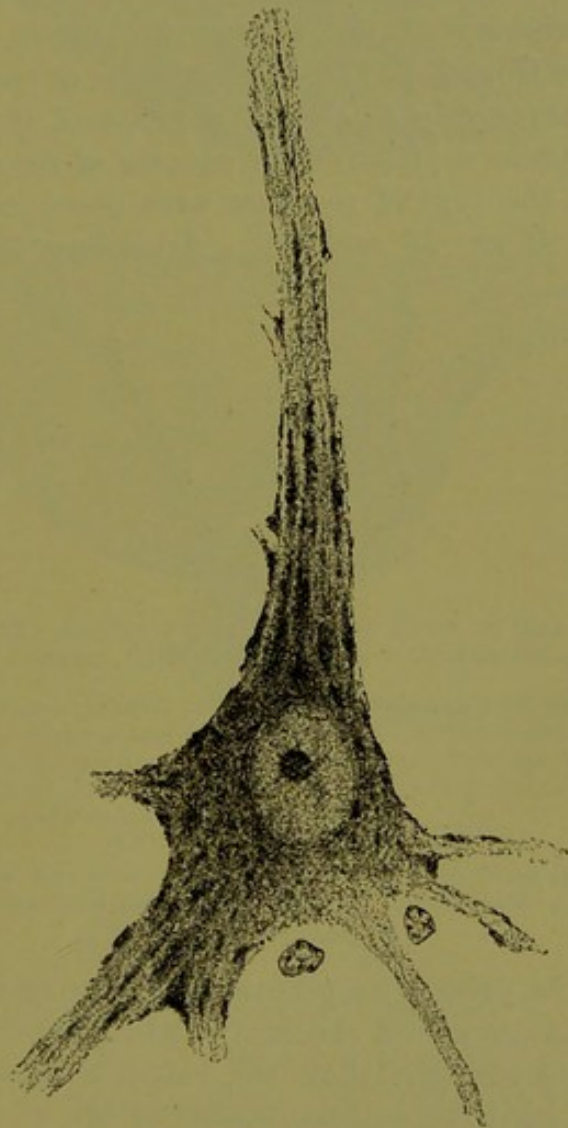


FIG. 18.—NORMAL CELL OF BETZ, FROM THE ASCENDING FRONTAL CONVOLUTION OF AN ADULT.

process of complete destruction, or disappearance of the whole nervous element. If, on the other hand, the axone (the only part of the neuron that can be the subject of a partial injury) is affected, the following changes generally occur: The cell-body becomes round in form; there is centrifugal chromatolysis; the nucleus becomes eccentric in position, and sometimes even protrudes from the cell; it becomes reniform in shape; the chromatic substance accumulates at the hilum of the altered nucleus

(Figs. 20, 21, and 22). This morbid process, the steps of which have been most fully demonstrated, may end in one or other of two ways—namely, either in death of the nervous element, or, more commonly, in its slow repair.

This typical process, observable in the great majority of instances, sometimes exhibits a sort of attenuation. In some cells, instead of the modification described, there is to be observed simply a perinuclear accumulation of the chromatic substance, the periphery of the cell at the same time becoming abnormally pale (Fig. 23). This special type of reaction may also be observed temporarily as an initial phase of the usual process (Fig. 24), or even as a phase of the process of repair in cells that have exhibited the typical reaction with eccentric displacement of the nucleus (Figs. 25 and 26). According to Lugaro, it is

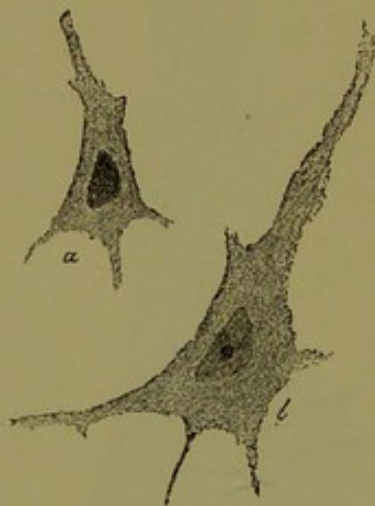


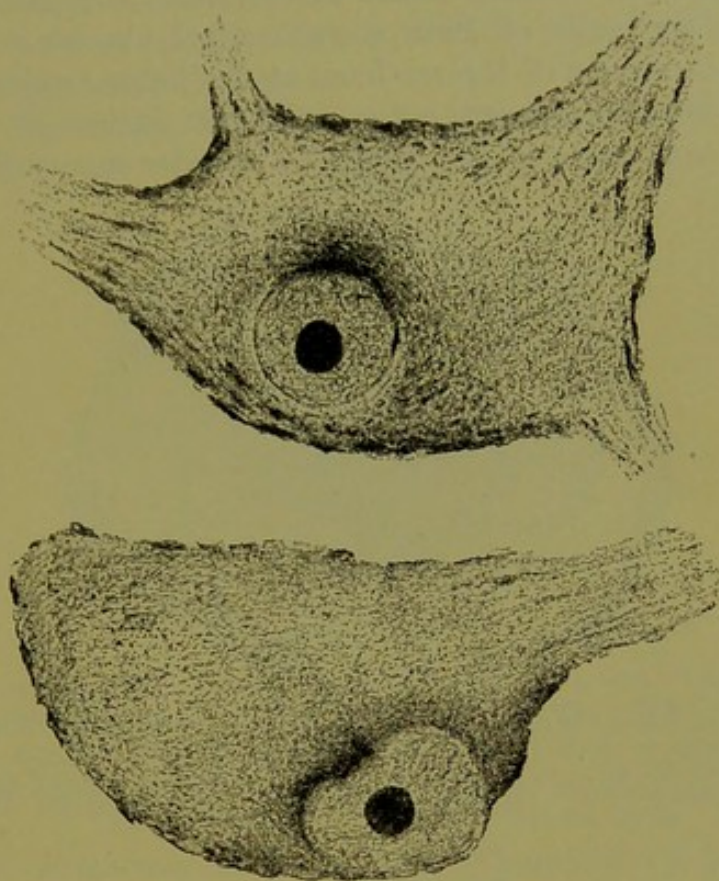
FIG. 19.—CEREBRAL CORTEX.

a, Small pyramidal nerve cell ; *b*, small pyramidal nerve cell in a case of amentia. Diffuse chromatolysis, coloration of the achromatic part, deep staining of the nucleus. (From Camia.)

probable that the process of peripheral chromatolysis with perinuclear condensation of the chromatic substance is the expression of a less intense reaction than the classical process of central chromatolysis with lateral displacement of the nucleus.

The appearances that characterize the latter process correspond to certain normal features of the embryonic nerve cell. For this reason Van Biervliet and Van Gehuchten have maintained that it represents a rejuvenescence of the cell connected with the regenerative effort of the nerve fibre. Lugaro has further noted that both types of pathological reaction just described correspond to the normal forms of cells in certain of the inferior vertebrates, such as fish, batrachians, and reptiles.

The type of cellular reaction characteristic of a lesion of the axis-cylinder occurs in acute mental diseases dependent upon



FIGS. 20 AND 21.—CELLS OF THE ANTERIOR HORN OF THE LUMBAR CORD OF A DOG FIFTEEN DAYS AFTER SECTION OF THE SCIATIC NERVE.

Fig. 20 shows a less advanced phase of alteration, incipient central chromatolysis, displacement of the nucleus, and accumulation of chromatic particles upon its inner aspect. Fig. 21 represents a more advanced phase, with marked central chromatolysis, lateral displacement of the nucleus, and formation of a depression on its inner aspect in which chromatic substance has collected.

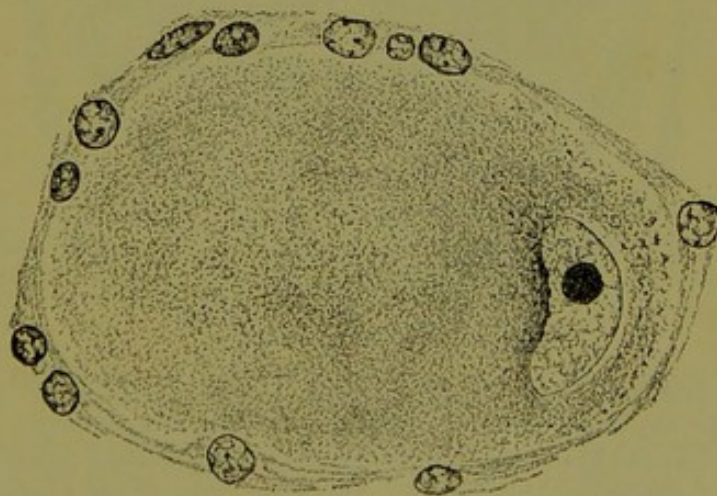


FIG. 22.—LARGE, CLEAR TYPE OF CELL FROM THE EIGHTH CERVICAL GANGLION OF THE DOG FORTY DAYS AFTER SECTION OF THE BRACHIAL PLEXUS.

There is diffuse chromatolysis, eccentric displacement of the nucleus, and reniform alteration of its shape, and accumulation of chromatic substance in the hilum of the nucleus (Lugaro). This type of alteration is the most common.

intoxications. In certain cases of amentia, and also some of alcoholism, the cells of Betz show central chromatolysis with lateral displacement of the nucleus, at the inner aspect of which there is a depression containing an accumulation of chromatic substance, sometimes in the form of a quarter-moon (Fig. 27).



FIG. 23.—VORTICOSE CELL OF THE EIGHTH CERVICAL GANGLION OF THE RABBIT TWENTY DAYS AFTER SECTION OF THE BRACHIAL PLEXUS.

Perinuclear condensation of the chromatic substance, peripheral chromatolysis. Nissl's method. (From Lugaro.)

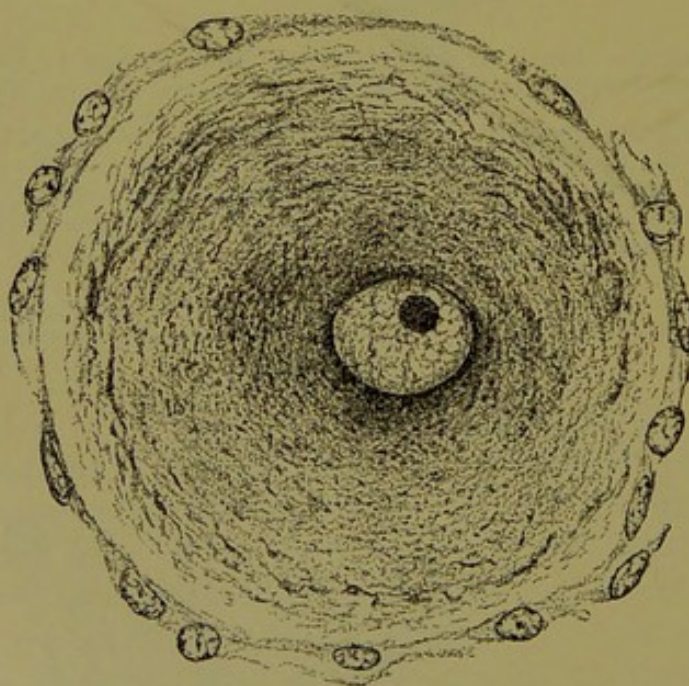


FIG. 24.—VORTICOSE CELL OF THE EIGHTH CERVICAL GANGLION OF A DOG SEVEN DAYS AFTER SECTION OF THE BRACHIAL PLEXUS.

In a more advanced phase this cell would present, by gradual transformation, the ordinary type of reaction, as in Fig. 22. Nissl's method. (From Lugaro.)

In these cases the lesion of the pyramidal tract, which takes origin in the cells of Betz, is not always evident. Sometimes the application of Marchi's method gives entirely negative results, and when this is so it is to be inferred that only the extreme non-

medullated terminations of the fibres have been injured (Camia). The large and even the small pyramidal nerve cells may participate in the morbid process.

Outside the brain, the cells of the column of Clarke likewise

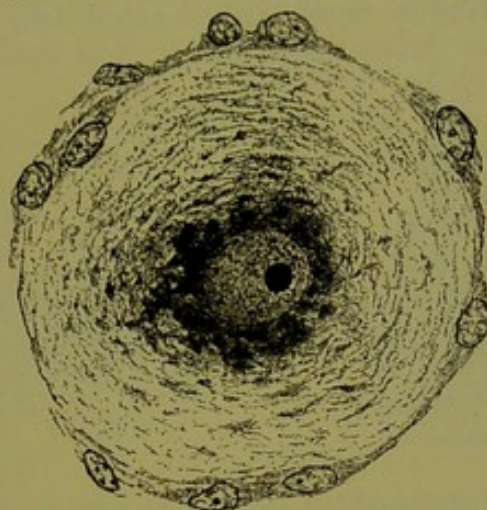


FIG. 25.—VORTICOSE CELL OF THE SPINAL GANGLION OF A DOG DURING THE PHASE OF REPAIR, EIGHTY DAYS AFTER INJURY TO THE CORRESPONDING PERIPHERAL FIBRE.

The nucleus has resumed its central position, and there is perinuclear condensation of the chromatic substance and peripheral achromatosis. (From Lugaro.)

often show some morbid alteration. When there is polyneuritis, as is not uncommon in acute and subacute toxic processes, the cells of the anterior horn and of the spinal ganglia also show the typical reaction.



FIG. 26.—SMALL DARK CELLS OF THE SPINAL GANGLIA (DOG) IN THE PHASE OF REPAIR.

In the cell *b* the nucleus is still eccentric; in the cell *c* it is advancing towards the centre amidst the newly formed chromatic particles; in the cell *a* the chromatic substance is condensed around the nucleus. Nissl's method. (From Lugaro.)

(*b*) *Subacute Processes*.—The lesions are analogous to those that occur in acute processes. As, however, the changes take place more slowly, there is no swelling of the cell; the disintegration of the chromatic substance is more partial, and frequently

takes the form of peripheral chromatolysis (Fig. 28). Accompanying this peripheral chromatolysis there is sometimes condensation of the remaining chromatic substance around the nucleus. In this instance the appearance is similar to that already described as occurring transitorily after injury to the axis-

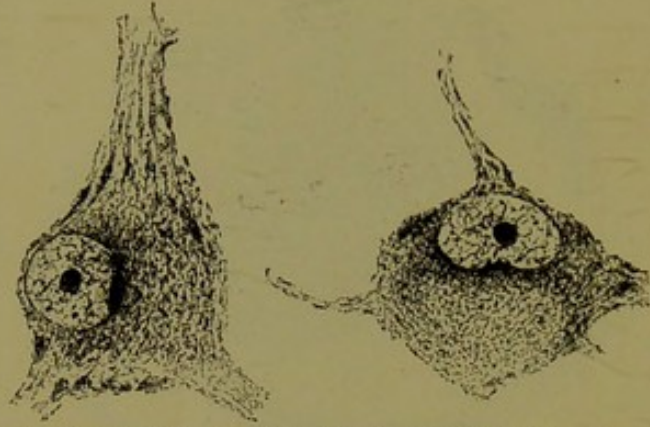


FIG. 27.—GIANT PYRAMIDAL CELLS (ASCENDING FRONTAL CONVOLUTION) IN A CASE OF AMENTIA.

Reaction to a lesion of the axis-cylinder, probably from a toxic cause. (From Camia.)

cylinder. According to Lugaro, peripheral chromatolysis and perinuclear condensation of chromatic substance from toxic causes are to be interpreted as evidence of a cellular reaction which is reintegrative in purpose. On the other hand, severe

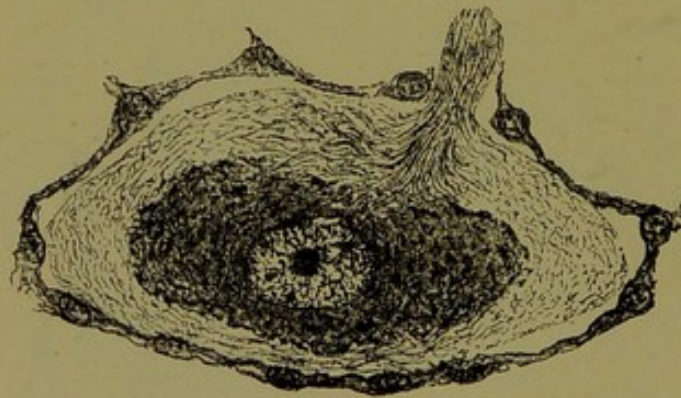


FIG. 28.—SPINAL GANGLION CELL OF A DOG.

Peripheral chromatolysis from subacute poisoning with arsenic. Staining with Delafield's hæmatoxylin. In the peripheral portion the loss of the chromatic substance renders the fibrillar structure visible.

diffuse chromatolysis, accompanied by changes in the achromatic part, is indicative simply of degeneration. Subacute processes have various results, such as repair, slow atrophy, and death of the nerve cell.

Subacute alterations in the cells are observable in all toxic processes that run a subacute course—as, for example, those associated with alcoholism, pellagra, uræmia (Fig. 29), and certain cases of progressive paralysis. Upon the characters of

the subacute process there may naturally be superimposed those of the acute lesions, which obscure them.

(c) *Chronic Processes*.—When affected by chronic morbid processes, the nerve cell, if it has not entirely disappeared, is atrophic in all its constituent parts. Its outline is irregular and shrunken-looking; the nucleus is homogeneous, small, and deeply stained

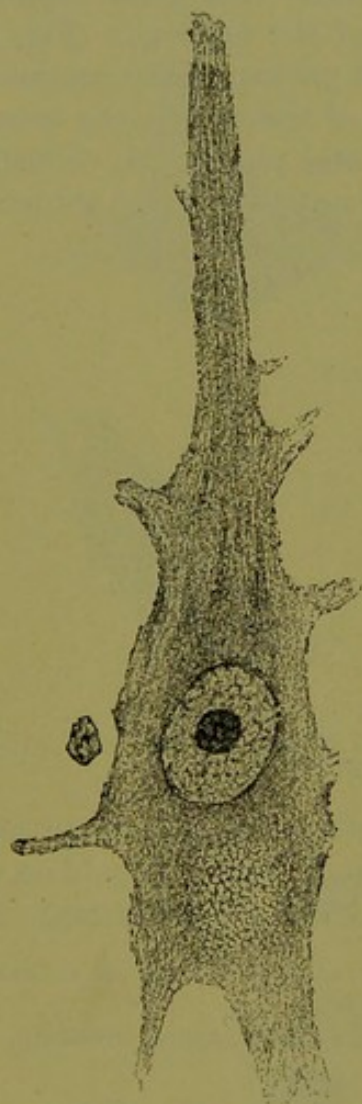


FIG. 29.—GIANT PYRAMIDAL CELL OF THE ASCENDING FRONTAL CONVOLUTION IN A CASE OF URÆMIA.

At the base there is a mass of pigment.

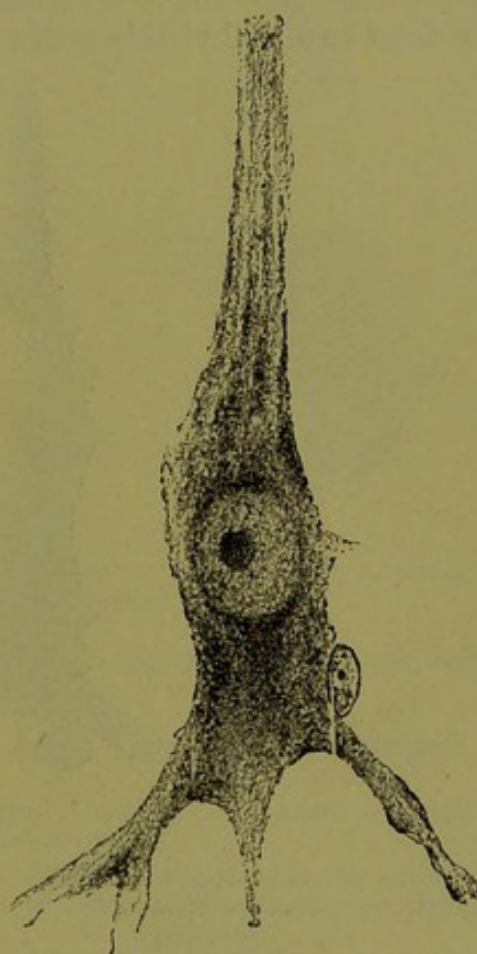


FIG. 30.—CELL OF BETZ FROM THE ASCENDING FRONTAL CONVOLUTION, IN A CASE OF SENILE DEMENTIA.

Shows incipient atrophy.

(Figs. 30 and 31). The atrophy may manifest itself by very distinct reduction in the volume of the cell, without important changes in structure (Fig. 32). In the cytoplasm there is often to be observed a deposit of yellow pigmentary substance. Such deposits are also to be seen in the brains of normal persons, but only at an advanced age, and in certain cells, more especially in the largest (Fig. 29). The pathological character of these

intracellular aggregations, therefore, depends upon their quantity and upon their seat. Thus, in general paralysis yellow deposits appear in almost all the small cells, which ordinarily are entirely devoid of them, whilst they are also to be seen in the large cells, which contain them normally, though more abundantly in old age.

Whatever the course of the morbid process, it is probable that the disintegration of the dead cells occurs with great rapidity. Special phagocytic action on the part of the neuroglia (Fig. 33) sometimes contributes to this result, but perhaps more commonly the dissolution is caused by the action of the circulating lymph, without the intervention of migratory and phagocytic elements. The dead and still visible nerve cells are naturally more abundant

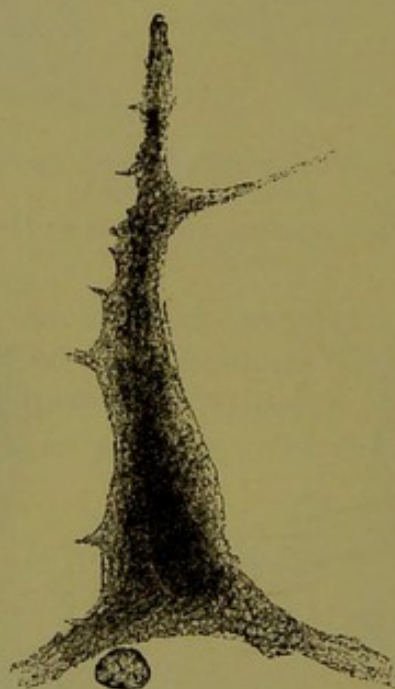


FIG. 31.—BETZ CELL OF THE ASCENDING FRONTAL CONVOLUTION IN A CASE OF SENILE DEMENTIA.

It shows advanced atrophy, diffusion of the chromatic substance, shrinking, and homogeneous coloration of the nucleus.

in cases in which the morbid processes are acute and severe. In the chronic processes it is the paucity of nerve cells that is remarkable. For example, in progressive paralysis the grey substance suffers great damage; the thickness of the cortex is diminished, sometimes as much as by one-half, as may be recognized even with the unaided eye; and the fact of the destruction of the nervous elements is confirmed by the results of microscopical examination.

Indeed, the cells that can be observed at the stage in which they show the most marked evidence of an active process of dissolution are very few in number. The fact of the rapid disappearance of the dead cells has been demonstrated by experi-

mental methods. It has been shown that temporary occlusion of the abdominal aorta (for one hour or a little longer) causes necrosis of the grey substance of the spinal cord, and that forty-

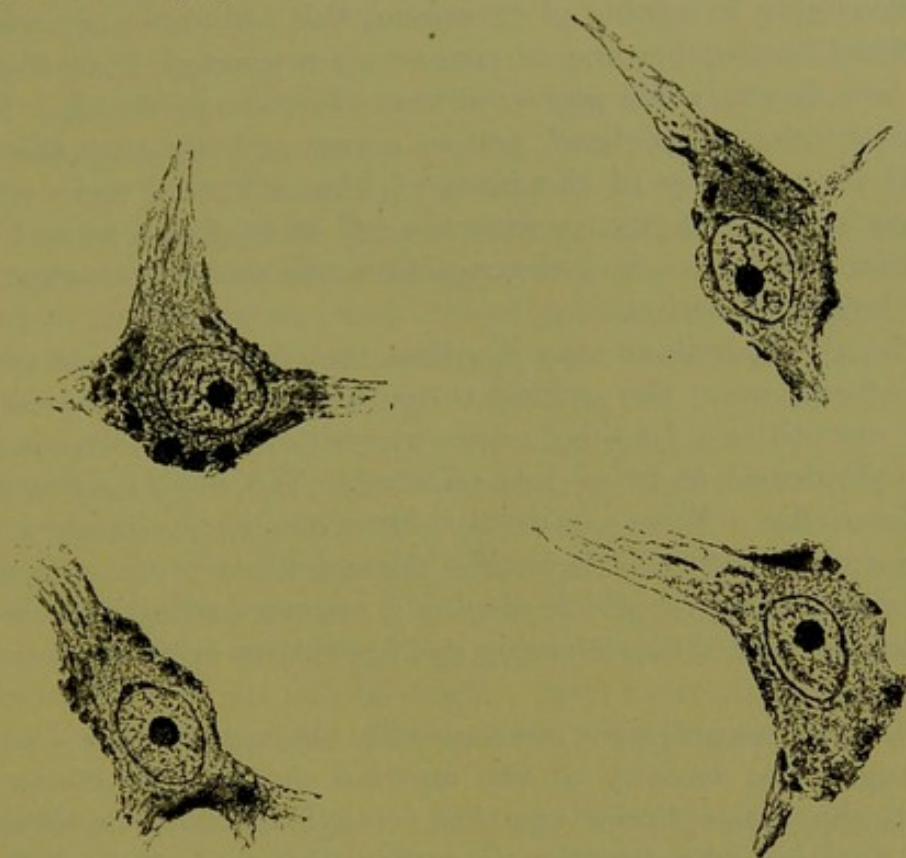


FIG. 32.—ATROPHIC CELLS OF BETZ IN A CASE OF AMYOTROPHIC LATERAL SCLEROSIS. (From Franceschi.)

eight hours afterwards the dead giant cells of the anterior horns are no longer visible.

2. **Lesions of the Nerve Fibres.**—The nerve fibre is subject to



FIG. 33.—TWO NERVE CELLS OF THE POLYMORPHOUS LAYER OF THE CEREBRAL CORTEX OF A PARALYTIC.

Both are greatly swollen, and vacuolated, and invaded by neuroglia cells. In the cell *a* the nucleus, recognizable from the presence of the nucleolus, still persists; it is diminished in size, and very deeply stained. In the cell *b* the nucleus has disappeared, and the cytoplasm is represented only by debris. Nissl's method.

primary and secondary changes. Primary changes result from the direct action of a pathogenic agent which is usually of a toxic nature, and which comes either from the outside or from

within the organism. Secondary changes occur when there is an interruption of the trophic influence of the cell with which the fibre is anatomically connected, either in consequence of the cell becoming incapable of exercising this influence, or owing to the fibre having become in some way separated from the cell. The two degenerative processes may also be associated. If the primary lesion is localized, and so severe as to destroy the functional permeability of the tract of fibre affected, there will be a breach of the continuity with the cell of origin, as in section of the fibre, and secondary degeneration will occur throughout the fibre below the lesion.

Primary alterations may manifest themselves in acute or sub-acute forms upon the sudden action of toxic substances in very large quantities. In these cases, in addition to the myeline, the axis-cylinder is more or less affected. The fibre may undergo repair or die. More commonly, however, the primary process takes a chronic form. It is then dependent upon the slow action of toxic substances, which display a selective affinity for certain special systems of fibres, giving rise to primary systemic degeneration.

Primary degenerations are especially characterized by a process of progressive atrophy of the myeline sheath, notwithstanding which the axis-cylinder remains for a long time almost intact. This explains why function is rather disturbed than abolished, and why the observable pathological changes do not accord with the slightness of the clinical symptoms. Atrophic lesions of this nature, characterized by comparative integrity of the axis-cylinder and the possibility of repair, are observable in the peripheral nerves, and likewise in the long fibres of the spinal cord, as the result of chronic intoxications or of cachexias.

It is also characteristic of these processes that the morbid change begins and is at least most severe towards the distal end of the fibre, and that it passes from the termination towards the cell of origin. Only in the later phases does the axis-cylinder suffer a true destructive process, in consequence of which the nerve fibre dies and disappears.

Typical examples of atrophic degeneration, more or less systemic in character, affecting the peripheral nerves, are to be seen in the so-called senile polyneuritis and in the polyneuritis of alcoholics. As regards the tracts of the spinal cord, combined degenerations affecting the posterior columns and the crossed pyramidal tracts are common in pellagra and in progressive paralysis. According to Tuzek, a primary atrophy may also occur in the brain in a much more extensive system—namely, that of the tangential fibres—constituting, indeed, in the opinion of this authority, the

initial and characteristic lesion of progressive paralysis. It is, however, probable that this degeneration is not entirely of a primary nature, but depends, at least principally, upon early morbid changes in the nerve cells.

Secondary degenerations develop more quickly. Upon the death of the cell from which it takes origin, the nerve fibre undergoes a change, which extends rapidly in a distal direction. This change takes place with equal rapidity as the result of section or of any other lesion which separates fibre from cell. The fibrillæ of the axis-cylinder break up into granules; the medullated sheath undergoes fragmentation, first into ellipsoidal segments, then into smaller droplets, which blacken by Marchi's method. The droplets of myeline, and likewise the débris of the axis-cylinder, become absorbed, or in part removed mechanically. In the peripheral nerves this absorption is assisted by the action of the cells of the sheath of Schwann, and perhaps also by that of leucocytes. In the nerve centres the neuroglia has a similar action.

In the peripheral nerves a process of regeneration may take place, provided the secondary degeneration is not dependent upon the destruction of the cell of origin. It is extremely doubtful if this work of repair can be carried out or even begun in the nerve centres.

3. Lesions of the Neuroglia.—Although the old staining methods showed the structure of the neuroglia only imperfectly, they were sufficient to demonstrate that hyperplasia of this tissue serves to fill up the spaces left by destruction of the other elements, and is thus of the nature of a complementary process. Weigert's recent method, which in all probability selectively stains all the fibres of the neuroglia, showing where their network is most dense and where it is most open, has not only fully confirmed this law of compensation, but has at the same time served to reveal certain interesting facts regarding its mechanism. The neuroglia very readily undergoes progressive and regressive changes that recall those associated with its normal development. These have lately become more precisely understood both in their pathological and in their developmental manifestations.

Among the cells of the neuroglia there are certain which possess only short protoplasmic prolongations of a mossy appearance, and which are chiefly situated in the cortical layers. Others, known as astrocytes, give off fibres which stain by Weigert's method, and which form the material of the intercellular substance, which closes, opens, and traces out the path for the progressive formation of the nervous elements. These fibres make their appearance only in the last stages of development, when the neuroglia cells have ceased to migrate, and have become fixed in position.

In pathological proliferation the body of the astrocyte (only the nucleus of which is visible in preparations by Weigert's method) detaches itself from the fibres, and reassumes its primitive migratory power. The neuroglia cells, originally devoid of fibres, also assume the appearance and perform the function of astrocytes, thus joining in a kind of pathological repetition of embryonic gliogenesis. Many of both varieties of elements attain to hypertrophic dimensions, forming the *Monsterzellen* of Weigert. The nucleus of these monster cells, likewise enlarged, sometimes undergoes direct division. In this way new glia cells are formed, which in their turn elaborate or secrete new fibres. The neuroglia network becomes dense, coarse, and recognizable even with the naked eye. Among its more or less interwoven fibres no nerve-cell nuclei can be discerned (Fig. 14).

In the migratory phase the cells of the neuroglia would appear also to acquire phagocytic powers, which they exercise at the expense of the nerve cells. It may be that the free bodies of the astrocytes devour only small fragments of cells that are already dead, or that they assail those that are still intact but much weakened, penetrating their interior, and determining their disintegration. It is at least certain that the hyperplasia of the neuroglia is diffuse or localized according as the destructive lesion of the nervous elements is general or focal.

In chronic processes, in addition to hyperplasia of the neuroglia and substitution of this tissue for the lost specific elements, there is a spontaneous proliferation of the neuroglia in situations in which it is normally most abundant—namely, subjacent to the pia mater (Fig. 34), in the tangential layer of the cerebral cortex, around the vessels, and in the ependyma. In the last-named situation very densely crowded little swellings may be formed, constituting the condition known as granular ependymitis. Thus also are not infrequently formed genuine masses or islets of neuroglia cells in the midst of areas of normal nervous tissue. These constitute the miliary gliosis of senile dementia and the patches of gliosis that characterize tuberous sclerosis.

4. Lesions of the Vessels and of the Meninges.—In very acute mental disorders, or in cases terminated by acute toxic infective processes, the brain not uncommonly shows capillary hæmorrhages. The larger hæmorrhages are connected with chronic and diffuse changes in the vessels, more especially with the presence of miliary aneurisms which affect the small arteries. The cellular elements of the vascular walls are subject both to proliferative and to regressive changes, and the two are often associated with each other. A remarkable morbid alteration affecting the vessels, and one which is nowadays much discussed, is small-cell

infiltration of the walls, a term which includes phenomena that are not in every instance of the same nature.

In very severe morbid conditions there may be new formation of capillaries, as in early development. Proliferation of the cells of the intima may narrow the lumen of the vessels, sometimes even leading to its occlusion (endarteritis obliterans). Frequently, however, the proliferating cells undergo gradual regressive changes, and in this case the intima becomes attenuated, the nuclei of its cells lose their affinity for stains, and the lumen of the vessel is dilated. Among these regressive processes the most common are fatty degeneration and colloid degeneration, which affect the

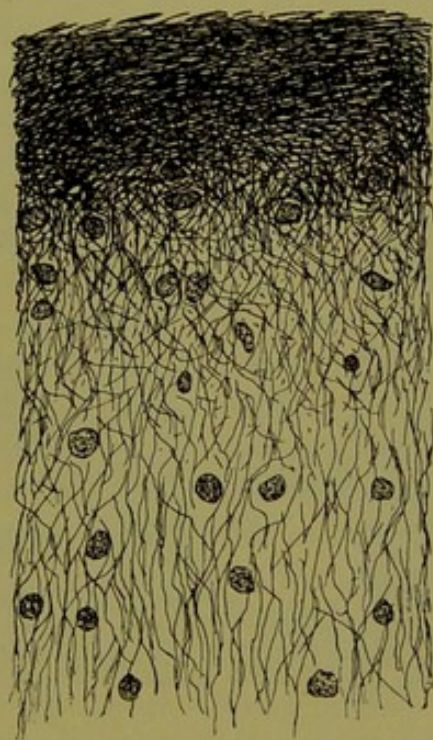


FIG. 34.—EPILEPTIC GLIOSIS ; MOLECULAR LAYER OF THE ASCENDING FRONTAL CONVOLUTION IN A CASE OF EPILEPTIC DEMENTIA.

The layer of superficial fibres is more than double the normal thickness, and is extremely dense. Increase in the number of fibres is also seen in the subjacent strata, in which, however, it gradually becomes less marked. Selective method of Weigert.

various vascular coats, more particularly the intima and media. Of frequent occurrence, especially in the aged, is calcification, consequent upon the deposit of solid matter ; it affects especially the adventitia, and deprives the vessels more or less completely of their elasticity. These alterations are the terminal results of the atheromatous process, the evidences of which in the large vessels at the base can be recognized with the unaided eye. It is the most characteristic vascular change in senile dementia, as occurring in which it is commonly termed cerebral arteriosclerosis.

The adventitia is the chief seat of cellular infiltration, a morbid

change which often obscures, or even completely conceals, the degenerative processes affecting it. Notwithstanding the proliferation, the lymphatic spaces of the adventitia may remain unaltered, or they may undergo great dilatation. In the first case the external layer of the wall is thickened, and contains many cells of normal appearance, which may nevertheless be partly of exogenous origin, for their nuclei do not differ in appearance from those of certain other cells, as, for example, the small round cells of the neuroglia (Nissl).


If the lymphatic spaces of the adventitia are dilated, they may contain leucocytes, especially lymphocytes with scanty protoplasm and deeply staining round nucleus.  Lymphocytes are



FIG. 35.—HISTOLOGICAL OEDEMA OF THE BRAIN.

The vascular and pericellular spaces are enormously dilated. (From G. Catola.)

also found in the thickness of the walls. Lastly, the walls of the lymphatic spaces may contain, together with the cells of the adventitia, other elements, which Alzheimer regards as of connective-tissue origin and allied to mast cells, but which Nissl considers to be identical with those occurring in other organs, and known as the plasma cells of Unna. Whatever their nature may be, these elements may occur singly, in moderate numbers, or in such abundance as to fill and distend the adventitial spaces.

Well-marked and widespread dilatation of the perivascular lymphatic channels is sometimes accompanied by the formation of considerable spaces around the nerve cells. This constitutes the condition that has been termed by Léopold Lévi "histological œdema of the brain" (Fig. 35). It is not to be confounded with

the artificial formation of pericellular spaces, owing to shrinking of the cells, in consequence of faulty fixation of the tissues.

Along with the vessels the meninges frequently suffer morbid change. The pia mater is especially affected. It is thickened in all chronic and diffuse morbid conditions of the cerebral cortex. Overgrowth of connective tissue around the vessels, sclerosis of the cortex, and inflammatory processes, tend to cause adhesions between the cortex and the pia, sometimes extensive, sometimes localized. The pia is also the initial seat, and the path of propagation of certain morbid processes that profoundly affect the mental functions, such as meningo-encephalitis.

The dura mater is very prone to inflammatory conditions that tend to lead to the formation of new vessels and to hæmorrhage. The new vessels may readily be recognized, because normally the vessels on the internal surface of the dura are only few in number, and delicate. The blood effusion may be extrameningeal (from the external surface), intermeningeal (from the internal surface or subdural), or intrameningeal (within the substance of the dura). When the blood becomes encapsulated, the condition of hæmatoma of the dura mater is produced. Localized ossification of the dura with adhesion to the cranium is also somewhat common. It is evidence of an old inflammatory process.

In the neighbourhood of the longitudinal sinus of the dura mater remains of the Pacchionian granulations are very commonly to be observed. These granulations are papillary masses of connective-tissue origin derived from the pia mater. They press upon the dura, eating their way into it, and even perforating it. They may indent the internal table of the skull, which may be actually penetrated by them. They are so common as to be almost without significance, but it is to be noted that their number and size is increased as the result of chronic inflammatory conditions.

III

EXTRACORTICAL AND EXTRACEREBRAL MORBID CHANGES

Various other portions of the encephalon may present evidence of the occurrence of morbid processes quite analogous to those that have been described as occurring in the cortex and its immediately dependent parts. They may show early or late, focal or diffuse, chronic or acute lesions, which may affect especially the nerve cells, the nerve fibres, the neuroglia, or the vessels. These lesions are both an index and a complement of the cortical lesions. In some instances, without extending to the cortex, they disturb

its functions indirectly by preventing the access of sensory stimuli and the discharge of voluntary impulses.

The spinal cord is frequently the seat of lesions consecutive to lesions of the brain, and also of lesions of a primary or autochthonous nature, but caused by factors similar to those that act upon the cortex. Hence there are to be observed changes in the nerve cells and in the nerve tracts, in the neuroglia and in the vessels. The lesions in the nerve tracts are often systemic, sometimes being combined, and for the most part they are due to toxic causes.

The peripheral nerves are equally subject to acute, subacute, and chronic alterations of an atrophic and degenerative character, which are sometimes merely accidental complications of the mental disorder, but in other instances are to be included in its mechanism or in that of some of its symptoms—for example, paræsthesias.

The sensory organs may be the subject of any of the morbid conditions to which they are liable. Atrophy of the optic nerve is often a collateral symptom of a morbid process that is at the same time the cause of the mental disorder. External lesions of the ear may give rise to deafness or to complex hallucinations, acting as occasional causes of delusions or of mental confusion. Nasal polypi may induce convulsive seizures, together with their various possible psychopathic complications.

The cranium is still the subject of measurements and studies as minute as they are sterile in practical results. As regards pathological alterations, it may present atrophy or thickening of the diploë, and also exostoses, osteomata, and fractures, which often constitute the primary cause of the cortical disorder. As for irregularities of form and the various developmental anomalies that the cranium may present in its ridges, protuberances, and depressions, they have no importance as causes of mental diseases or of mental anomalies, excepting in those cases in which they attain to such enormous proportions that they are recognizable on first view, even in the living subject. Much more commonly they have no part in the pathogenesis of the mental disorder, but are merely an accessory manifestation, or a collateral effect, of a general morbid process in which the psychopathy has had its real origin.

Macrocephaly is a sign of hydrocephalus, especially if accompanied by brachycephaly (broad head) and convexity of the frontal regions (infantile forehead). Microcephaly is the almost constant correlative of a brain that is unnaturally small. Kymbocephaly (depression in the bregmatic region) indicates premature closure of the anterior fontanelle. Plagiocephaly (asymmetry of

the two lateral halves of the cranium) is the result of lack of synchronism in the processes of synostosis on the two sides. The occurrence of a depression at the root of the nose, frequent in congenital myxœdema and in cretinism, is due to premature ossification of the occipito-sphenoidal symphysis. Extreme brachycephaly and also extreme dolichocephaly are signs of developmental anomalies of a pathological nature. On the other hand, dolichocephaly and brachycephaly have in themselves merely an ethnological significance, their numerical formulæ constituting the expression of one of the most constant and trustworthy of racial characters. It is probable that from infancy onwards the cephalic index—that is to say, the percentage relationship of the bi-parietal diameter to the antero-posterior diameter of the cranium—remains unaltered throughout the period of growth. Although it is very difficult to repeat the same measurements year after year in a large number of children or of adolescents, and to avoid losing sight of them up to middle age, everything points to the fact that the cephalic index is an individual character of the highest importance. It is not, however, easy to understand what clinical application the knowledge of this anthropological character can have.

The peculiarities of cranial form, so commonly observable in the insane, were first interpreted as visible causes of supposed intracranial anomalies to which the psychical disorders and perversions were attributed. As a matter of fact, however, the brain is capable of developing in a normal manner in almost any form of osseous covering; intelligence develops as the result of the establishment of intercellular associations, whatever may be the configuration of the cortical gyri, save in cases in which there is extreme deviation from the normal. The intellectual character of the individual depends chiefly upon the number of the neurons, their dendritic development and functional activity, and comparatively little upon these external features.

The most convincing proof of this relative independence is derived from a consideration of the effects of artificial deformation of the cranium. The ancient Peruvians had the custom of binding the head of the newly-born with tight bands, in consequence of which it remained permanently deformed. The people consisted of two races living together, and all the skulls that have been collected in large numbers from tumuli bear the impress of this national custom, which was enforced throughout many generations. There were two varieties of deformity, both of which were carried to an almost incredible extent (Figs. 36 and 37). Nevertheless, the people thus deformed acquired a high degree of civilization, of which there still remain conspicuous evidences and various records,

If a cranium of extremely low type, but not deformed—as, for example, that of a native of Terra del Fuego (Fig. 38)—is compared with a European cranium of good type (Fig. 39), it will be readily recognized that the two differ from each other much less than the two artificially deformed Peruvian types differ from each other, notwithstanding the poor intellectual development of the Fuegians, an extremely barbarous people known to be addicted to cannibalism.

Cranial anomalies, far from being the cause, are often not even the effect of special—or, at least, recognized—cerebral anomalies, the psychological significance of which would in any case constitute a new unknown quantity. Notwithstanding the general

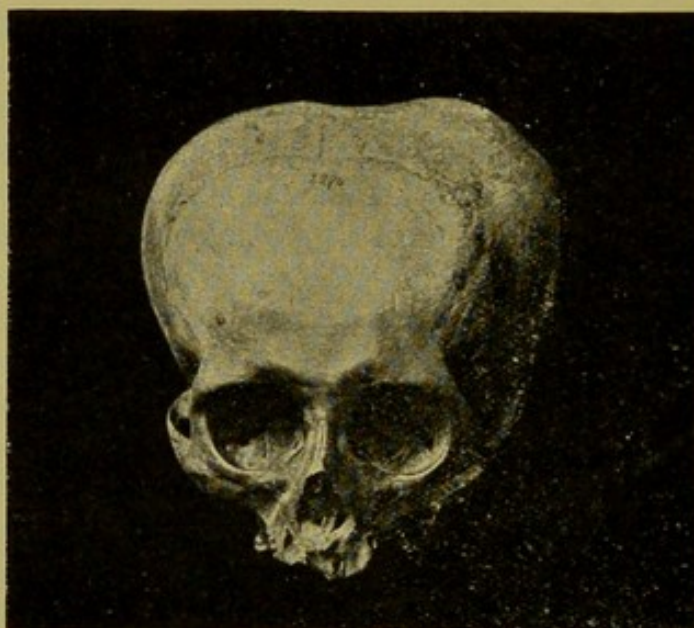


FIG. 36.—PERUVIAN CRANIUM, WITH ARTIFICIAL DEFORMITY (PRODUCED BY CONSTRICTING BANDS) OF THE QUICHUA TYPE.

In the Quichua tribe (which displaced the rule of the Aymarà, and which contributed to the development of a flourishing civilization) only those were allowed to dispense with the bandage who could not tolerate the compression; the head assumed the form of a compressed bladder in the line of the bands, whilst it protruded in those regions not subjected to pressure. (From the Anthropological Museum of Florence, Professor Paolo Mantegazza, Director.)

subordination of cranial development to cerebral development, the correspondence of the one with the other is not carried into matters of detail. It is therefore useless to seek in the head of the living, or in the skull of the dead, the external revelation of insanity and degeneracy, or, with Gall, the qualitative and quantitative index of intelligence and character.

With much greater reason the cranium has been made the subject of investigation and measurement as the chief seat of atavistic anomalies or of arrests of development that might be regarded as signs of moral degeneracy. Even from this standpoint, however, the importance of the so-called stigmata of degeneration is not very great for the purposes of individual

diagnosis. The anthropological statistics collected by Lombroso, Marro, and others, have shown that certain anomalies are more common in the insane and in criminals than in normal persons—

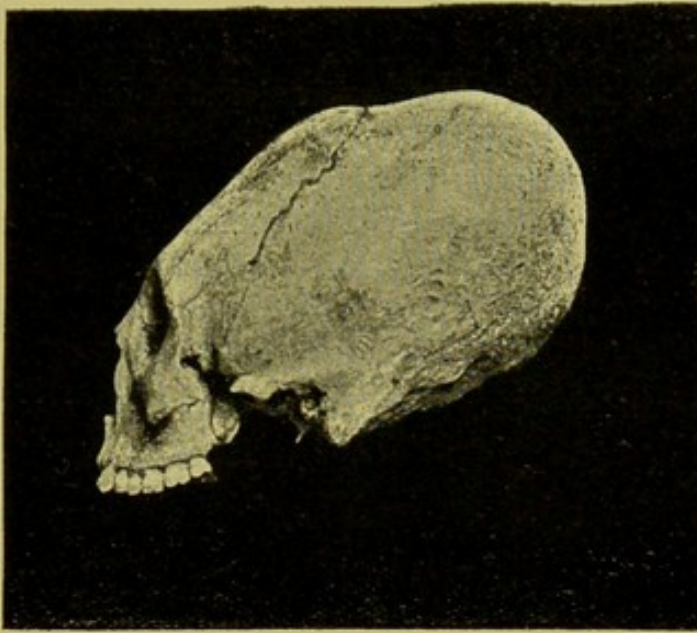


FIG. 37.—PERUVIAN CRANIUM, SHOWING ARTIFICIAL DEFORMITY (PRODUCED BY CONSTRICTING BANDS) OF THE AYMARÀ TYPE.

In the Aymarà tribe, which has left evidences of having reached a high degree of civilization, this deformity was general. It is recognizable in nearly all the crania that have been examined. (From the Anthropological Museum of Florence.)

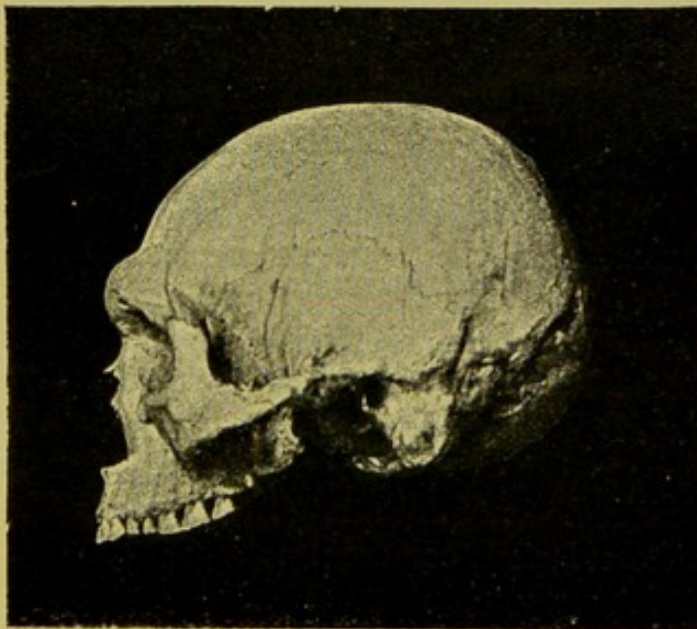


FIG. 38.—CRANIUM OF INFERIOR TYPE, FROM TERRA DEL FUEGO, SHOWING LARGE FRONTAL SINUSES, STRONGLY MARKED SUPERCILIARY RIDGES, PROGNATHISM, AND AN EXTRAORDINARY PROMINENCE OF ALL THE OSSEOUS CRESTS THAT SERVE FOR THE INSERTION OF MUSCLES. (From the Anthropological Museum of Florence.)

that is to say, in the intelligent and law-abiding. But this greater incidence is very slight, both as regards the actual numbers of the anomalies and their degree, in ordinary cases. The more or

less atavistic anomalies are fairly frequent even in the skulls of persons who are mentally normal, and many anomalies that pass for degenerative stigmata are simply the expression of slight irregularities or of pathological processes to which a definite significance cannot be attached. Hence the presence of stigmata even undoubtedly degenerative cannot constitute a sign of the psychical inferiority of any given individual, except in the way of a very remote probability.

As regards the viscera, in the lungs there are to be observed, in addition to the ordinary lesions, pneumonia from changes in the vagus, which is sometimes the immediate cause of death in general paralysis (Bianchi), pneumonia resulting from inspiration of food in demented, idiots, epileptics, and patients in a state of marasmus who do not cough properly. There is also to be

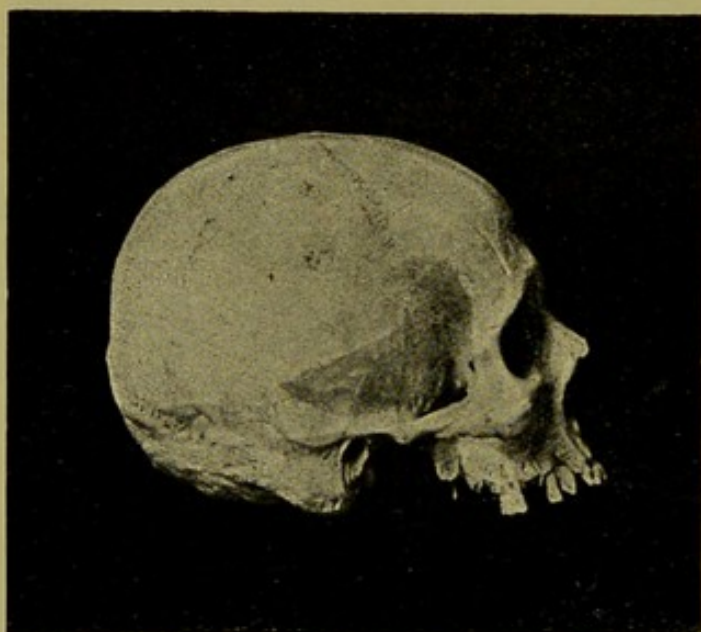


FIG. 39.—EUROPEAN CRANIUM OF GOOD TYPE (FOR COMPARISON WITH FIGS. 36, 37, AND 38).

mentioned occlusion of the air-passages, owing to the entrance of foreign bodies, an accident which is liable to occur on account of the insensibility, and also the voracity, of certain patients (epileptics, paralytics, and idiots). In all katatonic patients who do not react to external stimuli and who habitually stand motionless tuberculosis is common.

The heart degenerates in the conditions of marasmus which constitute the terminal picture of various chronic psychoses. Hypertrophy of the left ventricle occurs from various causes, often intimately connected with the mental disease—as, for example, in chronic epileptics, owing to transitory excess of functional resistance in the blood circulation; in demented, owing to arterio-sclerosis; and in paralytics, owing to renal lesions.

The large vessels present dilatations, arterio-sclerotic patches,

syphilitic changes, diffuse arterio-sclerosis. The small vessels show the same lesions, which are, moreover, identical with those that occur in the brain or in organs that have a close functional relationship with the brain—for example, the kidneys.

Dilatation of the stomach is common in chronic demented and in idiots, on account of their voracity. Gastric catarrh is seen in alcoholics. Atrophy of the mucosa occurs in the chronic gastritis so often associated with melancholia and hypochondria. The intestine very frequently presents catarrhal and atrophic changes in patients suffering from marasmus—that is to say, in the majority of patients who die in asylums. Pellagrous enteritis has special characters, which are deserving of the most careful attention. They consist in atrophy and hyperæmia, with ulceration in the large intestine, and especially in the rectum.

The kidneys are very frequently the seat of various alterations, which in some cases are the direct or indirect cause of the psychosis, whilst in others they are merely a concomitant phenomenon due to a common toxic cause. Few of the insane examined post-mortem fail to show morbid changes in the kidneys.

The liver and the spleen not infrequently present evidences of pathological processes that serve also to explain the psychical disorders. The depressing effect of jaundice is proverbial. Hepatic cirrhosis is often the concomitant of cerebral alcoholism. Enlargement of the spleen may be a sign of an infection that entails acute or chronic disturbance of the intellectual functions.

The sexual organs may show congenital morphological anomalies. Imperfect development occurs as an effect of general dyscrasias—as, for example, in various forms of infantilism, such as the myxœdematous, the dystrophic, and the cerebroplegic. There may also be evidence of acquired diseases, which are rarely without influence upon the origin and course of a psychosis. A gonococcophrenia has been described. Sometimes there are hypertrophies and deformities, the result of psychopathic habits, more especially onanism.

In the muscles there may be observed, in addition to atrophy from general emaciation, localized or diffuse functional atrophies and systemic atrophies of neuropathic origin, which occur chiefly in cases of infantile cerebroplegia and in those of post-apoplectic dementia. In the skin there occur dystrophies and bed-sores. The bones may show congenital deformities and skeletal asymmetries connected with paralyses and muscular atrophies of long-standing, especially those contracted in infancy. They may also exhibit atrophies, dystrophies, abnormal fragility (associated with rarefaction and with diminution in the amount of calcareous salts, which may be so extreme that the slightest traumatism results in fracture), and osteomalacia.

CHAPTER IV

SENSIBILITY

THE GENERAL PHYSIOLOGY OF THE SENSORIAL AND SENSORY PROCESSES

LIVING organisms possess the power of nourishing themselves, of reproducing their like, and of reacting. Reaction implies power of adaptation, momentary or lasting, to the changes, sometimes ephemeral, sometimes permanent, that affect the conditions under which we live. Every reaction is therefore simply a change that is necessary for, or favourable to, the continuation of life. The power of reacting in cellular protoplasm is spoken of as "irritability." In pluricellular organisms the reactions occur through the instrumentality of the nervous system, which conveys information regarding environmental conditions, which can thus be either utilized or resisted by appropriate movements, attractive or repellent in nature, according as the stimuli are of a beneficial or harmful character.

The beginnings of nervous organization are very simple. Most external changes either do not produce any effect in the animal, or they kill it at once. Phenomena of only one order or circumscribed group are capable of acting as stimuli and of provoking a special reaction always the same in character. For the performance of so elementary a function there is no necessity for a complex apparatus of association in which conscious processes occur. It is sufficient that a certain number of cells or neurons, which we may anthropomorphically term "sensory," receptacles of mechanical or chemical force in a state of tension, are distributed throughout the integument, and brought into contact by means of their central terminations with a group of motor neurons. We then have those invariable and unconscious movements of retraction or of prehension, of flight or of approach, that the animal requires for its protection or for its nutrition. As the animal organism becomes more and more complex, it is exposed to an increasing number of different external influences, and consequently it is under the necessity of having recourse to fresh

adaptations—in other words, to reactions which become more and more differentiated and numerous. The organization of the nervous system also becomes more perfect; there is a multiplication of special mechanisms, centralized in ganglionic masses, which act independently of each other and unconsciously. This type of adaptation reaches its highest development in the arthropods.

As the variety of reactions further increases, it becomes necessary, however, that the special mechanisms should cease to be separate and autonomous, and that a single general and complex governing mechanism should be developed. The function of this mechanism is that of dominating external changes, each of which presents a problem with which it has to deal, not by means of stereotyped reactions, but by responses suited to each case, and effected by placing itself in relation with, and, as it were, constituting itself an arbiter among, the special mechanisms that end in the ganglia, and which determine reflex movements.

There is a point beyond which the differentiation of new special mechanisms would become harmful. Considerations of economy of space render impossible the unlimited multiplication of them with the object of meeting growing needs. The result would simply be encumbrance of the organism and interference with the development and functions of non-nervous organs and tissues that are still more necessary to existence.

Considerations of economy of time condemn as inconsistent, not only with continuous and invariable needs, but often also with those that are quite unusual and unexpected, a series of special mechanisms which, in order that each may fulfil its particular office, must be formed expressly, and which can in phylogenesis attain perfection only laboriously and slowly—perhaps when the need that called the mechanism forth has already passed away, or when its incentive no longer exists. [E.]

In order that it may not be overwhelmed by the number and pressing character of the stimuli that affect it, the organism therefore needs to possess or to acquire a centralizing mechanism to which there flow impressions produced by external agents, and from which there can be diffused reactions which are appropriate, but not pre-established, and which are capable of being carried out even in response to unusual combinations of stimuli. In this way provision is made for new emergencies, and methods of attack and defence may be improvised that cannot be included in the programme of biological automatism. Thus, in short, the unforeseen is controlled. In place of an interminable succession of special and established adaptations there is a general

and efficient adaptability to all ordinary conditions, along with power of adaptation to occasional conditions. In place of a stock of fixed relations between given external actions and given nervous reactions there is an arrangement of unlimited relations between a vast and always increasing number of external stimuli and a more and more complex system of nervous reactions that are the fruit of a conscious discrimination and the object of a voluntary determination, corroborated by foreknowledge of the consequences.

The functional perfection of the nervous system, inasmuch as it consolidates the reactive adaptations of an extremely complex organ, capable of freeing itself from the tyranny of obligatory reactions, leads of necessity to intelligence, which is indeed reached by way of the sensibility. This higher organization of the nervous system, which manifests itself in the fullest degree in man, does not exclude the utility of reflex actions. Hence the coexistence in a highly organized nervous system of inferior centres for reflex action, and of superior centres for conscious discrimination and volition, constituting an automatism flourishing side by side with intelligence.

In order that the nervous system may be capable of responding in different ways as occasion requires, it is essential that external phenomena determining its reactions should be perceived in different ways; that every phenomenon should attract attention perhaps by some distinctive character, and should be exempt from the danger of being confounded with others or of passing unnoticed; that, in short, the objective differences, sometimes very minute, upon which the individuality of the various phenomena depends should be translated into subjective differences.

Therefore it is necessary that the phenomena should be broken up into their individual elements, and that the nervous system, by subjecting them to this analytic process, should succeed in isolating their distinctive element or their differential features. Without this power it could not distinguish the incessant modifications that the external world presents, either at successive moments, or in its various parts at the same moment.

The physiological action of external forces is favoured by certain structural features of the nervous system in the sensory organs and at the surface of the body, which is exposed to the influence of external changes. Each of these structures, very different in character, is capable in an extraordinary degree of being stimulated by a given form of energy, strictly limited in nature. Each reacts delicately to the smallest differences that can occur in this restricted class of phenomena, but remains silent and inert to all others. For light there are the rods and

cones of the retina, exquisitely sensitive to the chemical influence of the various colours, and distributed over a surface exposed like a photographic plate. For sound there are the ciliated cells of Corti, ready to vibrate in unison with the various notes, and perhaps graduated in their dimensions like certain musical instruments. For touch there are innumerable more simple terminations, fibrillar and not cellular, almost capable of distinguishing quantitative differences of pressure.

The physiological processes of analysis that take place in the peripheral nervous organs maintain their individuality by being transmitted by separate paths to the central organ, which, by perceiving the differences between the various phenomena, is able to distinguish them and to compare them, and to direct its own motor or inhibitory activity as is required by the complex of information that it continually receives from all parts in the most varied forms.

Where the fibres are specially dense and interwoven, the separate transmission of the stimuli is insured, in the more highly developed organisms, by an isolating substance, the myeline, which ensheaths the conducting axis-cylinder, like a coil of silk around an electrical wire. In vertebrates there further makes its appearance among the nervous elements a new complementary tissue, the neuroglia, which traces out the paths for the nerve fibres, which even from earliest life are required to develop in determined directions and for a precise purpose. This tissue envelops the nerve cells as if for the purpose of protecting them from injury, and especially from the risk of dissipation of their energy. Around these elements it forms delicate ramifications, which are recognizable on account of the peculiar arrangement of its fibres and the special minuteness of its corpuscles.

Thus intelligence has its origin and is gradually brought to perfection in a special organ, having as its indispensable foundation sensibility, and as its practical objective voluntary action. In order, however, that this practical objective may be effectively and usefully attained—that is to say, in accord with the interests of the individual and of the species—it is necessary that there should be a systematic correspondence between the internal images and the external realities—that is to say, between what takes place within us and what exists outside us. If correspondence between the subjective world and the objective world were entirely wanting, all the long series of visions and of actions which from birth to death constitute the cycle of a mental life would be reduced to a dream presenting no analogy to anything else in the universe. Man himself, like a pilgrim without a destination, would pass by the real as if asleep, carrying with

him a useless collection of pure illusions. If the correspondence did exist, but without truthful and constant characters, the psychical processes would form a guide so false, a weapon so feeble, in the battle of life that it would become a mere stumbling-block, a source of weakness, a perverted function, the appearance of which in phylogenesis and in ontogenesis would be biologically without reason, and would lead to a fatal unfitness for existence.

The great utility of the correspondence between external phenomena and internal phenomena has allowed of the sensorial functions becoming more and more highly differentiated, and of the intellectual functions becoming more and more complex, through elaboration of the material furnished by the senses. A slight aberration from this law of correspondence, even within the small limits of simple sensibility, is sufficient, not uncommonly, to produce that grave biological fault that constitutes insanity.

The concrete images of objects and external phenomena are a product of a crowd of elementary perceptions and of a knowledge of their reciprocal relations. By sensation is meant the subjectively indecomposable process by which the nervous system takes cognizance of the most simple stimulus of a particular kind. By perception is meant the process by which concomitant sensations are integrated with each other and with memories of other similar or dissimilar sensations. It requires a certain degree of attention, and allows of the location in time and space of images of occurrences and objects, of the precise objectivation of them in the external world, and of their utilization as materials of consciousness.

A sensation has only a theoretical existence, for it never occurs alone. On account of the changeability of the environment, the multiplicity of our organs of sense, and the irresistible nature of the associations that are immediately formed between the various simultaneous and successive sensations of the same kind or of different kinds, the elementary units of sensation are, to all intents and purposes, also perceptions, and we cannot imagine sensations in any other form than that of perceptions even by reducing memories of them to the simplest possible terms, or thinking of them abstractly (without reproducing them) as fractions of perceptive phenomena.

Among the various sensorial and perceptive images, distinctions are made of quality, of quantity, of coexistence, and of succession. Distinctions with regard to quantity and quality concern more especially the simple sensations; distinctions of coexistence and succession apply widely also to perceptions. In the various forms of sensation the particular kinds of association have a preponderating part. Thus visual and tactile images are

co-ordinated in their elements and with surrounding images by relations of coexistence; auditory, gustatory, and olfactory images are determined in their elements and in their relation to other images by order of succession. Thus there are drawn and fixed the lines of comparison which we employ for the formation of a practical conception of time and space. This empirical conception is indispensable for the orientation of the various impressions of our senses, and we may compare it to a scaffolding upon which we arrange and support our perceptions and their memories.

Without this empirical conception of time and space sensorial and representational images would fall into an empty void, and it would be impossible to make use of them as materials of consciousness. The perceptions would be reduced to the office of simple and coarse stimuli, like hunger and pain, and psychical life would not go beyond its rudimentary form, which, in fact, is sensibility.

THE PATHOLOGY OF SENSIBILITY

Between the disorders of sensibility and those of intelligence there are relations of dependence in two directions; but often there are to be observed relations of simple concomitance, owing to the fact that a common cause—for example, a diffuse disease of the encephalon, of the brain and spinal cord, or of the whole organism—involves both functions at the same time. It is not uncommon to have mental alterations, with integrity of all the sensory functions, as, for example, in melancholics, paranoiacs, and imbeciles. Instances are also to be observed of severe sensory lesions without any disturbance of intelligence. Blindness and deafness, if acquired, or even if congenital, provided they are compensated for by education of the other senses, do not influence the intellectual functions. The paræsthesias of tabetics, the noises in the ears of anæmic subjects and of those suffering from ear disease, and the analgesias in cases of syringomyelia, do not take origin in the intelligence, and as a rule they do not disturb it. Anosmia and ageusia may be due to peripheral causes, such as coryza, and may be entirely insignificant mentally.

Apart from the exceptions that occur in individual cases, there is no form of sensibility, from cœnesthesis to vision and hearing, that does not deserve the most earnest attention on the part of the alienist.

Cœnesthesis.—The united and incessant exercise of the sensory functions is the perennial source, not only of all special informa-

tion that is supplied to us regarding the external world and our body, but also of a general and indistinct, but often very active, consciousness that enables us from moment to moment to recognize the functional intactness of the body in all its parts, including those which, owing to being isolated and in a normal condition, never make themselves felt. Normal cœnesthesis imparts a sense of well-being which, though slight, is so profound that it defies the buffetings of fortune, and asserts itself even when there is mental distress, which it helps to assuage. An altered cœnesthesis, even if dependent upon disturbances that are to a very small extent appreciable by the senses, produces a depression from which even persons who are normal and in good health are not exempt. The occurrence of moderate variations in cœnesthesis is, indeed, a common fact of daily physiological life. The customary morning motion, a warm bath, the sudden dispersal of atmospheric dampness, the movement of a railway-train, a condition of perfect equilibrium of the sexual functions, etc., modify our cœnesthesis and state of mind, increasing or diminishing the energy of our actions. After an illness, the state of convalescence yields periods of *bien-être* during which acts, ordinarily colourless, are rendered pleasurable, as, for example, micturition, breathing, and walking.

In persons suffering from mental disease the relation between the cœnesthesis and the true condition of the organism is often altered, either because the same morbid process affects both the psychical centres and the visceral sources of sensation, or because a local irritation of the somæsthetic centres awakens vague but strong sensations of ill-being or of well-being, that appear to proceed from the viscera, and are erroneously referred to them. Progressive paralysis never spares the somæsthetic centres, and the gratuitous euphoria manifested by those who suffer from it is one of the most trustworthy signs in the diagnosis of the disease. The few paralytics who do not present euphoria rarely escape an opposite mental condition—a tormenting, ceaseless, and almost indescribable sense of ill-being, which sometimes renders them irritable and depressed for weeks and months without a minute of relief, so that they are driven almost to a state of despair. In other instances the general dysæsthesia is less intense and less direct, simulating hypochondriacal delirium.

Euphoria is also frequently exhibited by maniacal patients, and likewise sometimes by senile dements, from causes analogous to those that produce the condition in general paralytics. In like manner, in senile involution there are periods or phases of severe depression, which depend upon cœnesthetic alterations of central origin, and which aggravate and tend to confirm the

melancholia of old people. In neurasthenics an habitual hyper-æsthesia of the cœnesthesis determines a state of irritable depression which is perhaps the most characteristic symptom of this disorder. In cases of amentia in a state of acute confusion the cœnesthesis is variable, but from time to time there may be observed a state of acute distress, which results from a sense of general, and more especially mental, deficiency. The patient realizes that he does not perceive things correctly, or that he does so with great difficulty, and, notwithstanding the difficulty he experiences in clearly expressing his ideas, he describes in forcible language his sense of mental obstruction and almost of intellectual paralysis, although he is unable to understand his condition fully. Cases of amentia attonita are, on the other hand, almost always affected by analgesia of the whole body.

An important expression of the cœnesthesis is that form of sensibility which is generally referred to the muscular system, or to a large part of it. The sense of fatigue is entirely absent in maniacal patients, who consequently multiply their commonly useless activities. They sit up late, revel, are noisy during the night, and do not realize that they are foolishly wasting their energies and their health. An exaggeration of the sense of fatigue, more especially the muscular, is, on the other hand, the daily burden of the neurasthenic, who is consequently led to take things easy and to indulge in repose. The chronic discontent of such patients, however, makes them so pessimistic and so fearful of the future that they picture to themselves in exaggerated fashion the financial and moral evils of inactivity, and end by voluntarily condemning themselves to overwork, which serves only to aggravate their sense of ill-being.

In the disorders of the cœnesthesis that characterize states of mental confusion other disorders of the muscular sense manifest themselves. Aments, paralytics, and alcoholics experience a sense of lightness which sometimes leads them to give way to absurd delusions, such as that of being able to fly, of being transformed into cork or gas, of having only a spiritual existence, etc. In other instances there may be lacunæ in the sense of bodily personality. Thus patients suffering from dementia præcox and from general paralysis may believe that they have no legs, head, heart, or stomach; or they have strange systemic alterations of cœnesthesis—their bowels are blocked, their chest is as fragile as glass, their body is rotten, their stature is that of a dwarf or of a giant, their arms are immense, their appetite seems to be or is insatiable, their sexual power seems to be or is extraordinary, the muscular force appears to be (but never is) trebled.

Metamorphoses of cœnesthesis, succeeding each other with a certain degree of regularity, accompany, and perhaps determine, those changes in the state of feeling and in conduct that constitute circular insanity. Sudden and complete change in the mode of feeling may of itself destroy the sense of personal continuity, and furnish material for delusions of altered personality or of doubling in two alternating personalities. Sometimes the change is so general and profound that even the memory follows in part the fate of the cœnesthesis. In certain famous cases of hysteria there have been observed a first and a second state of the cœnesthesis, of the character and of the conduct, which regularly alternated throughout life, and which displayed a perfect antithesis. The memories of the first states remained in suspension during the time that the second states were experienced, and *vice versa*. Indeed, all forms of psychical activity underwent a change in character, as if two minds were disputing the dominion in a single body.

Tactile Sensibility, Thermo-Sensibility, Sensibility to Pain.—Alcoholism is a frequent cause of neuritis, which manifests itself in fairly extensive anæsthesias and analgesias—for example, of the hand, forearm, and face—generally of multiple character, but asymmetrical. The occurrence of such disturbances is strong evidence of the alcoholic origin of the mental disorders. Among degenerates there is frequently a degree of insensibility to touch and to pain, which is usually measured by means of the induced current (electrical algometry). A stronger current than usual is required to make such a person conscious of its presence; a still stronger current is necessary to cause pain or inability to endure the contact. This difference does not depend upon increase of resistance, but upon diminution of sensibility—that is to say, upon a functional inferiority. A similar inferiority is normally observable in primitive people and in the working classes of civilized communities. It is to be explained as dependent in part upon the condition of the skin, which is exposed to friction and to the injuries that often attend rough and continuous work, and in part upon want of exercise of function, in consequence of which the delicacy of the tactile sense becomes impaired.

According to Lombroso, women, notwithstanding the original and acquired delicacy of their skin, feel bodily pain less acutely than men do. In this alleged fact certain writers of anti-feminine views detect a mark of woman's anthropological inferiority, which they extend also into the sphere of intellectual manifestations. In the opinion of these persons the scientific and artistic genius, the originality and inventiveness of which women have in exceptional instances given proof, are male characteristics. When they

accidentally display themselves in a female brain, it is the result of an aberration of development, analogous to that which produces gynæcomastia in the male. Apart from these exceptional cases, woman, they say, is less intelligent and less sensitive than man.

Anæsthesias and hyperæsthesias constitute one of the most characteristic of the so-called stigmata of hysteria. They form the hysterical zones. These consist of points or areas that are insensible or hypersensitive to pain. As a rule, they are not more than one in number, and are situated in the region of the bregma, breasts, groin, or in small areas in other parts of the abdomen, thorax, limbs, or face. They are also frequently exhibited, along with paræsthesias, by constitutional neurasthenics. Hyperæsthesias to pain are distinct from topalgias, in which the areas are not hypersensitive, but simply painful. These hysterical zones have always a central origin. They are in effect the centrifugal projection of a more or less conscious representation, or of a fear, which, owing to the anomalies of innervation that are associated with hysteria, has the power of manifesting itself externally, or of contracting unusual and pernicious associations, impossible in normal persons even by effort of the will. In some instances circumscribed anæsthesias and hyperæsthesias are nothing more than the product of an involuntary suggestion on the part of a zealous but untactful medical attendant.

Maniacs and aments show remarkable insensibility to cold, in consequence of which they will sometimes divest themselves of their clothing in mid-winter, will walk out in their shirt, or keep the windows open in spite of inclemency of weather. The cause of such anæsthesia is, however, purely emotional. In the agitation of acute mental disorder external stimuli are neglected, like the pain of the blows and wounds received in the excitement of a quarrel or of a battle. Maniacs are always busy. Aments sail on fantastic seas and take no heed of atmospheric changes, even when they are compelled to remain inactive within the walls of an asylum room. They are not, however, exempt from the objective effects of cold, which, indeed, are rendered more serious by their imprudence.

In melancholics the persistent concentration upon one delusional idea, or upon an evil design, paralyzes the sensibility to pain, and also the visceral sensibility, thus rendering very easy certain horrible methods of suicide, mutilation of the limbs, tearing out of the hair, etc. In dements, paralytics, and idiots coughing is sometimes absent, because even the simple form of sensibility required by this reflex is deficient. It is perhaps for an analogous reason that many of these patients do not attend properly to their bodily needs.

The Genetic Sense.—Although sometimes excited in senile dementers, paralytics, idiots, melancholics, and epileptics, the genetic sense is much more often dulled and almost absent, not only in these classes of the insane, but also in all others. All secondary dementers, cases of dementia præcox in the terminal stage, the majority of idiots, imbeciles, paranoiacs, hysterical subjects, neurasthenics, and alcoholics, are in this respect fairly or entirely abstinent.

In asylums the occurrence of acts of indecency is rare, and supervision in regard to this matter is extremely easy. Erotism displays itself openly in obscene gestures or by onanism in patients who are much excited, confused, or demented, as in cases of very acute mania, of amentia, dementia præcox in its first stages, and in epileptics when a fit is about to occur. In epileptics, erotic transports may form an equivalent of the convulsive seizure, and in such instances they sometimes assume monstrous and criminal forms, consciousness of the action being absent or dulled. Hysterical subjects and patients in a condition of hypomania form the only exception among the insane. By outward expressions, speech, or action, they exhibit an erotism which is sometimes latent and restrained by modesty, sometimes a little displayed by coquetry, but almost always kept within æsthetic limits, if not within ethical ones.

Taste and Smell.—Taste and smell are sometimes impaired in melancholics, who bemoan the fact as an irreparable loss, which they imagine betokens the beginning of bodily dissolution. Among idiots and dementers there occur persons who have perverted taste and smell, earth-eaters, collectors of filth, connoisseurs capable of eating almost anything with voracity and of enduring any stench. In hysterical patients hyperosmia is not uncommon; there may be a systematized intolerance of certain odours or of certain tastes, constituting an idiosyncrasy that sometimes has its origin in auto-suggestion. Similar phenomena occur in paralytics, but they are transient in character, and dependent upon circumscribed cortical lesions. Local irritations of the cerebral cortex may give rise to olfactory and gustatory sensations that have no corresponding external object, and which may attain to the vividness of hallucinations of painful intensity. I have seen paralytics subject to attacks of sneezing, as if tormented by disgusting imaginary odours, which probably depended upon irritation of the fifth nerve.

Hearing and Sight.—Apart from organized hallucinations, hearing and sight may in the insane present a series of irregularities that are not devoid of importance. In neurasthenics and paralytics there is sometimes hyperacusis. Jules de Goncourt, in some doleful verses, cries for a little silence, so much had he suffered from every trivial noise. Hysterical patients are subject to hyperacusis and

to transitory deafness ; there is, indeed, almost no neuropathic symptom that is foreign to hysteria. Noises in the ears, in the form of humming, whistling, crackling, etc., are common in anæmic and neurasthenic subjects, and also in melancholics, but they are without psychopathic significance so long as they remain within the limits of an elementary hallucination and of a peripheral disturbance.

In the sphere of vision there is to be noted the retinal hypo-æsthesia of some degenerates, imbeciles, and criminals, who are able to bear intense light, and even to fix their gaze upon the sun. Dyschromatopsias and photopsias occur especially in alcoholics. Hemianopsia, besides having its origin in focal lesions, may occur as a transitory condition from functional and unilateral disturbances of the visual cortex. In hysterical patients actual blindness may occur, but a slight restriction of the field of vision is more common.

Congenital blindness, which, however, is somewhat rare, does not affect the development of the intelligence so much as congenital deafness, which leads to deaf-mutism. Deaf-mutism, if not compensated for by a long and patient education, limits the mental horizon, and often forms a favourable soil for the development of insanity ; it is not uncommon to see deaf-mutes who are at the same time more or less imbecile.

Hallucinations and Illusions.—The abnormalities just described are to be regarded as errors of proportion, or as lacunæ of sensibility ; they render the correspondence of the mind with its environment imperfect. There are, however, other abnormalities which tend directly to falsify this correspondence, and which, therefore, have naturally much greater importance in psychiatry. In the former case, the impressions that arrive from without are merely incomplete or exaggerated, and the harm that they cause to the intelligence is limited by the quantity and extent of its acquirements. In the latter case, on the other hand, the information received is false in regard to its quality, and results in the production of hallucinations and illusions, and the intelligence becomes, not merely impaired, but, still worse, deceived, because there is an alteration in that fine power of appreciation of external conditions that is so essential for the quick and correct adaptation of oneself to changes, whether in the great issues or the daily occurrences of life.

By an hallucination is meant the occurrence of internal images, which, on account of their remarkable vividness, are referred externally as if they had come from without, and which are mistaken for an objective reality. By illusion is meant the involuntary process by which imaginary attributes are added to an

existing object, under the conviction that they are real, or, at least, with the feeling that they may be so. Momentary illusions may occur in normal persons as the result of fear or of expectant attention, but they are quickly rectified. Hallucinations of all kinds, mingled with some incoherent ideas, constitute the material of dreams, but in this case they have no permanent influence, and are quickly forgotten after waking. On the other hand, hallucinations and delusions occurring in the course of mental diseases always constitute a highly important symptom.

Among hallucinations it is necessary to distinguish the elementary and the organized. Elementary hallucinations do not constitute a psychopathic phenomenon, but are the normal reaction to an irregular stimulus affecting the nerve; they include, for example, photopsias, noises in the ears, paræsthesias, and sensations of taste and smell dependent upon local irritation. In such instances—that is to say, when the nerve is irritated by a pathogenic agent—the hallucinatory reaction is a natural phenomenon; not its occurrence, but its non-occurrence, would constitute an anomaly. Organized hallucinations are, on the other hand, cerebral creations that require the assistance, which may be simply involuntary or entirely unconscious, of the intelligence; they would be impossible but for this sort of treachery on the part of the mental activity.

It is chiefly in the sphere of the higher senses, sight and hearing, that organized or true hallucinations occur. The lower senses rather merely furnish material for illusions, for in the subjective phantasms that they are able to create (with the appearance of real sensations) it is difficult to eliminate the possible action of irritative and hidden causes. The exciting causes of sensations of touch, smell, and taste often escape detection, for the reason that they are always more obscure, questionable, and individual than those that affect sight and hearing. Visual and auditory sensations are, on the other hand, occasioned by stimuli the existence and nature of which it would be absurd to have any doubt about; acoustic stimuli are often associated in their action with visual stimuli; visual stimuli, if the objects that occasion them are within reach, may be capable of confirmation by touch. Each one may be perceived in the same form by anybody who comes within range of them, and the victim of hallucination or illusion who sees or hears what we do not see or hear is at once thereby proved to be such.

Elementary hallucinations are common in the initial stages or in certain periodic recurrences of not a few mental diseases, and with the aggravation of the mental disorder they may take an organized, complicated, and definite form, which alters their

character, and marks them as distinctly psychopathic phenomena. Thus, the photopsias of alcoholics become images of insects, goblins, Lilliputian warriors, or of the other small, numerous, moving objects that are characteristic of the visions of persons suffering from delirium tremens. The illusion that forms the epileptic aura may be converted into a complex and systematic hallucination, which recurs at the beginning of every fit in the form of visions, of blood-stained objects, red flags, skulls, or fights. The humming noises that are so frequent in cases of melancholia and of neurasthenia may be converted into the definite sounds of a human voice, or into verbal forms that alter the morbid significance of the hallucination.

Formed or organized hallucinations have various degrees; they may be devoid of significance, verbal or graphic, and indeterminate; they may be threatening or flattering, with precise and complex significance; they may be associated with similar hallucinations of other senses. Indifferent visions of unknown objects and persons occur at the beginning of paranoia, in juvenile dementia, and in amentia; the patients hear a whisper of disconnected words, see shadows, flowers, or faces depicted upon the walls or upon the ceiling. In paranoiacs and in cases of dementia præcox a common hallucination is that of being called by name, or of hearing some particular word, which acquires a mysterious and weighty significance. Further complication of the hallucinatory process gives rise to persistent visions, to speaking figures, to sustained dialogues, in which the patient believes he acts as listener and respondent, and to supposed repetition of thought.

Among the hallucinations connected with speech, psychomotor verbal hallucinations (Séglas, Tamburini) occupy a distinct position. They are hallucinations of the muscular sense, of which they represent a special form. The patients do not hear the sound of their own voice, but they believe they speak because in the motor organs of speech they experience the sensation of the phonetic movements. Hallucinations of movement are also manifested in the muscles of the limbs; the patient believes that he is moving an arm, or walking, or flying, or, at least, he has the impression that he is doing so. This phenomenon is very rare, presenting itself in chronic delusional cases, apart from which it has never been observed.

Particular forms of sensibility are constantly exempt from hallucination in certain forms of mental disease, and affected by preference in certain others. This fact, indeed, serves as a differential criterion for diagnosis. Thus, visual hallucinations are frequent in alcoholism, very rare, and perhaps impossible, in

progressive paralysis. Hysterical patients, who, however, only rarely suffer from hallucinations, are affected rather by those of vision than by those of hearing. The occurrence of hallucinations in general, and those of vision in particular, is rare in paranoiacs, but frequent in the paranoid delirium of dementia præcox. In true paranoia hallucinations are either absent, or, if they do occur, tend to affect hearing. In amentia hallucinations constitute a characteristic symptom, and more or less closely resemble those of alcoholism; according to the nature of the case, they are terrifying, annoying, indifferent, or even amusing, and the patients therefore conduct themselves in various ways, running madly about, becoming angry, appearing absorbed in quiet contemplation, or laughing heartily. It is doubtful if normal persons can have hallucinations, and if we ought to regard as hallucinations the illusions of emotional origin that some people experience under altogether extraordinary circumstances, and the vivid and precise representations that they are able to evoke by an effort of will, whilst perfectly aware of their fantastic origin.

Mechanism of Hallucinations.—According to Tamburini, hallucinations are dependent upon an irritable state of the psychosensory centres, analogous to that which in the psychomotor centres produces epilepsy. The disturbance of the sensorial centres arouses the images that have been deposited there in an unconscious state in simple or complex forms, according to the extent of the stimulation, and in a manner that the more closely resembles reality the more intense the stimulus. In short, whatever may be the origin of the morbid action, the seat of the hallucinatory phenomenon is always the same—namely, that part of the cerebral cortex that perceives the actual sensations, and is able, independently of where the stimulus comes from, to reproduce them more or less vividly in mnemonic form.

This takes place in three ways—namely, by anomalous excitation of the peripheral sensory apparatus and transmission of the stimulus along a centripetal nerve, or in consequence of a delusional idea that affects the sensorial centre, or by a local irritation that acts upon this directly.

With lucid synthesis, this theory applies to the field of pathology the data of physiology as they stood until quite recently. Now, however, that new, although still controversial, data have reopened the physiological question, it is not unfitting to inquire if a new hypothesis is capable of more fully explaining the facts and of correcting some defects from which the theory just mentioned cannot free itself. In my opinion, whilst in accordance with the classical data it would be impossible to

imagine an origin of hallucinations different from that formulated by Tamburini, the physiological inductions with regard to the existence of representational centres, distinct from those of sensation, as described in the first chapter, form a sound basis for a theory of a more harmonious and more complete nature.

The hypothesis that arises from the strictly experimental data leaves the following questions unsolved :

1. We can very well understand how a peripheral irritation may produce elementary hallucinations, such as photopsias, noises in the ears, and paræsthesias, but how can we explain in this way the occurrence of figured and significant hallucinations of forms, persons, words, and discourses ?

2. How can we believe that direct stimuli applied to the visual centres are capable of producing complete images when the visual centre of one hemisphere can give only a half image ? It is evident that in order to obtain this effect—that is to say, to produce the complete image of an object that is not present—it would be necessary that two simultaneous stimuli should impinge upon two complementary areas of the visual centres, and that they should be so intelligent as to project themselves upon the image of the object, one half of which is in the right hemisphere and the other half in the left, as in normal vision, and as must occur also in the mnemonic representation of visual images if the representation and the sensation have their seat in the same cortical centres. One can understand that this occurs in the case of an object that is present, or when there is a re-evocation of its mnemonic impressions, but not by the fortuitous falling of a pathological and incongruous double stimulus upon the visual centres.

3. If a delusional idea can succeed in awakening a corresponding hallucination in the sensorial centres, why should a normal idea, which can certainly attain to an intensity that is not inferior, be incapable of giving rise to a voluntary or involuntary hallucination ?

The pathogenesis of hallucinations becomes much clearer and more satisfactory if we recognize that, as indicated in the first chapter, the images of things are perceived in one place and thought of in another. What are hallucinations ? With the exception of photopsias, noises in the ears and paræsthesias, which can be explained as dependent upon local irritation of peripheral nerves, and regarding the origin of which there is no difference of opinion, hallucinations can resemble representations only because they are produced without the intervention of any peripheral stimulus ; but on account of the character they assume in consciousness, they approach much more closely to sensations.

This resemblance is so surprising that it leads us into error, and makes us believe phenomena to be real, of which the hallucinatory process presents only a phantom. Nevertheless, hallucinations are something entirely different, not only from representations, but also from sensations.

The most famous calculators, chess-players, and portrait painters, who are remarkable for the vividness of their representations, and who are therefore able to make mental calculations, play certain games, or to draw from memory, as also musicians who are able to recall the instrumentation of an entire orchestra, are not in the least subject to hallucinations. They do not require to make any particular effort to perceive the enormous difference that exists between the images represented to their minds and the real images, nor do they ever commit an error. On the other hand, the person who experiences an hallucination, even if the hallucinatory image is weak, loses the idea of its internal origin, and has the conviction—or, at least, the feeling—that it has a counterpart in the environment. This especially occurs in dreams, when colourless and formless phantasms appear as real things and persons. In short, an hallucination is always an abnormal occurrence; and whilst its antagonism to sensation arises from the mechanism of origin, no less marked is the contrast between hallucinations and representations as regards their subjective aspects. To say that sensation and representation occur in the same centre is to declare that hallucinations are precluded from the possibility of being opposed to representations, except as regards intensity. Now, if the difference between sensation and representation reduces itself to a question of degree, there should be transitional stages between the two phenomena, and their antagonism ought not to be so decisive. There should be indeterminate cases of hallucinatory doubt, in which the intensity of the image, though it exceeds that of ordinary representation, does not reach that of complete hallucination; and the difficulty in distinguishing between the real and the fantastic should occur frequently, even in well-balanced persons, whenever they have a vivid representation, or one that is a little more precise than usual.

For some years there has, in regard to this matter, been a tendency to believe that normal sensation does not leave any trace of itself in the two sensorial centres, but that, prolonging its course through homolateral and contralateral paths, it may become transformed and registered as a symbol in a transcortical centre of representation. From this centre it can be re-evoked as an idea, or as a fragment of an idea; but it can never be revived as a sensation, except by the repetition of the external stimulus.

I repeat what I said in the first chapter : " The sensorial centres of vision are a looking-glass, those of hearing a resonator, those of cutaneous sensibility an instrument for instantaneous signaling, and nothing more. The mnemonic representations of external phenomena and of our own bodies are built up in other centres (unilateral ?) in the form of symbols. These are direct symbols. From the centres of representation the direct symbols can pass to higher centres, in order to form more general and more abstract conceptions. These are symbols of symbols."

The sensorial centres are of themselves unable to give any complete images. They can only reflect them, but they reflect them infallibly, either with the assistance of external objects or with that of the imagination. In normal conditions, however, they reflect only the external objects that actually present themselves. To reflect also the mental images of objects reawakened within us, they must be in pathological conditions, or there must at least be unusual conditions, such as those of sleep.

It is sufficient to suppose, in order to give a satisfactory explanation of all varieties of hallucination, that under such conditions the homolateral and contralateral paths that pass from the centres of sensation to the centre of representation acquire the power, which they never possess in physiological conditions, of allowing impulses to travel in the reverse direction.

We may consider that an hallucination takes origin as an idea or symbol, or as a more or less conscious fragment of an idea in the associative area, but that, instead of forming associations with other ideas, or of projecting itself externally in movement, it flows back, either along the same homolateral and contralateral fibres by which it came, or in some other way yet to be determined, to the sensorial centres from which it proceeded when it was of the nature of a sensation (Fig. 40). Thus it becomes what it originally was—namely, a sensation ; but it is a sensation of a pathological character on account of its unusual origin.

This power of retrograde expansion, which inverts the habitual relation between the sensorial centres and the centre of representation, is accordingly the special morbid character that determines the individuality of hallucination, both as a psychological phenomenon and as a clinical symptom. The sensorial centres are importers in relation to external objects, but exporters in relation to the internal domain of transcortical thought. If, owing to a pathological inversion of the habitual relations, they import from within, it is natural that they should react in the only manner in which it is possible for them to react—namely, by the production of sensorial images.

That the return journey should be accomplished by the same path as the outward journey is certainly contrary to the law of dynamic polarization. According to this law, the nervous waves can pass only in one way—namely, in a cellulifugal direction.

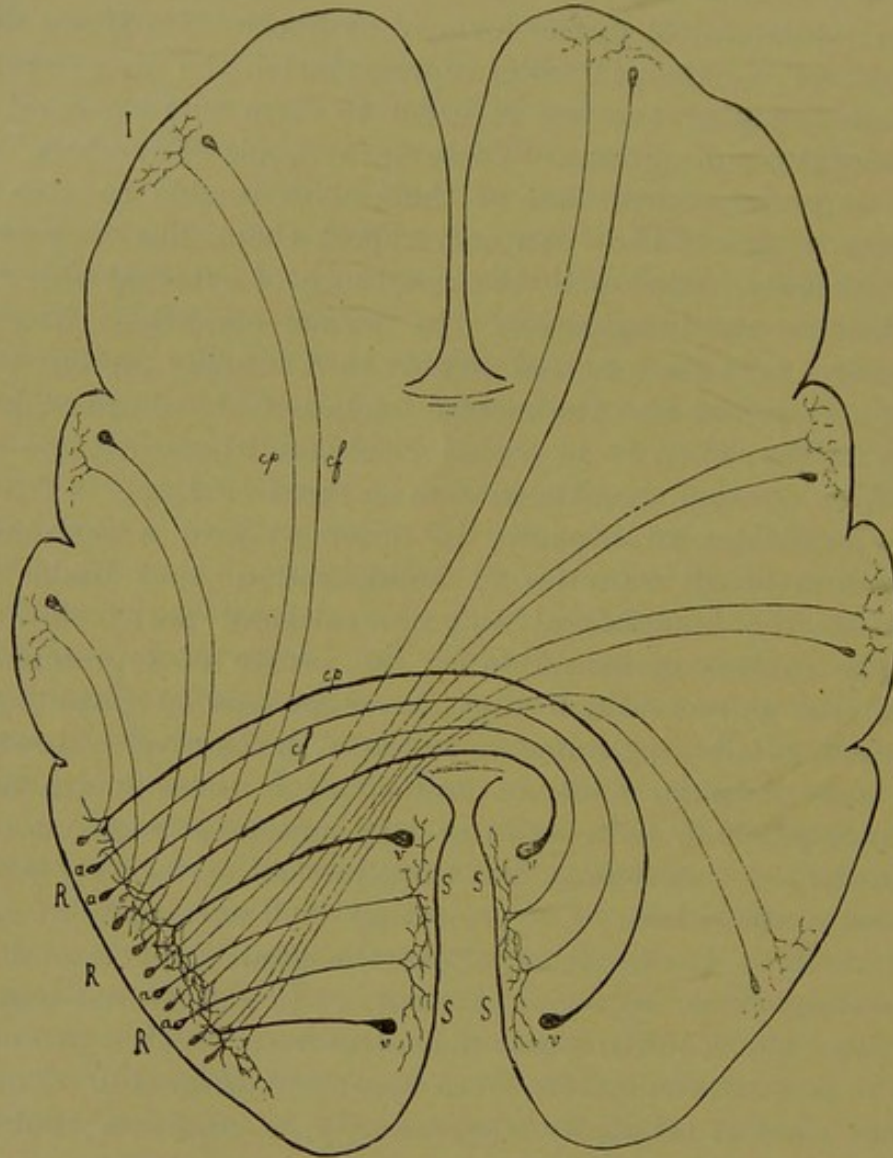


FIG. 40.—SCHEME OF THE RELATIONS BETWEEN THE SENSORIAL (VISUAL) CENTRES AND THE CENTRES OF REPRESENTATION.

SS, Visual centres; *RR*, centre of representation (unilateral ?) for vision; *I*, higher centre of ideation; *vvvv*, homolateral and contralateral neurons, which convey the actual images of sight to the transcortical centre of representation; *aaaa*, retrograde neurons which normally convey from the centre of representation to the sensorial centres excitatory and inhibitory stimuli (attention ?), and which by a pathological action arouse *hallucinatory images*; *cp*, centripetal fibres; *cf*, centrifugal or retrograde fibres. The lightly-shaded neurons indicate the reciprocal connections between the visual centre of representation and the other centres of representation, or of ideation.

The homolateral and contralateral fibres that convey the visual images to the centres of representation arise from cells in the sensorial centres, and their terminal arborizations end in the centres of representation. How can the functional current pass in an opposite direction? That there is an inversion of the

current in those fibres is very improbable, but it is nevertheless not impossible. We know, for example, that the fibres of the peripheral nerves, although, as a rule, they conduct in only one direction, are capable of transmitting impulses in an opposite direction under certain experimental conditions. In *malapterurus electricus* the whole of the electric organ is innervated by one gigantic fibre. It is obvious that the various divisions of this fibre must, in physiological conditions, conduct only in a centrifugal direction. Nevertheless, if one of the divisions of the electric organ is separated from the rest, but left attached to the nerve trunk, stimulation of this at any single point results in complete discharge of the electric organ. In this experiment the isolated branch behaves exactly like a sensory nerve: there is reversal of the normal direction of conduction, with transmission of the stimulus, not to the electrical organ from which the branch is now separated, but to the principal trunk of the nerve, which receives it and sends it on to its destination. The result is certainly that of a laboratory experiment, and therefore it is, perhaps, an exceptional phenomenon, but why should not a pathological cause also be able to determine an effect, likewise exceptional, but quite similar, in the sphere of the central fibres?

Moreover, it is not essential that the functional process, in order to pass back to the sensory centres, should retrace its steps along the centripetal paths. In the sensorial centres, in addition to the homolateral and contralateral bundles that ascend in a transcortical direction, there are terminal fibres that descend from the higher centres and perform a centrifugal function. It is not easy to imagine what may be the nature of this function, which no physiological or psychological induction would have ventured to attribute to a special system of fibres, although the existence of these is now established, beyond a shadow of doubt, by anatomical research. Flechsig considers the fibres in question to be moderators of sensations. Ramon y Cajal attributes to them a tonic or dynamogenic action in relation to the process of attention. In my opinion, these two views are quite compatible, and, indeed, serve to complete each other, if they are taken together and looked at from the same point of view—namely, that of attention. The process of attention requires the assistance of accelerating and inhibitory influences at the same moment. We can conceive of a reflux of the nervous wave taking place by way of these centrifugal fibres without being obliged to imagine that they deviate greatly from the performance of their own habitual functions. An extraordinary irritation, which places the retrograde fibres in pathological conditions and renders them easily

accessible to weaker stimuli than usual, is thus able to open for hallucinatory phenomena a path that is already existent, and one that naturally leads towards the sensorial centres.

A few descending fibres occur with constant regularity in all tracts of ascending projection. They are to be found between the visual cortex and the external geniculate body, between the external geniculate body and the retina, between the olfactory centres in the cortex and the olfactory bulb, and in the secondary and tertiary acoustic paths. It is not, therefore, out of the question that such fibres should exist also at a higher level than the sensorial centres.

The supposition that the more or less conscious representation of an image can in exceptional circumstances pass back to the sensorial centres by way of centrifugal paths, the existence of which is not hypothetical, serves satisfactorily to solve the problem of hallucination without doing violence to the law of dynamic polarization. Thus the mechanism of the hallucinatory phenomenon requires for its explanation only one condition—namely, the separation of the seat of the sensorial processes from that of the representative processes.

If, then, we consider the centrifugal fibres of the centripetal projections to be endowed with a regulative power over attention, and if we look upon this power as being normally manifested in two different ways—namely, by accentuating useful sensations and inhibiting useless ones—we shall understand better not only the positive mechanism of hallucination, but also its negative mechanism. The hallucinatory image is not localized in empty space, but is substituted for a real image, which is concealed and neutralized by it. This twofold character of hallucination is especially manifest in the case of vision. The exercise of the visual function ought, except during the hours of sleep, to be continuous in time and without lacunæ in space; but during the hallucinatory crisis there is a moment during which the real is not perceived, or is perceived only in part, as if there was a transitory scotoma of the cortical centres. In order to be able to localize the hallucinatory image in the environment, it is necessary that the person should either not see or not take notice of what really stands in the place usurped by it. Now, the centrifugal fibres that go from the transcortical regions to the visual centres (and also to other sensory centres) might quite well perform this double office of producing the hallucinatory image by conveying the corresponding stimuli from the representational centre, and of inhibiting, in the cellular groups occupied by the hallucination, the vision of the real.

With less constancy, the same inhibition of real images occurs

in the case of hallucinations connected with other forms of sensibility—for example, hearing.

In whatever manner the pathological reflux of the representation to its sensorial place of origin may be effected—whether by a return along the afferent paths, contrary to the law of dynamic polarization, or by an escape through what are normally efferent channels—the important point is to recognize that an hallucination consists exactly in this reflux. Thus understood, the psychopathological process of hallucination acquires features that are altogether special and befitting the indisputable fact of its unique character. It is no longer simply an extreme intensification of a representational image, but the morbid degradation of a representation that was once a sensation, and which, through being broken up under abnormal conditions, becomes again a sensation. Psychologically, it is an involutive phenomenon; physiologically, it is an unusual phenomenon of regressive association.

Applications of the Theory.—The value of this hypothesis may also be tested by the number of clinical facts it serves to explain. If I mistake not, their number is very considerable.

Hallucinations due to Irritative Stimuli that act directly on the Brain.—This hypothesis is especially compatible with the view most generally accepted and most frequently applied regarding the pathogenesis of hallucinatory phenomena—namely, that they depend upon local irritations. In cases of febrile delirium, amentia, alcoholism, and intoxications in general—that is to say, in every case in which there are hallucinations of an extravagant, confused, and illogical character—this syndrome cannot be attributed to any other cause than a chemical irritation of the cerebral cortex. Now, we have seen that if we assume the seat of the sensorial processes to be the same as that of the representational processes, we are logically obliged to abandon such a view of the mechanism of hallucination; for we should have to maintain that visual hallucinations are produced primarily in the area of the visual centres—the only one available—whereas, if they arose in this way, they could only present themselves as a chaos of hemianopsic forms or of halved images, which, however, they never do.

In order to produce a complete image by this autochthonous process, it would be necessary, as already indicated, that two simultaneous complementary and intelligent stimuli should, as it were, arrange to act upon the two cerebral hemispheres in such a way as to excite a half image in each, and that this should take place is wholly improbable, if not, indeed, absurd.

Now, if we accept the autonomy of the representational centres, there is no longer any need for the absurd idea of a double com-

bined irritation. As the representational centre is unilateral, we can regard the irritative stimulus (single) as acting directly upon it, and consider that the representation thus aroused has the power, not possessed by the normal representation, of returning to its place of origin—that is to say, to the sensorial centres—and thus of forming the hallucinatory image. It seems, however, more correct to regard the hallucination as having its primary origin in an idea or in a symbol, or in a fragment of an idea—that is to say, normally—and the morbid process as beginning only afterwards when the pathological action has affected the fibres of conduction. An hallucination might, then, occur in one or other of two ways—namely, through the afferent fibres which normally convey the sensation to the representational centre becoming pervious in a contrary direction, or by transmission in the usual direction, but with unusual effects, through the efferent fibres that normally convey the excitatory and inhibitory stimuli of attention to the sensorial centres from the higher centres. Of these three possibilities, the first (discarded) is rendered untenable owing to the difficulty that there is in understanding how an unintelligent irritation—for example, that produced by a poison—can determine a definite representation. The second is contrary, as we have several times admitted, to the law of dynamic polarization, although literal regard for all physiological laws is not demanded in pathology. The last is the one that is most satisfactory. It implies on the part of the irritated fibres a morbid permeability to stimuli that normally do not traverse these fibres, or which do traverse them, but in other circumstances and with other effects. Indeed, if these efferent fibres of supra-sensorial origin control the process of attention (and what other purpose can they serve?), it is not improbable that in physiological conditions, when an actual and already known image presents itself in the sensorial centres, they serve the purpose of carrying to these centres the residua of previous similar images, which assist in the discrimination of the features of the latest arrival by grasping some of them and setting others aside. An hallucination would occur when, in consequence of an irritation of the retro-representational paths, this reversed action takes place in the absence of a corresponding sensation, and with such energy as to give all the appearances of a real sensation.

Hallucinations occurring when the Eyes are Closed.—There are cases of nervous exhaustion, intoxication, post-operative shock, severe insomnia, etc., in which, although the intelligence is not in the least clouded, there is experienced the phenomenon of visual hallucination when the eyes are closed. When the eyes

are reopened the hallucination ceases. The patients, who are not delusional, understand quite well the nature of their experience, and are much troubled by it, but they are unable to prevent the occurrence of the sensations, which, indeed, are so vivid as exactly to imitate the real. The hallucinations take the form of shadows passing over the wall, faces that close an eye and put out the tongue, dwarfs, fishes, living caryatids, and other similar fantastic things that disturb exhausted patients while they are preparing to go to sleep. These effects are often due to medicines that are badly tolerated, and the patients, who realize this, beseech the doctor not to prescribe them. Morphia is an example.

Now, if hallucination were merely an exaggerated representation, as has been contended, closing of the eyes would suffice to produce, if not an hallucination, at least a representation so vivid as to be extremely like one; but this does not happen. It is conceivable, however, that this and something even worse will happen if the representation, finding open an unusual path that normally serves other purposes, is precipitated into the sensorial centres from which it originally came, and there reassumes the character of a true sensation. When the eyes are closed, the visual centres are put out of action, and it is then easier to revive the faint internal images; when the eyes are open, the internal image is overcome by the real images, excepting when the physiopathological process of hallucination is fully established. When this is the case, not only does the phantasm assume the appearance of reality, but for a moment it blots out the real, the place of which it usurps.

Repetition of Thought.—A not uncommon and very interesting phenomenon in sufferers from mental disorder is that of “audible thought.” It occurs in paranoia, dementia præcox, and other forms of delusional insanity. The patients hear repeated outside them what they are thinking of in their own minds. An annoying echo catches and divulges to everybody what they read or think in private, and as a consequence of this the delusion often arises that by means of mysterious mechanisms their thought is surprised and stolen. This symptom would be inexplicable if thought and its hallucinatory representation developed in the same place. It would be necessary to admit the repetition of a stimulus which on the first occasion produced silent thought, and on the second an hallucination. If this were really the case, it would be impossible to understand why the first stimulus should determine an effect subjectively so different from the second, and why the stimuli are always repeated in pairs and never in longer series.

The mechanism of “audible thought” becomes clearer when, on the other hand, one regards it as beginning physiologically in

the centre of representation and as being reflected from there by a process of pathological regression to the centres of hearing. The reason why this single thought is felt in two ways so different from each other, first as a silent thought and shortly afterwards as the voice of another person, lies exactly in the fact of its double localization. If the localization were always the same, as one might be led to believe by the ordinary physiological teaching, the subjective phenomenon could double itself only by repetition of the stimulus. In that case the effect produced could never be that of an hallucination of one's own thought being repeated by others. Except for some possible difference of intensity, one would only have either the representation of two identical thoughts of the person himself, or the sensation of two identical voices not of the person himself.

It may be asked, if the hallucinatory image is preceded by an analogous thought, why is it not always a copy (auditory, visual, or tactile) of that thought? In general, indeed, it is not. As a rule, the hallucination is, or seems to be, devoid of any connection with the thought of the patient. Perhaps the rapidity with which in these patients the representation is followed by the sensorial repercussion leaves no time for taking notice of the idea upon which the hallucination is modelled. There is consciousness of the repetition only when the succession is very slow. Perhaps also in most cases another thing happens: the representation that degenerates into an hallucinatory image lies beyond the field of attention, or at its extreme limits, and is so extraneous to the principal current of the individual's thought that it seems not to belong to it. Much less, therefore, does the person succeed in recognizing as his own the fugitive, aberrant, and perhaps quite unconscious idea that has for the moment rushed upon his field of thought in its hallucinatory disguise. This explains why the subject-matter of these hallucinations is so often indifferent, frivolous, unexpected, enigmatical, and contrary to the habits and character of the patient, who, indeed, repudiates them, looks upon them as an artificial imposition, and is always astonished at them.

Figured Hallucinations.—That elementary hallucinations may arise directly in sensorial centres irritated by toxic substances, compressions, or traumatisms is not cause for wonder. What can take origin in the peripheral sensory apparatus or in the centripetal nerve may still more readily arise in consequence of excitation of the centres. The somæsthetic centres, which receive information regarding what takes place throughout the organism, and which preside over the trophic innervation of the viscera, readily tend to acquire these conditions of hallucinatory

fertility. As is known, the majority of general paralytics, even without having definite hallucinations, almost constantly suffer from disturbances of *cœnesthesis*. Throughout many months, sometimes throughout the whole course of the disease, they are subject either to an indefinable but extravagant euphoria, or to a sense of ill-being no less indefinable and equally profound. These perversions of *cœnesthesis* are so constantly complained of and experienced that they cannot be explained as an effect of the mental enfeeblement or of a simple exaggeration in judgment. It seems more in accord with the facts to interpret them as a sort of persistent hallucination affecting the centres of general sensibility, and resulting from continuous and direct irritation of their cells. Since the centre of representation is excluded from taking part in the process, one can understand how the *cœnesthetic* hallucination does not in this instance acquire any definite form. The paralytic suffers from and enjoys he knows not what. His *cœnesthetic* error has neither form nor place, and it expends itself in a gay or dejected state of mind, to which there corresponds no representation, either pathological or normal.

In the field of cutaneous and general sensibility it is very rare for hallucinations, as also, indeed, for representations, to assume an evident and definite form. Even if they did so, it would be no less difficult to recognize in how far they accord with reality. Perhaps there are no corresponding centres of representation for a species of sensibility so slightly evolved and so subjective, or they are imperfect, or little used. It is true that cases of *astereognosis* are described which are evidence to the contrary, but they are always associated with psychical blindness. Moreover, the essential office of sensations of touch, heat, weight, and pain, as well as of the visceral sensations, is that of indicating a more or less definite locality of our body, but in such a way that there will be no confusion between one side and the other. Therefore, sensations of this nature divide into two parallel sets that correspond to the two lateral halves of the body, and which have no great need of being summed up in synthetic symbols. It is improbable that the centre of representation—if, indeed, it exists—can emancipate itself, like those of vision and hearing, from this necessity of equal division and bilaterality; and it may be that the restriction imposed by the double seat in the two hemispheres, by nullifying the economic opportunity of one representational centre, and diminishing in consequence its utility, already somewhat problematical, may also have impeded its formation.

Of very different aspect is the question of visual and auditory hallucinations. In the case of these, figured hallucinations are far from uncommon.

Irritating stimuli that can arouse the activity of visual and auditory centres do not possess such powers as to enable them to trace living figures therein or to produce verbal and significant sounds, but there is nothing to prevent one believing that a morbid action may open up paths of abnormal regression for representations already existing, and that at the end of these paths they may reassume the vivid and false appearance of sensations.

In this way any idea, whether normal or pathological, abstract or concrete, intense or almost unconscious, can become transformed into an hallucination. By a process of normal association the generic conception of persecution arouses a representational image of some special attack, and this representational image, as a result of a pathological reflux, becomes a sensorial image—that is to say, an hallucination. Thus can be explained the fact that hallucinations not uncommonly accord with the delusions and with the character (diffident, ambitious, or mystical) of the person affected. Not only can there be figured hallucinations, but even hallucinations subordinate to thought, which almost have a degree of formal rationality.

Combined Hallucinations.—Occasionally, especially in paranoiacs, there occur hallucinations—for example, of speaking figures—which imply the co-operation of sight and hearing, and which are to be regarded as a special variety of the preceding. They are complex images, and evidently prompted by a thought. These combined hallucinations result from the union of two representations that degenerate into a double sensation, after having been formed in their turn as the secondary consequence of a higher idea.

Ought we also to regard the passage from a higher idea to one or more special representations as constituting a pathological regression? And, in anatomical terms, are we to conclude that the nervous current must pass between two cortical centres only in one direction—namely, from the lower to the higher? Certainly not. The ordinary exercise of thought shows that, whilst induction, inasmuch as it leads us to the knowledge of more and more general laws, is the highest process of intelligence, there is no reason to despise the opposite process which enables us to descend from general conceptions (of ourselves or of others) to applications of them, to examples, and to single representational images. Between the transcortical centres there is no lack of associative fibres adapted for the maintenance of these inter-cellular communications in all directions, and the passage of the nervous current from one transcortical centre to another at a lower level is not to be regarded as a morbid occurrence. Only in its last step—namely, from a centre of representation to the

corresponding centres of sensation—does the descent of a nervous current assume a pathological character.

Hallucinations that present Themselves in the Form of Dreams.

—When we sleep, the gateways of sensation are closed and thought is silent. If, however, some loophole is opened, or if some internal disturbance arises, then phenomena of consciousness are often manifested—in other words, we dream. The fabric of dreams is a variegated tissue of evanescent images, representations, and ideas, slenderly and imperfectly woven, and often entangled. Logical arrangement is lost; the associations disperse along collateral and unusual paths; the subject of the dream, even if it begins as an obscure sensation of an ordinary kind, departs so immeasurably therefrom that it quickly becomes incoherent and often absurd. Nevertheless, in the subjective phenomena as a whole, notwithstanding their chaotic nature, we can still fairly well distinguish what is referable to our person from that which, rightly or wrongly, seems to us to belong to the environment—that is to say, representations from sensorial images. In short, although the subjective processes can vary in their intensity and in their nature, they never lose the specific characters that render them so distinct when we are awake. In dreams there is still felt that antithesis, so clear in the normal state, between spurious and genuine memories and between false and true images of real things. Whilst the fantastic scenes at which we seem to assist appear to us to be a part of our environment, we do not cease to regard our more or less senseless meditations and comments upon them while we sleep as a part of our thought. The phantasms of dreams have thus not the aspect of vivid representations, but of real objects, even when they are trivial and dim. It is evident that they must be formed in the sensorial centres, and thus that they are hallucinations. There is no ground for believing that they are dependent upon a mechanism different from that which determines the occurrence of hallucinations in poisonings and in mental diseases. That in a tired brain there takes place, from lack of inhibition, an escape of a few representational images into the sensory centres is more easy to believe than that an epileptic orgasm occurs in centres steeped in peaceful and reparative sleep.

Hallucinations of Peripheral Origin.—The elementary images that are formed in the sensorial centres in consequence of excitation of peripheral nerves have nothing in common with true hallucinations. The luminous images that are produced by compression of the eyeball, the flashing that accompanies cutting of the optic nerve, the noises in the ears associated with otitis, the hissing, crackling, and more or less musical sounds that occur

in Brenner's experiment, which consists in galvanizing the acoustic nerve, and the paræsthesias induced by morbid irritation of sensory nerves, are not morbid phenomena, but normal reactions to an abnormal stimulus. In each of these instances the hallucinations, provided they do not go beyond the stage of rudimentary images, are perfectly normal occurrences; not their occurrence, but their failure to occur, would constitute a pathological event referable to the brain. To notify an irregularity that takes place at some distant point is not the same as to commit that irregularity, and the sensorial centres, when they arouse in the consciousness an hallucination of peripheral origin, merely perform the office of impartial signalists. The peripheral hallucination, like pain, is an unusual occurrence, but it is natural and outside the domain of psychiatry.

Nevertheless, it sometimes happens that these unusual, but not morbid, sensations suggest ideas. If the brain in which they occur is not the seat of anomalies or of morbid processes, the ideas suggested may be correct or erroneous (it matters little which), but they are not psychopathic. If, however, delusions are caused by these hallucinations of peripheral origin, as also if they arise spontaneously or as the result of quite normal and ordinary sensations, it implies that the brain is not in a normal condition. When this is the case there readily occur, along with other symptoms of mental disturbance, those that favour the production of hallucinatory images. The more or less complex hallucinations that are then determined may take their colour from the unusual sensation which, coming from the periphery of the body by the normal path, has attracted the attention of the anomalous or morbid individual. We have therefore to deal with a special form of figured hallucinations, subordinate to thought, in which the so-called peripheral hallucination is simply a provocative agent.

There are, indeed, innumerable examples of persons who for weeks and months together suffer continuously from noises in the ears dependent upon anæmia or otitis, from photopsias consequent upon conjunctivitis or hemicrania, from paræsthesias occasioned by innumerable different causes, and who are far from presenting any evidence of suffering from true hallucinations, and much less from showing the smallest sign of delusion. We may therefore conclude that true hallucinations of peripheral origin do not occur. Hallucination, properly so called, is always a condition of transcortical origin; it is a retrocessive representation converted by a pathological process into a sensation.

Unilateral Hallucinations of Hearing.—There are persons who continually suffer from auditory hallucinations affecting only

one side. If in these cases the disturbances consist merely of noises in the ears, their origin is obvious ; but how are we to explain the formation of auditory images of a high degree of complexity that seem always to arise in one ear ? Why are the products of a transcortical elaboration, such as familiar voices, sounds of words, and flattering or threatening expressions, capable of such sharp differentiation, according to the ear from which they come or seem to come ? Are not the centres of verbal representation said to be single and untrammelled by relations of space ? How can we reconcile the unilateral nature of a verbal hallucination, which seems to enter by one ear and not by another, with its origin from a centre that is indifferent as to the source of the sounds that it receives, as without doubt that situated in the left first temporal convolution must be ? Does not this centre, being single, receive the contribution of the two ears indiscriminately and without distinction of any kind ? How could it impress upon a representation taking origin in it the character of uni-auricular source, and transmit this character to the hallucinatory image that is to be repeated in the two sensorial centres ?

The reply is easy. As a rule, when we form a representation of the sound of a word, we do not require to localize the sound either externally or within our body, in one ear rather than the other. Indeed, this localization in space does not ordinarily occur. If, however, by means of an association of localizing factors, as with other forms of sensation, such as vision and touch, we desire to pause for a moment over the phonetic representation in order to figure to ourselves the point from which it proceeds, its direction in relation to ourselves, the person who has spoken, or is about to speak, and the ear in which we hear the voice to resound or to be whispered, we at once find in our brain all that is required for the achievement of this very simple object. The localization of verbal sound in any point of external space, or in one rather than the other of our ears, is therefore not an ordinary consequence of acoustic evocation, and much less a necessary one ; it is a thing that can be effected by association when we so desire.

When a paranoiac with delusions of persecution fears that some injury is about to be done him by someone in the chimney, it is not improbable that all the auditory hallucinations of which he is the victim are systematically localized in that point of external space. When a patient of this kind is annoyed by genuine noises in the left ear, and his attention is frequently directed especially to this side, it is not improbable that the suggestion thus taking origin at the surface of his body, notwithstanding its legitimacy, associates itself with auto-sugges-

tions of transcortical origin, adding to them the indication of a localization in the left ear.

From this complex representation, provided there are established in the cerebral fibres the conditions necessary for the hallucinatory process, there will readily develop an hallucination, the reference of which to the left ear is the effect of the acousma. Certainly the association of an acousma affecting only one ear with a state that might be called an hallucinatory diathesis (in the sense of true and complex hallucination) is not very easy to establish; but this is merely because unilateral and figured hallucinations of hearing are somewhat rare phenomena, whilst acousmata, both bilateral and unilateral, are very common disturbances.

Illusions.—The mechanism of hallucinations just described may be applied without any difficulty to illusions. We know that an illusion is a deformed, but not entirely false, image of a real external object; it is a mixture of real, but often weak, fleeting, and altogether incomplete sensations, and of representations with hallucinatory characters which are united to them with fallacious results. An analogous process of integration, but unconscious and accurate, takes place at every act of perception, and confirms the real image by a transitory apparition of similar memories, by which we are the better enabled to distinguish the minute details of their reciprocal relations. In illusion, the actual image, instead of being solidly founded upon similar memories, is compounded with an incongruous perception, which accordingly assumes an hallucinatory appearance. This result is the effect of the regressive process that carries the representational elements back to the sensorial centres, and thus illusion is simply a partial hallucination.

Conclusion.—The theory here expounded, when applied to the various manifestations presented by hallucinations, both in asylum patients and in others, and especially to those that have hitherto remained unexplained or at variance with the most recent data of cerebral physiology, offers certain advantages that may be briefly summarized.

1. The hallucinatory phenomenon assumes objectively—that is to say, in its physio-pathological mechanism—those decided and well-defined features that characterize it subjectively, and prevent its being confounded with the processes of representation. An hallucination is not a spasmodic representation, but differs from a representation both in regard to its quality and its seat. With regard to quantity, hallucinations may be very weak, as they sometimes are in dreams and in the case of those (of sight) that disappear upon opening the eyes.

2. The origin of all genuine hallucinations is transcortical; and hallucinations of peripheral origin, provided that they are not completed by a supra-sensorial coefficient, have nothing in common with them, are not genuine hallucinations, and are not to be regarded as psychopathic phenomena.

3. The mechanism of hallucination consists in the regression of a more or less complex and more or less conscious image, which descends from the psychical zone to the sensory centres from which it came, thus reassuming the exact aspect of a sensation, so that it is mistaken for a real sensation.

4. This mechanism comes into operation only in pathological or abnormal conditions, but without the occurrence of epileptiform discharges, by way of paths that are anatomically suited for the centrifugal connection of the psychical or supra-sensorial zone with the cortical centres of pure sensation, although, on the other hand, these same paths normally subserve other more or less well-known functions.

5. As the processes of representation and sensation have separate seats, one may conceive of an hallucination, which is subjectively identical with a sensation, as occupying a portion of the cortex identical with that occupied by the sensation, and as shared by the two hemispheres. To allow of this, it is no longer necessary to suppose that two irritating stimuli act upon the cortex in a simultaneous, complementary, and intelligent manner—an idea which is improbable and almost absurd, especially when applied to visual hallucinations, which, under the influence of a single strong stimulus, ought, if this view be correct, to be unilateral, and therefore hemianopsical in form. On the other hand, there is no difficulty in believing that the sensory centres, no matter in what manner they are excited, always react by the production of precise, vivid, but ephemeral images. Physiologically, they reflect real objects, external to us; pathologically, they reflect, in stronger and more realistic form, images of the real that are within us, but in another territory of the cortex.

6. In the same way the mechanism of figured hallucinations in general can be explained, including those that result from the combination of several images belonging to different forms of sensation, hallucinations subordinate to thought and almost logical, illusions, and, lastly, that remarkable phenomenon, the imaginary audible repetition of thought.

Finally, the classical theory of Tamburini and that here advanced have one point in common—namely, the identity of seat, if not of origin, of sensorial and hallucinatory phenomena. Sensations and hallucinations therefore reside in the same cortical centres. This is true, but only if representations are not in-

cluded. In this way hallucinations acquire a true individuality. In virtue of their transcortical source they are products of representations (more or less conscious); in their pathological determinism they are an aberrant, extraordinary, and regressive association; in their subjective aspect, and on account of the cortical seat in which the culminating part of the hallucinatory phenomenon develops, hallucinations are merely sensations, quite similar to real sensations, and entirely different from representations.

Pseudo-hallucinations or Psychical Hallucinations.—A superficial examination might lead one to believe that sufferers from hallucinations, and more especially hallucinations of hearing, are numerous among the insane. An accurate investigation often shows, however, that a large proportion of auditory, and especially verbal, hallucinations are in reality only pseudo-hallucinations. In these cases the words are not like those ordinarily heard, but are verbal images, sometimes indistinct, that differ from ordinary thought in respect of their incoherence and of the unusual obscurity of their subjective origin. This phenomenon was not unknown in the early days of psychiatry. Baillarger described it as a form of psychical hallucination, Hagen as pseudo-hallucination, Kahlbaum as apperceptive hallucination. Many alienists have studied this problem, but without solving it; indeed, without even stating it clearly.

The obscurity that surrounds psychical hallucinations, both in the mind of the patient and in that of the alienist, depends upon the indefiniteness of, and, indeed, the want of any, distinction between the two phenomena, hallucination and mental image. According to the authors who adhere to current tradition, hallucinations and mental images are each produced in the same cortical centres—that is to say, where the actual sensations are determined; between an hallucination and a mental image they recognize only a subjective difference; and the difference becomes incomprehensible if we attempt to contrast a weak hallucination with a physiological but intense mental image.

Psychical hallucinations acquire a significance and interest only for those who recognize the existence of representational centres, and the difference, not only subjective, but also topographical, between sensation and representation. The pseudo-hallucinations of Baillarger, which, as a matter of fact, are of the highest importance in dementia præcox, are then capable of being interpreted as representations, mental images, or ideas, which in their features and localization are identical with normal processes of thought, and not with sensations or with true hallucinations—the perfect imitators of sensation. They are, how-

ever, allied to hallucinations in their origin, inasmuch as they arise from local and unusual stimuli, which are foreign to the existing association of ideas. Hence the patients speak of them as impelled thoughts, foreign to their personality, and alienists confound them with hallucinations properly so called.

This subject, which remained fruitless so long as it was merely a clinical problem among the curiosities of subjective psychology, was given fresh interest when Lugaro connected it with the genesis of hallucinations, and differentiated, localized, and described the mental images of pathological origin, endeavouring to explain their mechanism, and to render them comprehensible even to those who analyzed them from without, apart from having experienced them. According to Lugaro, pseudo-hallucinations are mental images which, instead of being evoked by external objects or by internal processes of association, arise as phantasms by the action of a local abnormal stimulus upon the representational centres. Their independence of the ordinary current of thought arouses in the patient the feeling of an anomaly, an evil influence, a cerebral suggestion, which he describes by various expressions, such as suggestion, commanded thought, alien thought, transmission of thought, mental speech, ideas that pronounce themselves in the brain, head occupied by invisible persons, forced actions and thought. They consist especially of verbal auditory images, which, however, are never mistaken for external voices, because they are weaker than a real voice, and also different. This the patients themselves clearly indicate, calling them by such names as subdued voices, microphonia, secondary speech, etc. In some instances the mental images that assume the aspect of pseudo-hallucinations are so indeterminate that they do not even resemble subdued speech, and the patients are at a loss to describe them. Nevertheless, these images are sharply differentiated from the ordinary representations that form the texture of normal thought.

As the motor centres are capable of becoming autonomous in respect to the ideative, the reciprocal solidarity between the various territories of representation is broken, and the patient acquires the conviction, or the suspicion, of a thought that is not his own. If the alienist hastily calls the phenomenon an hallucination, it may be that the patient, who is generally the subject of *dementia præcox*, not having an exact idea of the meaning of this word, regards the description as accurate; but, if he is asked to explain himself, he will give such indications of what occurs in his consciousness as to convince one that he suffers, not from hallucinations, but from pseudo-hallucinations.

CHAPTER V

IDEATION

The Psychology of Ideation.

MENTAL activity is characterized by consciousness. Subjective phenomena or states of consciousness, which constitute this activity, have in general (and according to the majority of psychologists always) a twofold character—namely, that which concerns (*a*) their representational content, which is capable of endless variety, and (*b*) their emotional tone, which may be pleasant or unpleasant, and which shows simple degrees of intensity.

The most simple expressions of representational activity are the *images* that are produced by the direct action of external objects, which are reflected in their various aspects. Such images may also be reproduced as *memories* by internal action, but provided only that they have at least once been provoked from outside: “Nihil est in intellectu quod prius non fuerit in sensu.” The image is therefore a copy of the real; the memory is a copy of the copy, not drawn in the presence of the model, and therefore less perfect. There are perceptions and re-perceptions, as Kahlbaum has aptly expressed it.

Ideas are more or less complex representations that result from the aggregation of images. This aggregation is not effected by a simple summation, but by means of a double and very delicate process: (1) from many diverse and complex but primarily indivisible images, the common element is isolated by an act of analysis, which for the most part is unconscious—for example, from the visual images of the sky, the sea, the gentian, and the sapphire, we abstract the attribute blue; (2) these similar elements of different images fuse in an ideal synthesis, forming the idea of blue. Even the most elementary ideas are therefore always abstractions, but they are termed *concrete ideas* when they are derived from simple images. From concrete ideas there can be derived *abstract ideas* by bringing into play these two processes of analysis and synthesis just indicated. For example, from the

concrete ideas of blue, green, and red one can separate out the common ideational element and reach the abstract idea of colour, which comes to be the abstraction of other less complex abstractions. One can proceed to a still higher degree of abstraction by seeking out the common element in colour, smell, consistency, and various other abstractions, and thus is formed the idea of physical quality. The higher abstractions are roughly designated *general ideas*.

During the hours when we are awake the activity of consciousness is continuous, but the succession of the ideational processes does not follow a strictly logical order, owing to the fact that it is from time to time interrupted by the accidentality of external occurrences. Our thought is broken up into an infinite and disconnected series of reasonings which are begun but left unfinished, or abbreviated, and which are at least very simple and without reciprocal connections. Hence representational activity is logical only in fragments, but in its general course it tends to be illogical, except in so far as it is controlled by the influence of attention, which is a sort of voluntary concentration. This influence, which we bring into operation when speaking, listening, and meditating, shields the consciousness from disturbing impressions, and thus favours the internal elaboration of ideas that have for long been associated.

Ordinary thought is for the most part carried out by images of various kinds; it is a veritable kaleidoscopic picture, to the formation of which all the special senses contribute in extremely varied measure. Logical thought, on the other hand, is effected almost exclusively by means of a particular class of images—namely, verbal images. Words, because they constitute the habitual means we employ of communicating with others, come to be a practical substitute for ideas even with ourselves. Their conventional correspondence with ideas, which extends even to the most delicate shades of meaning, relieves us from the necessity of always calling to mind at every step in the process of thought these complex images that are originally included in every idea, and especially in the more abstract ideas; and hence, in place of these complex images, we are enabled to form a representation of a homogeneous series of much more simple and definite images of which words become the symbol. Thus logical thought flows quickly and without impediment by the aid of verbal signs, behind which the phantoms of the original images appear only occasionally and indistinctly, and we think, as a rule, by means of words rather than of ideas.

The mnemonic images tend to follow each other and to combine with one another and with the primary or actual images

according to certain laws of reciprocal attraction, known by the name of *psychical associations*, which include the following : (1) Relations of contiguity in space (coexistence) ; (2) relations of contiguity in time (succession) ; (3) relations of resemblance ; (4) relations of causality ; and (5) relations of contrast, which only in mental pathology sometimes acquire a certain interest, but which one may look upon as the negative aspect of association by resemblance.

The representations that are associated in our consciousness in the forms that we have indicated are subject to this law of reciprocal affinity for a single reason—namely, that the phenomena to which they refer are themselves bound by objective and parallel relations. In other words, the laws of association rest on the principle of correspondence, by which the intellectual processes model themselves in accordance with the real world (Spencer).

In the form of association by contiguity (of space and of time) our mind reproduces, though but partially, the concrete order of the real. In the form of association by resemblance we identify the common element among similar representations—that is to say, the existence of an ideal relationship, which readily leads us to abstraction, and allows, if not the literal reproduction, at least a first classification of the real, which is like a subject-index of its various phenomena. We cannot, however, figure to ourselves with any vividness, even partially, the theoretical order of external phenomena, except by association of cause and effect.

On the other hand, this mental process, by which we are enabled to infer, even without seeing them, effects from causes and causes from effects, presupposes associations of succession and of resemblance. Indeed, in order to be able to comprehend the causal connection between two phenomena, it is necessary to have recognized, firstly, their succession, and secondly their constancy, and this requires the notion of identity of, or at least analogy between, one succession and the others, or the employment of association by resemblance. As the result of this synthesis, there arises the subjective conviction that the succession of the two phenomena is inevitable, and that therefore the cause and the effect recall one another by an objective necessity. This law of objective necessity, which ought to correspond in some manner to the mechanism of external reality, is, after all, no more than a subjective adaptation on our part (Hume)—a kind of traditional hypothesis which we all accept as proved ; and, indeed, whether it corresponds absolutely with the real world or not, the hypothesis or principle of causality is of immense value, because it allows of processes of induction and

deduction, by which we may make ourselves masters even of those parts of the real that we do not see.

From what has been said it is clear that in the two associations of contiguity the principle of correspondence is realized in its most simple and, as it were, literal form ; that the association of resemblance, by suggesting abstract ideas and indicating the constancy of certain relationships, supplies our minds with the abbreviated formulæ of actual phenomena, and with the means that are indispensable to our arriving at the association of causality ; and that the latter is the more synthetic process, and the one that is successful in effecting, with some degree of depth and breadth, the adaptation of our representational activity to external reality.

Logical activity has a part in the associative laws in so far as it exercises a selective action (among the many ideas that would tend to associate themselves) over those ideas that relate to facts which are connected by necessary and serial ties, and eliminates from consciousness accidental facts, or, at least, those foreign to the series. This intellectual operation always presupposes a directive idea from which one sets out (deduction), or to which one tends (induction), and constitutes the faculty of reasoning. All forms of association affect ideas as they affect their symbols (words), which can be recalled without having of necessity to be awakened individually by the corresponding ideas ; and thus we are able, up to a certain point, to say one thing and at the same time to think of another.

This is in brief the picture of those processes of ideation which, gradually rising from simple perception to prevision and to study, constitute the rational side of intelligence. As we shall see, the sentiments form the other side, the side that is the more intimate and personal.

Pathology of Ideation.

Irregularities of ideation naturally form one of the two foundations of clinical psychiatry, and, indeed, the more characteristic of the two ; they can be grouped into those that relate to the rapidity of association, the logical value of the ideas, their absolute quantity, and their arrangement.

1. As regards the rapidity of the association of ideas, there are cases of acceleration and of retardation with and without disturbance of order and quality.

2. As regards the *logical value* of the ideas, we see it altered separately—that is to say, without general and profound disorder of all the mental processes—only in obsessions and in systematized delusions.

3. With regard to the *absolute quantity* or patrimony of the

ideas, it may have a pathological significance in respect of its original or acquired paucity, as in the various forms of imbecility and mental deterioration.

4. With regard to the *order* of association, the ideational processes are capable of giving rise to mental *confusion*, or the amential syndrome, and to chronic incoherence, or the demential syndrome. In these cases consciousness is also dulled, and the ideas are often altered in their quantity, and especially in their quality.

All of these symptoms merit being examined one by one, but in large part they present themselves in combination and mutually dependent, or as effects of a common cause.

Rapidity of Thought.

Acceleration of the ideational and perceptive processes may occur without any disturbance of their order or of their content ; but, when this is so, it is moderate in degree and constantly associated with a similarly moderate degree of sentimental exaltation, the condition that forms the pathognomonic symptom of hypomania. A patient in this condition may sometimes make a few brilliant and ingenious remarks, but this level is seldom maintained for any length of time. In most instances the acceleration does not confer any benefit ; on the contrary, if it does not actually involve disorder, it favours less useful associations at the expense of the more useful. Attention is turned preferably to relations of resemblance, and it is consequently diverted from those relations of causality that constitute the true strength of reasoning. Hence the patients, though not appearing to be out of touch with reality, and though still far from being delusional, form superficial, frivolous, and hasty judgments, devoid, however, of absurdity. Amongst these patients are to be found the facile rhymesters, the spouters, the inventors of quibbles and puns, and, in general, all those who allow themselves to be led away by the verbal sound, sacrificing the logical association of ideas to the purely phonetic association of words—that is to say, to an analogy of the most accidental kind. This tendency, which in cases of slight acceleration of the ideative processes merely suggests frequent digressions and increases the logorrhœa, becomes vaniloquence when the acceleration is great and play upon words is entirely substituted for reasoning. Nevertheless, purposeless talk from superabundance of ideas, or ideorrhœa, is of rare occurrence, and more seeming than real. Its characters are very different from those of amential or confusional talkativeness, which, indeed, is always accompanied by a condition of semi-consciousness, and rarely exceeds the normal in rate, in the majority of instances, indeed, falling short of it.

A singular effect of excessive associative rapidity is *palingnostic illusion* (erroneously termed palingnostic delusion). The patient, who is almost always a maniac or an ament, imagines he sees old acquaintances in persons whom he meets for the first time; he addresses them confidentially by a wrong name; but, when informed that he has made a mistake, he almost always recognizes the fact without difficulty. The possibility of a similar error being made by normal persons can by no means be excluded, but in such instances there is required the assistance of so-called expectant attention, or of emotional over-excitement.

When, in the midst of a crowd, we impatiently await the arrival of a friend who is later than the appointed time in appearing, even the slightest resemblance on the part of a passer-by is apt for the moment to give us the illusion that we see our friend. Evidently the mental representation of the person we are expecting fuses in hasty synthesis with the actual and, in part, similar image of the unknown passer-by, who perhaps resembles our friend in stature, carriage, cut of beard, or style of hat, and consequently there is an anticipation of judgment that gives rise to error. In maniacs with acceleration of the ideative processes, the emotional exaltation, owing to the fact that it inspires the patients with great confidence in themselves, plays the same rôle as expectant attention, and frequently leads to palingnostic illusion of a characteristic kind—for example, when the patient is confronted by a large class of students.

The slowing of the ideative processes is often associated with mental suffering, as in melancholia. The degree of retardation of the association of ideas is not, however, strictly parallel to the degree of mental suffering. The states of affective insensibility or apathy that characterize myxœdema and certain forms of amentia attonita are also commonly accompanied by slowness of ideation, which is in no way less marked than that which occurs in melancholia, and which, indeed, through being closely associated with sentimental indifference, acquires almost incredible proportions, even ten to twenty seconds being in some instances required for the monosyllabic reply to a simple question.

Slowness in the formation of ideas does not directly occasion errors in their nature or in their arrangement, but it favours such errors, because it is not without influence upon the extension and content of the ideational field. When there is retardation of the flow of the ideas, there is never that dispersion of psychical activity that is to be observed in states of acceleration, leading sometimes to inopportune or futile suggestions; but, on the other hand, since a certain portion of external occurrences escapes the

notice of these patients, this reduction of their perceptive processes renders more difficult the compensation for lacunæ and the rectification of errors, if there should happen to be any.

Whilst rapidity of ideation leads to verbosity, slowing of ideation induces taciturnity. The person speaks only after long pauses and much hesitation in a subdued voice, and only in response to very strong stimulation, or to categorical and persistent questions. Such conditions are often to be observed in cases of *amentia attonita*, and sometimes in their most marked degree in melancholics who are affected not so much by slowness of ideation as by other causes, such as fear, shame, and pain, which inhibit thought less than speech.

Prevalent Ideas.

A completely isolated idea is never in itself pathological. Strictly speaking, there are no alterations of the ideas that can be referred exclusively to their content. Indeed, fancy allows of our picturing any idea or image, even the most stupid or absurd, without exceeding the limits of normal ideation; it is sufficient that such images or such ideas remain in the state of simple mental representations.

The limits of normality are overstepped when purely fanciful ideas contract anomalous relations with co-ordinated thought, whereby their logical value is altered. This alteration occurs in two ways: (1) When a worthless idea, becoming the object of unseasonable preoccupation, presses continually and systematically on the logical processes, and thus weakens and alters their natural succession; (2) when certain ideas that are evidently contrary to fact become the subject of certainty or of doubt, falsifying in an obvious and gross manner the results of logical activity. In the first instance the patients jump from one idea to another, but they are neither without logic nor illogical; in the second, they reason badly, and are distinctly illogical.

In this connection it is customary to consider two varieties of psychopathic phenomena—namely, *fixed ideas*, and the so-called *delusional ideas* (better termed *delusional convictions*). These two forms have many and profound differences, the antagonism of which constitutes one of the most precise and practical conceptions in psychiatry; but they also possess some common characters, to which Wernicke has applied the single term *prevalent ideas* (*überwertige Ideen*). Both the fixed idea and the delusional conviction are separately manifested in more or less lucid minds, in which they do not find and never induce a complete state of disorder; they become, however, the centre of radiation of a systematic syndrome which varies little, and which is at the same time so

circumscribed that not without reason it has inspired the conception of partial insanity (monomania), now almost entirely abandoned.

Obsessive Ideas.

To Westphal is due the credit of having, in 1871, shown the very diverse psychopathic values of the syndromes that then still survived the shipwreck of the old monomanias by distinguishing and contrasting with each other *fixed ideas* and *delusional convictions*. By the names of *fixed ideas* or *Zwangsvorstellungen* (Westphal), *compelled ideas* (Buccola), *incoercible ideas* (Tamburini), and *obsessive ideas* (Pitres and Régis), all very expressive and synonymous, are meant certain representations which, as regards their content, are in no respect either unusual or morbid, but which acquire a pathological value on account of the spasmodic insistence with which they continually intervene, like an ideational tic, in the natural course of thought. Obsessive ideas (at most one or two in number) do not originate from the reason, and they do not succeed in penetrating into it; they have the power of interrupting it, but not of corrupting it; they have and retain the form of non-logical and casual representations, which, almost as soon as they have appeared, vanish again owing to their lack of utility and of interest; nevertheless, they return, forcing their way into and encumbering the field of consciousness, dreaded and persistent spectres, sometimes thrust aside with success, but always ready to make a fresh invasion. These apparitions disturb more especially the logical processes, in the midst of the products of which they figure as heterogeneous bodies that cannot be assimilated, and that therefore will never succeed in forming an integral part of the psychical personality, but will, instead, be in open conflict with it. Now conquering, or conquered, according to circumstances, the fixed idea cannot but gain strength from each battle; it arises from and lives by its contest with the personality of the patient, and it does not pass away until there ceases to be such contest. The expression *folie de doute*, by which a special form of fixed idea has been described, may very well be applied to all the others, for doubt is in substance merely the logical expression of an internal conflict.

In order to understand the mechanism of the development of a fixed idea, it is necessary to examine thoroughly its relations to the personality of the patient. In what does the conflict consist? In the fact that the obsessive idea is not willed. And why is it not willed? Because it is recognized to be fruitless and vain. Nevertheless, the fixed idea persists, and the conflict is renewed. Why? Because it is fed by a blind, uncontrollable, and con-

tinuous force that renders it indestructible, and this force, which constitutes the more remote and fundamental cause of the phenomenon, is a morbid emotional state.

It is not to be forgotten that obsessive ideas almost always assume the form of a *monophobia*; they are at least easily reducible to the conception of a phobia. *Agoraphobia* (*Platzangst*) is the dread of falling in attempting to cross without assistance an open place (Westphal); *claustrophobia*, on the contrary, is the fear of being suffocated in confined places (Verga), as, for example, in tunnels; *acrophobia* is a fear of heights (Verga); *ereutophobia* is fear of blushing (Pitres and Régis); *dysmorphophobia* is the fear of becoming deformed (Morselli); *pathophobia* is the anxiety of the person who, being in good health, is in continual and irrepressible dread of becoming the subject of disease; *taphyphobia* is the terror of premature burial in consequence of seeming death (Morselli); *misophobia* is the very common and tormenting horror of defiling contact (Hammond) from the dust that covers objects, from the cloth with which it is removed, from the hand that has grasped the cloth, from the glove that has covered the hand, and so on *ad infinitum*.

Other forms of obsessive idea, although not given the name of phobias, are special examples of pathophobia, because upon analysis it is seen that the cause that inspires them is the fear of suddenly becoming insane. This fear may specially relate to a particular psychopathic action, the representation of which, just because of the repugnance it produces, excites very strongly the mechanism of contrast, and becomes the immediate theme of the obsession. In this manner—that is to say, as the expression of a phobia—the so-called impulsive monomanias of old writers are in part to be explained. There are pious, virtuous, and at the same time lucid patients who, just because of the fear they have that they will not succeed in repressing a sin or crime that they abhor, feel compelled to commit it—for example, to blaspheme in church, to worship the devil, to commit murder, or an act of incendiarism (Carrier).

Others, affected in a less tragical manner, cannot refrain from counting everything that is capable of being enumerated (*arithmetical obsession*). Some cannot cease from putting to themselves metaphysical and insoluble problems. This constitutes *interrogative obsession*, the obsession of the *why*, or *Grübel sucht* (Griesinger), which has also somewhat unfortunately been designated metaphysical delusion and phrenolepsia erotematica (Meschede). The condition of preoccupation from which the fixed idea starts is evident also in these cases; all the insistence and morbidity of the obsession is derived from the doubt that the patients ex-

perience as to whether they will be able to overcome it, a doubt which in the last analysis is simply a monophobia.

Many neurasthenics and normal persons, by the influence of a strange doubt as to their ability to perform certain physiological functions, are reduced to a state almost of impotence at the very moment, and only at that moment, in which the performance of the function is most urgently desired. In this way there are occasioned various forms of psychical impotence by suggestion, a remarkable example of which is the oratorical incapacity of some ready and very rapid writers. A special instance of *verbal phobia* (Chervin) is the sudden stammering that afflicts lecturers and teachers exclusively during the holding of their classes, or in anticipation of having to speak before an audience. There is likewise an inability to micturate in public, which is induced by an atavistic phobia of modesty, and an inability to micturate promptly, which, arising out of the quite modern fear of not arriving in time, affects only persons who are travelling, during the brief stop of a train, or in other circumstances of a similar nature.

A fertile field of complicated phobias is that of the sexual functions. Ejaculation, or, much more often, erection, may be absent, owing simply to fear of failure—a fear that is in some persons habitual and insurmountable, without being justified by anything in the condition of the sexual apparatus. This state of mind is very distressing, not only on account of the privation it imposes upon an imperious instinct, but also because of the humiliation it entails to the *amour propre*. These persons often try to deceive others, if not themselves, alleging æsthetic, moral, or hygienic scruples, which in reality they do not have. Their abstinence is in fact the result not of scruples or of indifference, but of a strong desire to succeed, combined with a great fear of not succeeding. This mental condition of painful doubt becomes the more irremediable the more it is confirmed by repetition of unsuccessful experience. In its origin, however, it is always determined by a gratuitous and purely *a priori* monophobia. Decisive proof that the doubt is irrational and contrary to the functional validity of the individual is furnished by the occurrence of subvarieties of psychical impotence, in which the condition is regularly manifested only under certain circumstances, and in relation to certain women, or to certain classes of women.

These clinical phenomena have nothing in common with horror of women, or with other similar aberrations of the sexual instinct, because they do not consist in defect or perversion of erotic ideals, but simply in impotence, actual or imagined, to

realize them. Such impotence is, moreover, sometimes in inverse ratio to desire. In other words, the alteration does not directly concern the sexual instinct, which is generally normal, or at most a little intensified, but arises from its being interfered with by a corresponding phobia.

Each of these phobias always contains two constant and characteristic elements: first, the fixed idea that forms its object concerns *possible* occurrences, and, second, this idea is unceasingly renewed, even though the occurrence thought of may be extremely *improbable*. On account of their theoretical possibility, obsessive ideas may occur in persons whose brains are comparatively healthy; on account of their improbability, they are recognized as morbid, and therefore fought against. From what, then, do they derive their combative tenacity, through which they loom large in the field of consciousness, notwithstanding the resistance of both reason and will? The key of the phenomenon is really the emotional state, as has been well shown by Pitres and Régis. There is a special hyperæsthesia of the affectivity, founded upon a partial timidity, which resolves itself into a monophobia. This partial timidity may be constitutional or acquired, and it is a fatal and fantastic, or, at least, very much exaggerated, feeling of personal weakness. In order to walk, to breathe, to find one's way in the dark, to maintain one's equilibrium, to inhibit blushing from shame, to rise with regularity, to keep in good health, to obviate death, to prevent oneself being buried alive, or to touch nothing unclean, demands a force, or a good fortune, or a degree of attention that may very easily be lacking. The morbid fear of such a want therefore causes the patient to feel to be probable, and, indeed, imminent, what his reason and that of others are agreed in regarding as merely possible. If the conflict between feeling and consciousness comes to an end, if the danger is felt affectively in the same degree as it is realized intellectually, the obsessive idea vanishes. In short, either the idea is feared to the extent it deserves—that is to say, very little, if at all, in which case it loses all pathological character, is not repeated, and becomes included in the list of ordinary ideas, and therefore cured—or the idea begins to have attention paid to it, because of the fears it arouses—that is to say, in a way it does not objectively merit—and in this second case it completely changes in pathological character; it is no longer an obsession, but a true delusion, or fraction of a delusion, which betokens a psychopathic state of quite a different nature.

The obsessive states thus result from a constitutional or transitory want of harmony between intelligence and the affective state. In this disturbance of relations, the part played by the

affective state is pathogenetically by far the most important. The intelligence can only supply the theme of the obsession at its initiation, and afterwards oppose to it that logical resistance that is the inalienable office of the normal mind. It is the character that produces the obsession with its fearful imperiousness. The error lies in paying serious attention to a theoretical and indifferent idea which has arisen in the borderland of logical thought; it lies in being afraid, not in thinking abstractly of the particular idea, and much less in condemning the fear as senseless. Indeed, the intelligence of those who are subjects of obsession is not only lucid, but almost always preserves its type and physiological energy; such people are merely pusillanimous. Their infirmity ought to be studied in its emotional aspect, and treated as an affective disturbance. As, however, it consists in a timidity of an entirely partial and special kind that has for its material an idea, and that can be described only in ideational terms, it is indispensable for the distinction of all these fears to designate them according to their representational content, and to regard them as irregularities of ideation.

Even normal persons sometimes find that they are unable to get rid of some importunate idea. Often the annoyance is caused by a tune that keeps recurring to the memory, humming with the irritating insistence of a mosquito, until sometimes voluntary attention becomes impossible. Often it is the idea of a sudden action, inimical to our own interests, and suggested by circumstances that would render its execution easy if the will should assent. For example, as a person is looking over the parapet of a tower, the idea of precipitating himself flashes repeatedly across his mind; or, whilst looking at a powerful machine in motion, one feels a strange impulse to introduce the hand between the teeth of unprotected wheels. The insidious fascination of these obsessive ideas does not proceed from a perversion of intelligence; it is the product of a momentary laxity referable to the character—that is to say, to the emotions and will. It is only the character that can thus become impaired, and it does so in consequence of fatigue, or of a passing change in the *cœnæsthesis*. The intelligence, which is not subject to fatigue, and which is strengthened by the inexhaustible tribute it receives from the special senses, ignores these lapses, and falls only when it is markedly altered or profoundly disturbed.

Obsessions have been divided into three groups: (1) The intellectual or purely representational; (2) the emotional—that is to say, with the complication of an affective state; and (3) the impulsive, with suggestion to an act. In reality, even the most indifferent of imperative ideas, on account of their incoercibility,

or on account of the consciousness that the patient has of their incoercibility, have an emotional colour, which, as we have shown, is the true cause of the obsession. Even *arithmetical obsession* and *interrogative obsession*, which are certainly amongst the least offensive, would lose their psychopathic flavour and their tendency to repetition if they were not accompanied by a certain degree of undue excitement. The intensity and gravity of the obsession does not depend upon the nature of its representational content, but rather upon the frequency with which the attacks are repeated. An indifferent representation, or a harmless impulse, such as to wash one's hands (*misophobia*), or to look at oneself in the looking-glass (*dysmorphophobia*), if it recurs frequently, causes a reaction, and sometimes a degree of despair much more acute than certain terrifying or criminal obsessions that occur only at long intervals. To these last there may be opposed, on the initiative of the patients themselves, material impediments that are not available in the case of simple representations; for example, there are persons subject to obsession who of their own accord go to asylums or prisons in order to be kept from injuring their relatives, and who, with their own hands, hide all weapons so that they may not be tempted to use them.

This being so, it is not necessary to divide obsessions into more than two groups. Simple obsessions keep within the limits of pure incoercible representations; complex obsessions include an impulse to actions that are ridiculous, indelicate, or criminal, and are merely a corollary of representations. One need not on this account regard every morbid impulse as an obsession. On the contrary, the morbid impulses such as occur in unconscious patients, in epileptics, maniacs, paralytics, and demented, are not in any way of obsessive origin. In the case of these sudden impulses, the action explodes automatically without struggle to prevent it, without consciousness, and without repentance or subsequent recollection of the occurrence. The name of true obsessive impulses is appropriate only for those auto-suggestions that are repeated with incontrollable persistence, which are recognized to be morbid by the patients themselves, and which excite a disgust or alarm, insufficient to prevent the return of the representation, but almost always serving to check the carrying out of the act. To liken these conscious obsessions, whether followed by action or not, to the entirely blind impulses of epileptics and demented, or, still worse, to compare them to the exploits of criminals who act more or less deliberately in entire conformity with the ordinary tendencies of their character, implies a chaotic confusion of phenomena that are of the most dissimilar nature.

A very good example of *obsessive ideas* and *obsessive impulses* occurring in the same person, and successively provoked by a common cause, was described by Morselli in 1886. A young woman, suffering from nervous exhaustion consequent upon her first puerperium, watched with disgust and shuddering her own husband as every day he spent a couple of hours in cutting up with scissors meat for his parrots. At first the image of this daily scene engraved itself in the exhausted mind of the patient in the form of a simple and repulsive obsession, but after some time it changed into an impulsive and horrible obsession. The woman, fully conscious of her mental infirmity, felt herself impelled to use the same scissors to cut off the tongue of her infant, whom she loved. She was, however, separated from the child, and recovered.

Obsessions are associated, more intimately than with any other psychosis, with *constitutional neurasthenia*, of which they form one of the most characteristic features; in such cases the tenacity with which they persist is truly extraordinary, sometimes continuing throughout life. They may vanish, it is true, but only to give place to other equally obsessive ideas, thus proving the existence of a true *diathesis of incoercibility*, which is identical with constitutional neurasthenia in its most clearly marked manifestations.

Another, but less permanent, source of obsessions is the acute neurasthenia that in some cases accompanies certain grave cerebral morbid processes, such as progressive paralysis, or which accompanies the exacerbations of pulmonary phthisis and of tabes dorsalis, or follows the febrile period of toxic and infective diseases. I may mention here a case of a general paralytic who had suffered from syphilis fifteen years previously, and who for four years afterwards showed only myosis, claustrophobia (fear of tunnels), and pathophobia (fear of dogs and of rabies), symptoms which were altered and destroyed with the advance of the paralytic process.

More or less ephemeral and numerous obsessions also occur in hysteria. In cases of melancholia they are, as a rule, so intimately mingled with doubts and delusional convictions that there is apt to be uncertainty as to their true nature.

For the reasons that have been indicated, we must exclude the possibility of the occurrence of true obsessive ideas in those forms of mental disorder that are accompanied by even slight dulling of consciousness. *Pantophobia*, which is so frequent in the various forms of excited melancholia, and which is so often a prelude to the raptus or other confusional phases accompanied by profound alterations of consciousness, is not, strictly speaking, a phobia, because the fear of everything leaves no place for critical rejection, which is a part of obsession, and which is possible only in cases in which logical thought is disturbed, but not suspended.

Notwithstanding the expression *rudimentary paranoia* or

abortive paranoia, by which it is sought to designate the nameless psychosis of the obsessions (which, in fact, is merely neurasthenia, for the most part constitutional), it must be maintained that the metamorphosis of fixed ideas into delusional convictions does not occur as a natural process. Obsessive ideas never, or hardly ever, occur in paranoia, which, indeed, is a guarantee of immunity from all manifestations of neurasthenia. The brain of a paranoiac, prone to precipitate and foolish conclusions, is not a soil suitable for the spasmodic hesitations that generate, accompany, and confirm incoercible representations.

Those persons in whom obsessions are followed by delusional convictions (it is believed by some that a gradual transition from the one to the other can be observed) are in general juvenile demented or cases of hebephrenia. In these cases, however, the origin of the two symptoms is independent. The obsessive idea is the product of the prodromal neurasthenia, which is often the first sign of illness in juvenile dementia; on the other hand, the delusional idea (rather a doubt or ostentation than a true conviction) arises as a sign of mental decay after the neurasthenia has vanished.

A young man of eighteen became ill, his symptoms being those of neurasthenia. For several years he suffered from paræsthesia, thinness, muscular and mental weariness on slight exertion, insomnia, irritability, and various phobias. He had a dread of metals, rings, pins, coins, razors, scissors, etc., and he allowed his beard, hair, and nails to grow rather than endure contact with them. He was afraid of electricity and lightning, and was seized with anxiety at the sight of a rocket or upon the least threatening of rain. Finally, he became unable to pursue his studies, to which he had previously attended with the greatest diligence, on account of an indolent and old-standing cicatrix upon his hand, which formed the object of his most continuous obsession, notwithstanding the application of anæsthetics, and even after surgical treatment. After about three years the clinical picture was completely changed: the patient became very fat; he developed into a case of juvenile dementia, with apathy and with incontinence of fæces, and his phobias had entirely disappeared.

Obsessive ideas are of much importance in regard to diagnosis. The presence of this symptom is incompatible with the majority of the more profound mental disorders, such as loss of consciousness, incoherence, the confusional state and systematized delusion, as well as with certain slight disorders, such as acceleration of the ideative processes. On account of these incompatibilities, obsession is to be observed only in a very limited number of diseases—namely, (1) in the lucid psychoses, such as constitutional neurasthenia, hysteria, and mild forms of melancholia; (2) in the neurasthenic episodes of those diseases which, during their exacerbations, may entail slight mental disturbance, as, for

example, tabes dorsalis and pulmonary phthisis ; (3) in the lucid and not yet definite preliminary stage of certain involutional psychoses, such as progressive paralysis and juvenile dementia, which, immediately they have acquired their characteristic features, entirely lose those of obsession. Whilst obsessive ideas do not tolerate association with other psychopathic symptoms, excepting those of affective depression, they are seldom unaccompanied by changes in sensibility and general bodily health. These signs almost always suffice for the recognition of the disease that lies at the foundation of the obsession.

Delusional Convictions and Delusional Doubts.

The true clinical opposite of the obsessive idea is the *delusional conviction*. Whilst the obsessive idea is the object of more or less anxious doubt, the delusional conviction is a matter of dogmatic certainty. The person who suffers from an obsession is a waverer, and knows he is ill ; the person who is the victim of delusion is an irreconcilable who will not allow discussion, either regarding his belief or his mental state. The one is in disagreement only with himself ; the other is openly and obviously at war with fact, and therefore with the opinion of all normal persons. The obsessive idea begins and continues external to the coherent personality of the person, who ceaselessly contends with it as an intruding element ; the delusional conviction has its origin in the individual's inner personality, which it pervades as one of its integral elements, and which in the end it dominates.

The most complete expression of delusional conviction is reached in *paranoiacs*. These patients adopt as their rule of conduct fantastic opinions which are suggested by passion and accepted without any proof. Their credulity and unreasonableness are limited to the subject of the delusion, whilst in regard to other matters their judgment is not far from normal. Therefore, the morbid character of the delusional idea is not due only to its strange content, but also, and chiefly, to the blind and passionate credulity that the patients manifest towards it. Indeed, delusional convictions, which are generally few in number, are connected by a certain show of logic in such a way as to form a context, to which the name of *systematized delusion* is given.

The subject-matter of these systematized delusions always refers to the personal and fundamental interests of the patient, to the preservation of the individual, or to the reproduction of the species.

Thus is to be explained the uniformity of these delusions, which, indeed, appear as if copied by one patient from another, for there are not more than five or six varieties, and these are the

same at all times and in all countries. Thus, also, is to be explained the singular blindness with which patients who are lucid and not devoid of dialectic ability can be led to credit a gross absurdity. Their beliefs are such as satisfy certain indistinct but yet profound and overmastering instincts and passions which, just because of their exceptional intensity, are incapable of adaptation to the fixed limits of external reality, and overflow into the region of the improbable.

The whole biological activity of organized beings is directed to defence against enemies and other hurtful agencies. Even aggressive and offensive acts are essentially measures of precautionary defence. *Delusions of persecution* represent a perversion of this instinct of defence, an erroneous and abbreviated, but precise and clear, form of that passive terror which, operating upon mankind in general, has given rise to the superstitions and religions of primitive peoples. The patients believe themselves to be the victims of persecutions which, though their names and mechanisms may change, do not change in nature. They imagine they are being watched, ridiculed, poisoned, bewitched, injured in their body and in their soul by the work of persons, sometimes real, sometimes imaginary; leagued together as Jesuits, masons, mountebanks, mahdists; or, acting independently, a sister-in-law, Bismarck, the Sultan, Dr. Fritz, who, they believe, employ natural and supernatural means, such as physical agencies, the Röntgen rays, magnetism, hermeneutics, telephonic ether, dry powders, catarrhal fumes, etc.

Hypochondriacal delusion is simply a subspecies of persecutory delusion; it is fear that has withdrawn to its last trenches in defence of the body. *Ambitious delusion*, or *delusion of grandeur*, is also a perversion (in the direction of excess) of the instinct of defence, which develops in an aggressive manner. Instead of believing themselves in a state of war, pitted against other men and against nature, the patients imagine, notwithstanding the humbleness of their real position, that they are invested with a triumphant supremacy, and they may even undergo a change of personality, and proclaim themselves princes, wise men, saints, prophets, the Madonna, Jesus, the Queen of Sheba, or confer upon themselves aristocratic surnames or invented titles, such as Louis XIII., Barolenus I., Alexander X., etc. Apart from the difference of conclusion, inspired in the one case by pessimism and in the other by optimism, both the persecuted and the ambitious betray the same paroxysmal solicitude for their own preservation and individual happiness, the same tendency to selfish interpretations, and the same analogies of their thought to that of primitive people.

Religious delusion and *erotic delusion* are the two most important varieties of ambitious delusion, involuntary plagiarisms of those errors and mental habits that are endemic among primitive societies. Religious paranoiacs despise the traditional religion, and preach only their own, seeking to impose its restraints upon others rather than upon themselves. Erotic paranoiacs imagine themselves united in mystical marriage with women in high social position and out of their reach, whom they have never seen, and who may not even exist.

Systematized delusions are to a large extent the result of passional suggestion. It is, indeed, just because the fundamental human passions have undergone only the slightest changes that there is a resemblance between the fantastic ideas of the paranoiac and those of primitive people. There is, however, this difference—namely, that the paranoiac himself creates them sporadically when the passion is specially intense, whilst the primitive man received them under ordinary conditions through tradition and psychical contagion.

A special expression of an attitude of both defence and offence is seen in *delusion of pretension* or *litigious mania*, in which the person, thinking himself injured in his rights, carries his case from tribunal to tribunal, and, having exhausted legal procedure, remains in an attitude of hostility to the powers that be and to the whole of society. Such cases constitute typical examples of persecuted persecutors. In some cases delusion of pretension reappears periodically in the maniacal phase of the circular insanities.

Notwithstanding their altruistic theme, a ridiculous self-centred attitude is also engendered by the pseudo-scientific, inventive, humanitarian, utopian, metaphysical, and other delusions of eccentrics, who in their proud independence of common sense show an individualism no less pronounced than that of paranoiacs with personal delusion.

A collateral delusion, often associated with that of persecution or preceding that of grandeur, was well described by Carpentier under the very appropriate name of *delusion of defence*. Paranoiacs with this form of delusion occupy an intermediate place between those having simple delusions of persecution, who have only enemies, and those with genuine ambitious delusions, who have only one or two subordinates; they imagine that they oppose their enemies with the aid of an array of *allies*, such as medical men, ladies of the aristocracy, lords, kind spirits, Joan of Arc, the Queen of Italy, the Emperor, etc.

When these paranoiacal convictions attain their full development they lead to a change of personality; the patients imagine

themselves endowed with a new personality, always superior to the real, or with two personalities simultaneously. With the same lack of modesty, but without any preceding operation of the imagination, the delusion of changed personality presents itself also in other psychoses in paranoid form.

All these delusions, which compose the classical cycle of paranoia, are often fed by hallucinations, which may be auditory, gustatory, olfactory, or, more rarely, visual.

Hallucinations may precede the delusional convictions or follow them ; but it is very difficult to determine if the hallucinations are the cause or the effect of the delusions. For the most part the two phenomena are independent of one another, and their only psychopathogenic connection consists in this : that hallucinations, no matter what their subject may be, possess the power of confirming the delusion. Indeed, through their mysterious fascination, they more and more familiarize the patients with the borderland of the supernatural, and remove the last obstacle in the way of belief in the false.

It is probable that prevalent ideas (obsessions or delusions) are dependent upon a morbid hyperæsthesia of the ideational centres. In consequence of this hyperæsthesia, ideas are awakened in such a way as to render them spasmodic, as in the case of obsessions, or to surround them with a halo of false certainty, as in the case of delusional convictions. It depends upon its attraction or repulsion by the complex of habitual tendencies whether the prevalent idea will be received as a conviction, or combated as an obsession.

In most cases hallucinations and delusions occur in association with one another, although there may be no logical connection between them. This association is the rule in confusional and semiconscious states.

A similar explanation does not at first sight seem applicable to the cases of lucid and limited delusion that we have been considering. Indeed, it may be said that when there is hyperæsthesia of the ideational centres, all, or almost all, of the ideas should assume characters of obsession or of delusional conviction, and this does not occur except in cases of very great ideational disorder. On the contrary, in paranoiacs and many other lunatics there is a partiality of manifestation which is so definite and constant that obsessions, and still more delusions, never develop except along the well-defined lines that have already been mentioned. This is so because the pathological metamorphosis that gives to a representation the distinctive mark of obsession, doubt, or delusional certainty requires, in addition to hyperæsthesia of the ideational centres, the assistance of the feelings. Feelings of diffidence and ambition, carried to a morbid or anomalous inten-

sity, induce hyperæsthesia of the ideational centres, but only in regard to those perceptions or ideas with which they harmonize, and thus they give rise to obsessions, to systematized delusions, or to a series of ideational disorders, the subject-matter of which is fixed within determined limits.

The fact of the participation of a sentimental element appears with incontestable clearness in the case of those delusions which, apart from paranoia, occur transitorily in melancholics as a result of their affective depression. Melancholics, who are rendered by their illness submissive and humble, give way to convictions or doubts in conformity with their sentimental state. Thus, there are delusions of smallness, guilt, sin, self-reproach, of active injury to the interest of others, etc., which manifest themselves at the height of the melancholic process, but disappear like mist before the sun the moment the affectivity returns to its normal condition.

On the other hand, every melancholic patient does not become delusional. There are melancholics who in the most severe phase of their illness preserve intact the clearness of their judgment upon every point. This fact signifies that in delusional melancholics there operates along with the sentimental factor an intellectual coefficient. Only in consequence of a special feebleness of intelligence does the idea aroused by pain and discouragement become capable of contracting such relations with the store of habitual ideas as to become converted into a delusional conviction; without it the prevalent idea would remain a simple obsession. In other words, among melancholics only those become delusional who have inherited a paranoiac constitution, however latent and incomplete this may be. Indeed, their delusions, not having as their basis a decisively paranoiac intelligence, belong rather to the category of doubts than to that of convictions. Whilst a delusional conviction causes an incredible fact to appear certain, the delusional doubt makes it seem simply possible, and is associated with less, though always grave, defiance of logic. Thus, the delusional doubt is something intermediate between the delusional conviction and the obsessive idea, of which it in part shares the offensive character.

In the delusional melancholic the sentimental factor in the production of the delusion is evident, whilst the intellectual factor remains latent. Just the converse occurs in the case of the paranoiac, in whom the intellectual constitution, as is well recognized, is originally very anomalous, whilst feelings of diffidence and ambition operate, as it were, in shadow, and sometimes, indeed, would not be suspected if it were not that they are revealed by the delusion.

This double origin of delusions is plainly revealed in those cases

of general paralysis in which, in consequence of the dissolving and simplifying action of the disease, it is easy to observe the play of mental processes. On the one hand, almost all paralytics show an alteration in their affective state, ranging from extreme euphoria to extreme depression; on the other hand, they always exhibit defective judgment in consequence of the progressive demential process by which the intelligence is affected. Therefore, whenever the paralytic becomes subject to the cœnesthetic, and hence the affective, hyperæsthesia that results from the action of the pathogenic agent on the cortical centres, there is displayed, with the co-operation of the intellectual enfeeblement, megalomania, changing delusion of grandeur, hypochondriacal delusion, and other similar forms of well-known, common, and characteristic delusions. On account of the intensity of the affective disturbance and the great extent of the intellectual dissolution, these delusions of the general paralytic are more varied, incoherent, and hyperbolic than those that occur in the paranoiac. Further, as the sentimental alteration is not connected, as in paranoiacs, with the psychical constitution, but with the incidental extent of the morbid localization, it is natural that in paralytics the delusions should be of ephemeral duration and extreme inconstancy. On the other hand, apathetic paralytics, owing to the fact that their intelligence, though impaired, is not stimulated in any way, manifest incoherence, but no delusions.

An interesting class of *paranoid delusions*, which, on account of their transitory character, can be placed alongside those just described as occurring in progressive paralysis and melancholia, may be observed more or less episodically in the course of several other diseases of the nervous system, such as hysteria, epilepsy, imbecility, alcoholism, neurasthenia, and senile dementia, but above all in juvenile dementia. Whilst the majority of these diseases leave room for no diagnostic uncertainty in view of the emphatically pathognomonic nature of their other symptoms, which are never absent, juvenile dementia, though recognizable in the long-run by the peculiar characteristics of its course, readily leads to mistakes. The delusions of juvenile dementia so closely resemble those of paranoia that Kraepelin, after having distinguished certain small differences, described them first as a special form of fantastic paranoia, distinct from combined paranoia (the classical form) by their slighter coherence, but afterwards, perceiving the analogy between the course of these cases of psychosis exhibiting fantastic delusion and those that he had already designated hebephrenic and katatonic varieties of juvenile dementia, he decided to create a third variety of juvenile dementia characterized by this paranoid delusion.

Delusional convictions and delusional doubts of a fleeting and abrupt character may manifest themselves in any disease, phase of disease, or syndrome that is accompanied by grave disturbances of consciousness ; but in all such cases there is united with the symptom of delusion, overshadowing it, that of general disorder. The delusional doubt is devoid of any painful character, and becomes the expression of a timid and confused uncertainty, due to imperfect realization of facts. The delusional conviction loses the dogmatic pretensions that mark the paranoiacal and paranoid convictions, and is reduced to a hasty judgment due to momentary disturbance of the reciprocal relations between ideas. Thus, from qualitative alterations in the ideas one passes to those that regard their quantity and arrangement.

The Quantity of the Ideas.

The *quantity of the ideas* has to be considered from two points of view, the static and the dynamic. On the one hand, the individual memories and ideas, fixing themselves in the brain in the potential state—that is to say, as a reserve of representational processes capable of being recalled to consciousness when required—become deeply imprinted upon the psychical personality, increasing its complexity and strength, and constituting the working capital of experience from which one can make immense profits, which in their turn can be made to contribute to capital.

On the other hand, the slow acquirement of this capital and the continual employment of it require a conscious activity, the exercise of which at different times is very varied in degree, and therefore independent of the quantity of the store of ideas.

Ideas existing in the state of evocability, as well as those in process of evocation at a given time, defy all attempts at computation, not only because of their very great number, but also on account of various intrinsic conditions that render such a census impossible, or, at least, without significance and utility. Although the numerical computation of the ideas is impracticable, an empirical and approximate valuation can be made very easily, and is, indeed, commonly carried out cursorily ; it allows of an estimate being made in each individual case, both of the intellectual capital and of the use to which it is put.

Each general idea has a different capacity of multiplication, and therefore a very different importance in the hierarchy of our thoughts, but, in order to be utilized, it requires the concurrence of favourable circumstances, which foster the opportune associative efforts, and keep in circulation the corresponding portion of capital.

This happens more easily and more frequently when the

conscious activity of thought is more intense and varied. In the melancholic, under the influence of severe depression of spirits, this activity is temporarily diminished and circumscribed, even though intense; therefore, even if the ideational stock remains quantitatively the same, its employment is less, so long as the state of depression remains. If the depression is prolonged indefinitely, a gradual impairment results. It is true that in the maniac, who acts, speaks, and thinks under the influence of exaltation of feeling, very numerous, vivid, and unusual associations are aroused, so that there is a tendency to the utilization of the more neglected and worthless portion of the ideational stock; but the instability of attention, which is distributed over subjects that are almost always frivolous, hinders higher judgment, which requires strict and sustained analysis. Therefore the abundance of thought which is sometimes admired in maniacs constitutes an embarrassment rather than a sign or source of greater richness.

A true and happy equilibrium between the patrimonial richness of the ideas and the facility in evoking them by means of associations is an important element in the psychical personality, because it reconciles knowledge and intellectual potentiality with the militant activity of thought. Neurasthenia, whether constitutional or episodic, commonly renders the power of evocation more torpid; and the consciousness of this torpor increases in the patient the already exaggerated sense of his own impotence. Many persons who are normal, but who have neurasthenic tendencies, are able very rarely to make full use of their intellectual power, and, in order to marshal with facility the available ideas that slumber in their mind, require an emotional upheaval, such as is experienced by those orators who become eloquent, effective, and truly extemporaneous, only when the applause or the interruptions of their audience overcome their habitual state of inhibition.

Indeed, cœnesthetic discomfort, hypochondriacal broodings, and defective bodily nutrition, produce in neurasthenics a state of permanent and passive resistance to a large number of associative processes, and thus a large part of their ideational capital is left unused, though it is not destroyed.

The fundamental ideas that serve as our directive guides in judging and deliberating almost never appear in consciousness in their actual and clear form; nevertheless, we owe it to them if the judgments and deliberations to which we commit our well-being are appropriate, prompt, and in conformity with our personality, even under circumstances that arise suddenly and for the first time. In estimating the mental power of an individual, it is necessary to take into consideration the content of these supreme

ideas, and the greater or less amount of solidity and cohesion that they exhibit. If the fundamental ideas are deficient, erroneous, or imperfectly connected, the result will be a personality which, notwithstanding erudition and vivacity of spirit, will show credulity, inconstancy of beliefs, lack of critical faculty, and therefore a morbid predisposition to more or less fixed delusions in consequence of simple affective disturbances, such as those attending melancholia and mania, and organic disorders, such as fevers, physical pain, insomnia, and anorexia. So-called psychical degeneration, moral imbecility, and paranoia often depend merely upon this partial deficiency, anomaly, or incoherence of the directive criteria. On account of want of critical faculty and trustworthy guidance, these degenerates, moral imbeciles, and paranoiacs, even if they are, and can show themselves to be, very correct in their ordinary judgments and decisions as long as the conditions that affect their mind and body remain normal, break down and become delusional, or commit crime, when confronted by certain conditions and disturbing influences that less rich and brilliant, but more stable, intelligences are able to resist, because better endowed with general criteria. Our knowledge is not something fixed that can be considered apart from the manner in which it manifests itself. Not only in as much as it contains germs capable of further fruitful applications, but also in as much as it is the laborious synthesis of antecedent ideas, it is merely the static condensation of a dynamic activity in a state of continual formation, which eludes anything of the nature of enumeration. The past intellectual work, of which the existence of general ideas is evidence, is just as important and as indeterminate as that which the existence of these ideas promises for the future. Moreover, our views are often not the products of our own thought, but the results of collective thought, which has been assimilated in its conclusional form in accordance with the beliefs of others. In the case of many ordinary persons, general conceptions are not opinions, but simply things imperfectly learned that are lost at the first touch of dementia. All of such constitutional imitators, when they chance to become insane, more especially if the form of insanity is that of juvenile dementia, display lack of that originality for which they were previously conspicuous, and show a great inferiority to paranoiacs, who, although poor as regards their critical faculty, are always the genuine and convinced inventors of their own special delusions.

One of the most widely received maxims in psychiatry is that regarding the patrimonial stock of ideas, formulated by Esquirol in the saying that the imbecile is a pauper, the dement is a bankrupt. Their intellectual level is the same, but the one does

not rise because he is unable to learn, the other falls because he has unlearned what he knew. Nevertheless, it is necessary to add that the imbecile does not at all resemble the dement. The imbecile is mentally a more or less grown-up caricature of a child ; his behaviour, his speech, but more especially his expression, his stock of words, his ingenuousness, and his vanity bear the mark of infantilism. The dement, though advanced in dementia, preserves amid the ruin the remnants of a developed intelligence ; he has some scientific and moral ideas, many good expressions, and a certain dignity of behaviour that give him the external seriousness of a normal person and at first sight hide his deficiencies.

In order, therefore, to determine the intellectual power of an individual, we ought not to limit ourselves to the measurement of his permanent stock of ideas, but must take into account also the capacity, not always the same, that he exhibits for using it and adding to it. The numerical sum of the potentially existing ideas, their hierarchical degree, and the strength of their cohesion form the capital ; but the manner in which this capital has been accumulated, the habitual facility with which it is utilized, and the ability to increase it by the development of corollaries, form another capital still more intimate and fundamental, which we call talent or intelligence. It is this capital that is originally deficient in imbeciles, and which is partly lost in dements. Every mental disorder, even though it involves only the affective functions, is a danger to the integrity of the intelligence, which may even suffer temporary eclipse and permanent, but limited, mutilations. A very good example of such suspension of intellectual activity is seen in *amentia attonita* ; another, but less marked, example occurs in *myxœdema*.

Alterations in the Arrangement of Ideas.

The *succession of ideas* is said to be altered when the order of the internal representations ceases to correspond to that of external events—that is to say, to reality. We maintain continual contact with external reality by means of perceptions that reflect the actual order of things, memories that reproduce for us their past order, and general conceptions that schematize the abstract or ideal order of the external world, and thus we are enabled to distinguish what is possible from what is impossible.

The slightest forms of ideational disorder are those that consist in the simple prevalence of fantastic or uncontrolled thought over thought that is applied to the subjective and, as far as possible, exact reproduction of reality. The patients show a

certain lack of interest in and attention to both the little and the great problems that continually present themselves to the intelligence, whilst they pay attention in a superficial and purposeless manner to surrounding objects, just as animals, children, and, in general, the lower creatures do. The feeble-minded juvenile demented, general paralytics in the prodromal stage, senile demented in the phase of remission, and many other mentally afflicted patients, who are not delusional, and who conduct themselves with a certain amount of good sense, often betray a slight degree of mental enfeeblement by this sort of indifference. They cease to control their attention with due continuity and strictness. Even if there is not distinct disorder in the abstraction of ideas, the evidence of a certain amount of defect in their arrangement is observable. Similar persons occur among normal individuals of small intellectual development, among neurasthenics, those in the earliest stage of progressive paralysis, and cases of insanity that have recovered incompletely. Derangement of the order of ideas is connected with the absence or deformation of many of the perceptions, memories, general ideas, etc., which form the framework of our thought. Without extensive lacunæ or deformations of representational content there is no possibility of disorder, because the ideas that correspond directly to or logically harmonize with the real have in themselves a suggestive power that calls forth the normal successions, and therefore hinders those that are false.

Hallucinations or other errors require to attain to a considerable number in order to deflect and overturn the logical order of ideas, and lacunæ require to be extensive in order to arrest and suppress it. On the other hand, the dispersal of the ideas without any order favours the development of new errors and of delusional convictions, which occur unceasingly in all severe cases of mental disorder, producing the so-called chaotic delirium.

This reciprocal solidarity of the qualitative and quantitative content of our thought, on the one hand, and of the succession of ideas on the other, is easily demonstrated in imbeciles and in certain paranoiacs with very abundant delusions. Imbeciles are not so poor in ideas as to be obliged to forego any attempt at mental initiative, but their equipment is so defective that often, owing to want of directive and corrective ideas, they are exposed to outbreaks of paranoid delusion of confusional character, not from excess of passion, but owing to insufficient reflection. Similarly, hebephrenics, burdened with delusional convictions or doubts, finally fall into a state of mental disorder, because they almost entirely lose a just vision of reality, thus coming to resemble demented and chronic aments.

On the other hand, slight alterations of the perceptions, memories, or general ideas, an isolated hallucination, a partial amnesia, or a single error of judgment, do not profoundly modify the general course of the ideas. Imperative ideas may endanger, molest, and exhaust the processes of thought, but they do not succeed in altering its correspondence with the real.

Ideational disorders are therefore constantly connected with somewhat extensive alterations in the quality and quantity of the ideas. A noteworthy degree of disorder reveals itself in the very conspicuous form of *partial disorientation*, which causes a patient to lose the knowledge of his exact position in time and space, to forget or to localize inaccurately the particulars of his own life, or to be unable to recognize the identity or the office of persons around him.

This partial disorientation may depend upon a crowd of hallucinations, more especially visual, which distract the patient's attention from real objects in his vicinity, and cause him to be deceived in regard to their real nature. This occurs sometimes for a few minutes in febrile diseases, drunkenness, hypnotic fascination, the heavy waking state, and certain occasional circulatory disturbances of senile dementia; it occurs also for longer periods in the crises of hysteria and in the course of delirium tremens. Disturbances of perception do not destroy the sense of the surroundings, but they so falsify it that they constitute the most frequent cause of partial disorientation. This phenomenon is, in fact, the rule in a psychosis that is specially of a hallucinatory nature—namely, confusional amentia. At other times partial disorientation is an effect of grave mnemonic lacunæ, and manifests itself after a traumatism, in apoplectic and senile dementia, in progressive paralysis, and in convalescence from acute psychoses, such as mania and amentia.

A celebrated Italian painter, who had suffered for eight months from an attack of amentia associated with glycosuria and very severe convulsions, recovered his habitual lucidity, returned with great success to the labours of the brush, and was capable of carrying on brilliant æsthetic discussions. He did not, however, recognize either his friends or his own pictures. During the very long period of his convalescence he was fully conscious of his own disorientation, but, being rightly assured that his intelligence was otherwise preserved, he jokingly enjoyed the surprises that his amnesia brought him, as it allowed him to renew with the flavour of freshness his old friendships, and to criticize or to praise without preconceptions the artistic creations that he was unable to recognize as his own.

Other patients are not aware that they are, or have been, in an asylum; they do not know who has taken them there, or how long they have been confined; they mistake the attendants for prison warders; they do not correctly know their age, place

of residence, or position in life, although their behaviour and manner of conversation do not perceptibly differ from the normal.

In progressive paralysis and senile dementia also there occur moments and phases of partial disorientation, owing to more or less permanent deficiency or alterations of the general ideas. The patients are defenceless against sinister suggestions and accidental auto-suggestions; with a childish credulity they accept literally statements and appearances that the smallest particle of judgment would cause them to reject at once. They can be made to believe that they are going a long ride whilst their legs are merely astride a chair that remains motionless; that they are sailing to distant lands, though they never even leave the house; that they are the owners of the asylum in which they are lodged along with the poor; that they are conversing with the portrait of a deceased relative; or that they have priceless treasures in their hands, whilst they hold merely some markers used in games or some valueless sheets of paper. Notwithstanding these incoherent beliefs, the same patients are able from force of habit to maintain a sensible conversation so long as it is confined to commonplace remarks.

When a still larger number of perceptions, memories, and general ideas are involved, whether in the direction of qualitative alteration or in that of suspension or destruction, there is total, or almost *total*, *disorientation*. This state can be produced in two ways, and may have two entirely different origins.

The term *mental confusion* is applied to the severe disorder that occurs in an acute form from transitory alterations or arrest of many ideational processes. Mental confusion is a syndrome characteristic of *hallucinatory amentia* and of *amentia attonita*; it is seen in the rambling of febrile delirium, is exhibited in the psychical equivalents of epilepsy, as well as in the pre- and post-convulsive states of epilepsy and hysteria, and sometimes occurs as a more or less prolonged phase in the course of progressive paralysis, imbecility, and juvenile dementia.

The term *psychical incoherence* is, on the other hand, applied to that chronic disorder which is occasioned, not so much by irregularity of the perceptive powers as by the irreparable loss of memories and general ideas. Whilst confusion is especially an amential syndrome, incoherence is especially a demential syndrome. Incoherence does not cause an amount of disorder equal to that of acute confusion, except in rare instances; it at least does not do so excepting in very severe cases of dementia paralytica, juvenile dementia, and senile dementia, that are absolutely incapable of any kind of reintegration.

States of Semiconsciousness.

A high degree of dissociation results in the cutting off simultaneously of all communication with the present, past, and theoretical succession of events, and leaves the patient isolated from all actual mnemonic or logical correspondence with the objective world, including his own body. Even if the perceptions persist in a normal form, as they do in rare instances in acute confusion, and very frequently in chronic incoherence, the disorientation remains complete, because the actual images lose all value when they fail to effect any integration with the memories that might have transformed them into ideas. Both confused and incoherent patients talk and act in an entirely irrational manner; they fail to respond to the majority of external and internal stimuli, and end by losing even the idea of their own psychical and bodily personality.

The activity of consciousness tends also to be abolished or suspended in these cases, for there is no consciousness unless there is at least a gleam of intelligence. Between extreme mental disorder and complete unconsciousness the distance is as small as that between the state of dreaming and lethargic or anideic sleep. Indeed, whether perceptions and ideas are badly associated, or whether their voices are feeble so that they are weakly associated, the discerning faculty is equally affected—by the inharmonious disturbance in the one case, and by the almost complete silence in the other. Hence, along with discernment, consciousness becomes obscured, for it requires for its daily food representations that are strong, well associated, and of the greatest possible clearness. Consciousness, indeed, consists only in a series of distinctions—that is to say, differential comparisons and associations. In order that consciousness may remain active, it is necessary that the primary material for its distinctions should be supplied—that is to say, that the ideas, or at the least the representations, should continue to be formed. In order, also, that consciousness may maintain the clearness that permits of precise distinctions and renders it complete, it is necessary that the terms of the distinctions should not arrive in such numbers or in such disorder as to be incapable of being associated. Hence confused and incoherent patients are in a crepuscular or semiconscious condition, and their consciousness is said to be dulled. Therefore, when external excitations no longer succeed either in becoming or in rousing representational processes (acts of distinction), and the internal thought, which is the activity of mnemonic distinctions, is more or less quickly exhausted, there is a total suspension of every mental function

(even the emotions do not exist without a representational content), and there is at once reached a state of unconsciousness like that of dreamless sleep. This occurs in epileptic and febrile coma, at the height of amentia attonita, in the extreme degradation of progressive paralysis, and perhaps in the raptus melancholicus.

Unconsciousness is therefore the goal towards which both mental confusion and mental incoherence tend to travel. All patients who are either confused or incoherent are candidates for unconsciousness.

CHAPTER VI

MEMORY

The Physiology of Memory.

MEMORY is the capacity that the states of consciousness have of renewal in the form of recollections or reminiscences through the agency of the associative processes. By means of memory there is organization of experience, which is a condition indispensable to even the most elementary exercise of mental activity.

From a broad point of view all representations are merely more or less masked recollections, or more or less complex aggregations of mnemonic fragments. Excepting (within certain limits) at the moment of perception, our thought, whether we reason or exercise our imagination, can never develop out of unfamiliar material, and must find in the memory the elements needed for its construction. The conception of the past, the exploration of the future, and even the perception of the present, in so far as it consists in recognition and judgment, are to be regarded as applications or utilizations of our mnemonic data.

From a narrower point of view memory is the capacity, not only of reproducing an antecedent state of consciousness, but also of recognizing with a certain amount of exactness the relation between the copy and the original. This last condition is not necessary, and almost never occurs, in the exercise of the imagination in processes of abstract thought and in reasoning in general. Although these mental operations, on account of the images that are employed, require the assistance of a retentive power, we do not need, in carrying them out, to recognize in the images utilized evidences of where they have come from, or to identify them as parts of our stock of knowledge, which they really are. Only in the processes of memory, properly so called, are the mnemonic representations recognized as the revival of a situation, or of an occasion, already experienced in the past, and pertaining to our personal history.

Memories connected by their time of origin, their subject and intensity, form natural groups, and undergo the same changes both

in their evolution and in their dissolution. Therefore it is said that there are *memories* (Ribot), not simply one memory. Pathology confirms this principle, showing how memories may disappear in categories of time, quality, and degrees of intensity, each of which has a certain autonomy with respect to the others.

Irregularities of memory have formed the subject of important studies on the part of psychologists and clinicians, but in the symptomatology of mental diseases they have not been valued as they deserve to be. The cause of this neglect is twofold: on the one hand, the more serious alterations give rise to indirect but evident errors or lacunæ of perception and intelligence, as occurs in psychical blindness, in word blindness, and in other forms of so-called *asymboly*, which are now included among cases of amnesia (Monakow, Dejerine); on the other hand, minor disturbances of memory, its momentary eclipses and its permanent insufficiencies, if they are limited and occur in pure form, alter the main features of the mental personality so little that they pass for simple imperfections rather than as symptoms of mental disease. Nevertheless, every obvious irregularity of memory introduces into the various psychopathic pictures a characteristic and often decisive element in regard to the clinical and anatomical opinion that can be given of it.

Memory should not be identified with the simple persistence of a functional capacity, and still less with the perfecting of anatomical arrangements that serve as the basis of association of images. These facts, or, more correctly, these laws, are certainly, as we shall see, necessary conditions of memory, but they are not the whole of memory, and therefore they are not memory. The increasing dexterity with which the muscles act in habitual exercises (such as buttoning the clothes, playing the piano, writing, etc.) has even been designated a form of organic memory (Hering), but in such instances the perfectation (which is not indefinite) of the muscular acts is due, not to accumulation of the supposed memories in the muscular substance, but rather to the spinalization (not quite complete) of the motor impulses, which implies simplification, because it involves the suppression, on the one hand, of all conscious processes, and, on the other, of all superfluous movements that complicate the period of learning. The rendering of conscious movements automatic is therefore a process of gradual disuse which leads to a relative perfection, not because it adds anything (memory), but only because of what it takes away (superfluous movements).

There is therefore no memory without consciousness. Consciousness must have accompanied the formation of the primary image, and must reaccompany the revived image as often as it is

recalled, in order to complete the mnemonic act and establish the resemblance between the two situations—that in which it is, and that in which it was. Indeed, the genuine and regular exercise of the memory requires a series of conditions that only the nervous centres (though not all of them and not always) are able to realize fully.

1. First of all there must be the *formation of mnemonic impressions* which prolong in the nervous elements the existence (in the latent state) of the mental process that is destined to be, or capable of being, revived as a recollection. Therefore every state of consciousness that is not doomed to oblivion, owing to congenital insufficiency, leaves upon the path traversed, or upon a portion of this path, an organic legacy that more or less permanently modifies the chemistry or the structure of the neurons concerned, endowing them with a new functional capacity.

Perhaps every representation immediately determines a functional hypertrophy of the protoplasmic processes and axons concerned; molecular vibrations become more intense and diffuse themselves, momentarily altering the form of the dendrites; and thus, if the conditions are favourable, new expansions and collaterals originate and become permanent. It is at any rate the case that the organic imprints which mark the mnemonic capacity (and from which memories spring only through the fertile action of the associative processes) are formed most deeply when the energy of the external stimulus, the delicacy of the receptive organ, the force of attention, or the addition of a strong emotion, augments the vividness of the conscious phenomenon. Each fresh occurrence of the same conscious phenomenon in the form of recollection, fantastic representation, or identical repetition, strengthens the mnemonic capacity, because it determines the formation of new impressions that are substituted for or added to those that were there.

The ancients, even from the time of Plato, regarded the mnemonic impressions as comparable to a mark upon wax (the material theory); others, without advancing the matter thereby, are inclined rather to interpret them as a state of molecular tension which, upon the occurrence of a stimulus, liberates the record, and is then recharged (dynamic theory). However this may be, until a few years ago it was generally held that the state of original consciousness, the first stamping of the mnemonic impressions, and the subsequent conversion of the impressions into acts of remembrance, were different processes, differently determined, but all centralized in the same anatomical elements (Bain, Spencer, Wundt, James, Binet). To-day, however, not without good grounds, chiefly clinical in nature, there is more

and more an inclination to hold that the mnemonic images, whether in latent or active state, are localized in cortical elements, or strata, different from those that momentarily receive the primary sensation (Munk, Wernicke, Ziehen, Horvitz), or even in ultra-sensory and entirely separate areas of the cerebral cortex (Nothnagel, Bianchi, Flechsig, Ramon y Cajal), in which the elementary sensations, continuing their course, arrange themselves among the ideo-mnemonic symbols, and thus become capable of reappearing from time to time, either as indifferent images or as definite memories.

If we try to apply the simple conception of Spencer and Wundt to the data of modern histology, we must believe that an invariable system of adjacent or distant neurons, vibrating in unison, serves as the vehicle for all forms of representation of equal content, and performs three offices—namely, those of (1) the admission of primary sensation, (2) the emission of the memory as such, and (3) the depository for the mnemonic impressions that maintain the latent continuity between the sensation and the active memory. By this threefold identity of localization there might be explained the equality (questionable) of the two active processes, the initial and the terminal—that is to say, between the states of consciousness that correspond respectively to the sensation and the memory.

According to the dualistic hypotheses, which in their fundamental principle harmonize much better with the clinical, anatomical, and pathological facts of hemianopsia, psychical blindness, and word blindness, the primary sensations which are formed bilaterally in the sensorial centres of the two hemispheres acquire symbolic characters (ideational or mnemonic) only by becoming located on one side in the higher centres of cortical association, the best known of such centres being situated in the left hemisphere. This interpretation serves to explain, among other things, why in cases of hemianopsia objects appear halved, whilst they are thought of and remembered in their complete form, and why remembrances resemble ideas much more closely than they resemble sensations.

The formation of mnemonic impressions is to be regarded as a necessary preliminary, not only to the perpetuation of single isolated images, but also to the recording of the order in which they are placed and follow each other. All recognize that we record not only images, but also more or less manifest and very potent relationships of images, and since isolated images are fixed and recalled from the state of latency only by means of associative processes, we ought to conclude that the content of our memory extends also to a large part of the associations, and that

if it embraces isolated images, this occurs only in as far as they have been and are able to become again terms of associative relations.

Now, it is necessary to bear in mind that every associative process, whether it prepares or evokes a remembrance, or gives rise to a representation or to a volitional act, is capable, as is well known, of becoming easy and familiar by force of repetition. When this takes place the neurons momentarily associated in the action ultimately become united in a stable functional solidarity, forming an association of habit which doubtless has for its foundation a greater intimacy of anatomical relations. It is probable that this result is attained by a progressive process of functional hypertrophy, which leads to more or less permanent increase of the neurodendrons that connect the nervous elements, which are thereby brought into closer relationship with each other. Now, the process of functional hypertrophy, inasmuch as it slowly determines the approximation of neurons united in a functional solidarity, can be regarded as the cause of the rapidity and precision with which habitual associations of various kinds, including mnemonic associations, are established, and also, inasmuch as in order to produce this combined effect the individual neurons must likewise be modified, it is the concrete expression of the mnemonic imprints that fix the image in the latent state and make it ready to respond to every possible call by new associative processes.

2. Mnemonic imprints may be formed, but disappear permanently after a more or less lengthy interval; the duration of their *preservation* depends upon the individual strength of memory, the interest of the recollection, and the number of times it has been recalled. Thus, there are preserved indefinitely, or almost so, many impressions, some useless, others important, which repeated exercise rescues from the functional exhaustion that follows disuse, and thus every day there perishes by a physiological process a crowd of useless records, such as those regarding what one had for dinner a week ago, or the state of the weather at that time.

Every impression as it is being made leads to the formation of new organic imprints that are added to those already existing, or to the remnants of them. This process of renewal, which rejuvenates the mnemonic imprints, effectively preserves from destruction a large portion of our records, and especially those that are enforced by more frequent calls on account of the intrinsic importance of their content. There are also, however, impressions that are preserved for a very long time in the latent state, owing to an unusual power of memory, or to special circumstances of origin.

The preservation of the mnemonic imprints on the one hand, and their formation on the other, may differ in character in the same person, or as regards the various memories, whilst remaining within physiological limits. Thus, there are memories that are slow but tenacious, others that are quick but of short duration ; in the one the conservative element is most pronounced, in the other the formative element.

3. The *evocation* of the record is the culminating act by which the memory declares itself, and passes from the potential to the actual state. The organic impressions pertaining to a state of consciousness, of which there is never any re-evocation, are preserved with great difficulty, and in any case a verification of its re-evocability, which is the very essence of memory, is not possible except by the act of re-evocation.

Re-evocation of memories takes place by way of the associative path—that is to say, by a nervous action external to the system of neurons jointly concerned in the mnemonic act ; it therefore obeys the laws of psychical association that are common to all representations. The memory slumbering in the latent state must be reawakened—as, indeed, is necessary for every idea—by the presence of sensations, images, ideas, or other memories which contract fresh relations, or renew old ones, with the image evoked.

In order that the evocation of a memory, or of an idea, may be possible, it is essential that there be no complete rupture of the anatomical and functional relations between the system of neurons that is the depository of its imprints and the intracerebral neurons that lie outside of this particular system, but which can influence it. If such relations remain intact, the evocation will be easy, frequent, and intense ; if they have become few in number, it will be difficult, infrequent, and blurred ; if they have been completely destroyed, it will be impossible.

4. A complete act of memory implies not only the reappearance of the recorded image, but also the *recognition* of its origin. In other words, it is not sufficient that the mental impression be thought again ; it must also be recognized as a returning of thought. This gives it a psychical character that is altogether special, which is conferred upon it in virtue of special associative processes, the necessity of which confirms the dependence of the memory upon laws of association.

A memory that presented itself to consciousness in an isolated way, apart from associative activity, and without any connection with other memories, could neither be evoked nor (still less) recognized as being what it really is—the new edition of a representation already experienced ; it would fall within the category

of images or of ordinary ideas. Only in consequence of recognition do we distinguish between a fact that is simply possible and one that has occurred, or, with even greater precision, between what has occurred to others and what refers to ourselves.

Now, among the psychical associations that allow of this recognition, we have to take into account those that conjointly and vaguely form the foundation for the sense of personal continuity with regard to the *ego*, and of historical continuity with regard to our environment. The recognition is also favoured by associations that render possible, at least approximately, the localization of the impression in time, to which is sometimes also added localization in space. The first of these subconditions of memory (direct condition of recognition) is always present, or, at least, is always susceptible to appeal, in the normal person, if not asleep; the second is only experienced at the moment of perfect recollection, and requires, in its turn, the presence of a second order of impressions, which serve as frameworks for the images re-evoked and recognized, and give them a place in the past.

The strictly associative nature of the process by means of which the impressions become fixed, recalled, and recognized, is rendered evident when the other term of the mnemonic transaction is a representation of place, the intensity of which happens to be subject to change. If after a very long absence a person returns to the city or house in which he passed his childhood, there is a reinforcement of the old mnemonic images of those things that are seen again in their actual state, and it is suddenly found that collateral images that were thought to be permanently lost are capable of revival. Thus, as the person looks once more upon a street or a room that was remembered only faintly, he at once recalls, through association of contiguity, an inhabitant, an object, another street, or another room not yet seen again, which, perhaps, no longer exists, and which would never have recurred to the memory but for the unexpected resuscitation of the other associative term.

5. A final condition is necessary for the reproduction of an impression—namely, *the internal cohesion of the elementary impressions* that constitute it. The vibration of one neuron ought to arouse that of the whole system if the impression is complete, or a large part of the system if the record has become weakened. Otherwise the representation reproduced will resemble the original so little that it will not be recognized as a copy of it, and it will be merely an image, and not a memory capable of being localized in time.

The Pathology of Memory.

Each of the laws concerned with the normal development, conservation, and active exercise of the memory has numerous and exact counterparts in cerebral pathology.

Agenesis of the Mnemonic Impressions.—No trace of themselves can be left by those states of consciousness that are inherently weak through defective attention, as occurs in idiots, and to some extent also in imbeciles. The mnemonic impressions may also cease to be formed owing to an acquired disturbance of nutrition, simple involutional loss of functional plasticity, and atrophy. This occurs in the case of aged persons who exhibit more or less pronounced mental enfeeblement, and it explains the loss of recent memories (almost always partial) and the preservation of old memories. It also occurs in the case of those patients who, on account of a physical or moral traumatism, exhibit a blank in their memory in regard to all that happened from the moment of the occurrence until a certain time afterwards, although they did not lose consciousness, or at least quickly recovered it (*anterograde amnesia*).

Defective formation of mnemonic imprints is of importance only when it hinders the recording of impressions that are intense and interesting, or at least very numerous, or of a quite special character. This last phenomenon is well seen in certain cases of incomplete *alexia*; the patients are still able to read short words, but they cannot read long ones, because by the time they have reached the last syllable they have forgotten the first one, or, in other words, they have not been able to fix the imprints of them even for an instant. The schematic idea of reading is not in such instances lost, and both the imprints of graphic images previously formed and the manner of associating them with each other are still preserved, but imprints of the actual images are no longer formed, and therefore the letters of the alphabet can only be associated as pure perceptions.

In some instances (and the fact is one of importance in diagnosis) the prodromal state of progressive paralysis is marked by a few, but striking, or by small, but repeated, acts of forgetfulness. In these cases there is, rather than true forgetfulness, a condition in which impressions, notwithstanding the energy of the external stimuli, fail to arrest the interest of the patient, and therefore remain in the ephemeral domain of the sensorial centres without being able to rise to those supra-sensory centres in which the ideomnemonic symbols are formed.

Mnemonic imprints are formed (and preserved) with extraordinary facility in certain persons who are remarkable for their

memory. In some instances this gift of memory, on account of its being manifested in regard only to certain varieties of images, and being by its own very excessiveness more embarrassing than useful, acquires almost a monstrous significance, as in some savants, polyglots, calculators, players at chess who play without a chess-board, etc. The partial talents of many imbeciles (almost every asylum has its example) who are notably above the average as regards the facility with which they remember tunes, numbers, and passages from books that they do not understand, are merely manifestations of *systematic hypermnnesia*. Even in these cases there are various gradations, ranging from the patient who remembers only the railway time-table, or all the saints in the calendar, to the one who not only retains in his memory a series of numbers, but makes use of his power by solving mentally somewhat complicated calculations. Between these calculating imbeciles and persons of ordinary education there is no great distance.

The Obliteration of Mnemonic Imprints.—The obliteration of imprints already formed, or the loss of records that figure in the active schedule of memory, comes to have a pathological significance when, instead of affecting, a few at a time, and after a certain period, records that are old, of small importance, or seldom recalled, it entails the wholesale destruction of memories that are bound together by their common origin and content. These true losses of memory are for the most part dependent upon organic causes that render them irreparable; they may be due to diffuse lesions of the nervous elements, as in senile dementia and in other demential processes, or to destructive foci affecting the cerebral cortex. In the first case the amnesia is slow, progressive, and general, although it may spare a fairly large number of isolated memories. In the second case the amnesia is sudden and almost always absolute, but limited to one or to a few special functions that correspond exactly to the seat of the lesion.

The loss of memories consequent upon diffuse lesions of the brain is subject to laws that are known even popularly. In the verbal repertory, the examination of which is very easy, the first to disappear are the memories of the words that are less frequently used, such as the names of strangers; then follow substantives in general, and the last to go are the verbs and adjectives, the disappearance of which marks the lowest degree of dementia. Except, however, in cases of unconsciousness or of total anideism, there may still be interjections, or single words, or a single syllable, to which the patients entrust the expression of ideas, emotions, and very rudimentary desires.

The general and progressive loss of memories that have formerly been active is almost always accompanied by inability to fix

new ones ; hence senile amnesia does not consist merely in a progressive agnesia of the mnemonic imprints from the beginning of the involutive process onwards, but also in a destruction of the imprints already existing, although strengthened by frequent acts of remembrance. The atrophy first destroys the more recent records, and thus, among the records that are destroyed and those that are aborted, the operation of the law according to which recent images disappear, whilst those of early life, or the oldest, persist, becomes more and more evident.

As we cannot conceive of the process of atrophy as exercising a selective action upon the nervous elements in accordance with their mnemonic content, we must believe that in the initial phase the anatomical connection and the organic imprints of the memory are not suppressed at one point and preserved in another, but suffer a fairly uniform and diffuse weakening, the dissociative and amnesic effects of which are rendered obvious and irreparable only at those points in which the associations were from the first less intimate and the impress less deep—that is to say, in those in which the memory is less organized. Simple but uninterrupted weakening of the associative links, with partial obliteration of the mnemonic imprints, will not finally destroy the records, but will render them weaker and less certain. Moreover, if the process of devastation becomes arrested, it will not be impossible to have a revival (by means of further, though difficult, evocations) of the imprints and of the connections that were about to perish. This favourable event will occur in the pauses in senile evolution, in respect especially of the memories of childhood. From the moment that the recent records have been destroyed it is natural that the old repertory will be resorted to, which, through being the least damaged and therefore the most evocable, becomes the preferred objective and at the same time the most accessible, both to simple imagination (without recognition) and to the activity of mnemonic reproduction. The absence of records that have been destroyed will cause the revival of those that are simply in process of being lost, and so the memories of childhood become fresh again for a little while.

Among the circumscribed and suddenly developing amnesias, accompanied by obliteration of the mnemonic imprints, there are three forms of aphasia which are well known on account of the definiteness of their symptoms and of their anatomical localization, and which Pitres (in order to reserve a higher title for amnesic aphasia) has designated nuclear—namely, *motor aphasia*, *word deafness* and *word blindness*, the focal lesions of which are situated, respectively, in the foot of the third frontal convolution, in the first temporo-sphenoidal convolution, and in the angular

gyrus. These lesions are always in the left hemisphere, excepting in cases of motor left-handedness, which is almost always accompanied by cerebral dexterism in regard to all or some of the forms of language.

The speech function may also suffer other very severe forms of damage, which equally involve the memory, but which are connected with the evocational association, and not with the state of the imprints. They are dependent, indeed, upon various lesions, and occasionally upon the presence of a focal lesion, extra-nuclear in position; the cortical nuclei of speech remain intact, but the internuclear communications are interrupted. It may also happen that, whilst the three nuclei remain intact, the transcortical or ideo-nuclear communications between one, two, or all three of them on the one side, and the other regions of the cortex on the other side, become cut off. It is easy to understand that under such conditions certain modes of verbal evocation will be absent, although the mnemonic imprints remain; and provided the centre that contains them is not blocked on all sides, they will still be capable of evocation by the paths that remain open. Such lesions, which destroy, not a group of images, but a complex of relations, are naturally to be considered from the standpoint of evocation, and not from that with which we are now dealing.

There are, however, belonging to the class under discussion other amnesias of focal origin which do not concern speech. The best known of these is *psychical blindness*, of which alexia is only a single form and a partial localization. Psychical blindness cancels the mnemonic imprints of the visual images or a part of them. When the amnesia is incomplete, as is very frequent, the hiatus is atypical, excepting in the case of alexia, and may occur in a form so slight as still to allow of extensive exercise of the intellectual processes. In a deservedly celebrated case described by Charcot there were lost the images of forms and of colours, and even those of letters, but ideation, conversation, and reading were preserved, except that the patient had to articulate the word mentally to himself, or to read aloud repeatedly sentences that he wished to understand clearly or to remember. This condition does not, at least, prevent the visual perception of objects, but makes it impossible to imagine them or to recognize them.

The person who suffers from psychical blindness, on seeing a hat, cannot understand what thing it is, nor can he tell its use, because, along with many other images, he has lost those associated with this object, the synthesis of which formed the abstract idea of a hat, or, rather, because he has lost the symbolic sign in which such abstraction was materialized, and which is localized unilaterally in

the left hemisphere in the centre for visible symbols. Hence, when the patient sees a hat, it is as a new object to him ; not only is he unaware that it is a hat, but, owing to obliteration or destruction of the functional organ, he is unable even to learn what it is. If, however, the focal lesion involves only the centre for visual symbols, he will be able to recognize, classify, and name the hat by means of his tacto-muscular sensations, the symbols of which are often entirely uninjured.

The impressions that have been obliterated through the destruction of nervous elements are perhaps capable of being formed again in other similar elements. This constitutes compensation, and is what we seek to obtain by means of re-education, but it can succeed only when there is a reserve territory not affected by the focal lesion. Hence endeavours to re-educate those who suffer from psychical blindness, and aphasics who are placed in similar circumstances, are frequently liable to failure, although at the same time they do not cause the least inconvenience.

Combined with psychical blindness, and, as it appears, also apart from it, there may be amnesia of the tacto-muscular symbols, producing the condition known as *astereognosis*, *tactile asymboly*, or *agnosis of the tactile and muscular impressions*. According to Wernicke, who has described two very distinct cases, both in their clinical and pathological aspects, the seat of astereognosis is in the Rolandic convolutions of the left side, and, more precisely, in their middle third.

When psychical blindness and astereognosis occur together, giving rise to the clinical picture of *complete agnosis*, or *total asymboly* (Wernicke), or *asymbolic dementia* (Heilbronner), the patients are no longer able to understand the significance of objects, for the surviving symbols—that is to say, those of sound, smell, and taste—are unable to supply ideas sufficiently broad regarding the external world. Such persons are reduced to a state of almost complete anideism ; they will bite a key, lick an inkstand, try to grasp a flame, uncover themselves involuntarily, fail to draw the bedclothes over them, or, when wishing to go out of the room, show themselves ignorant of the use of the door or of its handle. Yet, in spite of the combination of the two forms of asymboly, there still remains a glimmering of tactile and visual consciousness, because the relative images are to some extent preserved. Such patients, for example, will put a cigar in their mouth transversely ; they try to drink from an empty or corked bottle ; they mistake their trousers for their jacket, a looking-glass for a window, a urinal for a tumbler ; they take hold of a spoon by the wrong end ; they call those familiar to them by wrong names.

In its anatomical basis uncertain and clinically rare is the con-

dition termed *psychical deafness*, in which there is inability to understand the significance of sounds, including those of a verbal nature, and such as those of a bell, of a clock, or of the discharge of a gun.

A very special form of amnesia is that known as *amusia* (Mann, Monakow), which appears to be localized in the mysterious right hemisphere in the second frontal convolution. It consists in the loss of the muscular memories necessary for singing, whilst the power to recognize the melodies and to play them upon an instrument may persist.

In the category of muscular amnesias, closely allied to motor aphasia and to amnesia of vocal execution, and constituting a form of *apraxia*, though it refers to involuntary movements, there is to be included *amimia*, which has been localized in the right optic thalamus (Idelsohn). Another form of apraxia is *agraphia*, the clinical individuality of which is, however, denied by almost all neurologists, who look upon it as simply a complication of motor aphasia (of vocal articulation), or of alexia.

Any form of amnesia of focal origin, as also any cortical paralysis, can be simulated, without destruction of the nervous elements, by the toxic actions of *progressive paralysis* and *uræmia*. In these instances the mnemonic impressions are not lost, but simply paralyzed; and, indeed, both in paralytic amnesia and in uræmic amnesia, the transitoriness of the condition is characteristic. *Mono-aphasias* (without hemiplegia) are frequent, taking the form of short attacks in general paralysis, whilst they are often equally ephemeral in cases of uræmia (Lancereaux, Rose, Baginsky).

Another and entirely different form of amnesia, always, however, associated with obliteration of organic imprints, is that connected with traumatism. As the result of falls, wounds, attempts at suicide (especially by hanging), cerebral concussions, fright, and other strong emotions, amnesia often assumes, besides the anterograde form that has already been referred to, a *retrograde form*. This is the mixed type, and the one that is most frequent, of *retro-antegrade amnesia*, in which there is inability to remember not only what occurred for a period after the event, but also what happened during some time before it. Thus, a person who has been knocked down by a vehicle not only has upon his return to consciousness no recollection of the blow, the fright experienced, where the accident happened, and the assistance rendered him, but has no recollection of where he was going, or even of having left his house.

Disorders of Mnemonic Evocation.—Even in the normal individual the power of evocation of many records, more especially

those that are without personal characters and those that are connected by a complex series of logical associations, may be momentarily suspended, and even rendered impossible at times of emotion, or on account of a state of nutritive exhaustion, as in the presence of a superior, before an audience, in a court of justice, or before examiners, and also from the action of anæmia and of severe physical pain. In the last instance, and in many others, there is a true inhibition of the evocative process, owing to the predominance of other associations, and especially to a feeling of constraint. When this predominance has ceased, the inhibitory action ends, and the evocation of the record is again possible, and may even be easy and rapid.

The process of evocation may also fail on account of a condition of more or less habitual distraction. This frequently occurs in imbeciles through general defect of active attention, and also from a very different cause, but productive of the same results, in thinkers whose active attention is excessive, but persistently directed to a restricted order of abstract problems, which divert from the contemplation of insignificant facts.

Likewise, normal individuals in unusual states—for example, during convalescence from any disease, and in waking from dreams or from hypnosis—experience often insuperable difficulties of evocation with regard to all or part of what has happened during the illness, dream, or hypnotic sleep. Nevertheless, the mnemonic impressions of the relative images have not failed to be formed and preserved, for sometimes these persons exhibit a vivid recollection during a relapse, during a new dream, or in a later period of hypnosis.

Independently of hypnosis, a similar state of things may occur with more or less regular alternation in certain very remarkable cases of hysteria. There occur *transitory* or *periodic amnesias* with subsequent reintegration of the suspended memories. In some instances the life of the patients, who, however, do not on this account lose their clearness of mind or their feeling of personal continuity, is a continual alternation of two states, which in substance do not differ from each other, except in the difference of the memories evoked and evocable from consciousness. In the first state (the ordinary) what occurred in the second state (the unusual) is forgotten, and hence the records are interrupted by regular lacunæ; it may also happen that in the second state the recollection of what occurred during similar periods remains active, whilst those of the ordinary period are suspended; but it may also happen that both orders of memory become active together, as in the celebrated case of Férida, excellently described by the surgeon Azam, of Bordeaux.

Alternating amnesias involve curious modifications of the spirits, character, and conduct, which seem to be based upon a so-called *doubling of consciousness* or of personality, but which can be explained much more simply by the difference of the mnemonic material that consciousness has at its disposal. The effects of the amnesia can be fully realized if we imagine what would occur if here and there a few pages of a book were torn out. In the ordinary state there would be in use the pages that remained in the book, but not the detached ones ; in the other state either the detached pages alone would be employed, or there would be a reconstitution of the memory of the whole book, as the case might be. What makes especially strange the condition of hysterical patients subject to these alternations is the fact that, when in the second or unusual state there is a return of the two memories, and in the first or ordinary state only the memory of the normal phases, the mnemonic balance comes to be greater in the morbid state than in the normal.

Total or partial oblivion, owing to impossibility of recall, is the rule in those who have recovered from a mental disease that has been accompanied by dulling of consciousness and confusion of ideas. The images that have arisen during the disorder of delirium cannot be revived in the current of normal associations, which conform to external fact, and tend to reject what is isolated, incomprehensible, or absurd. Between the thought of a confused lunatic and that of a normal person there is such an incompatibility as to exclude any connection, even of simple mnemonic coincidence. Hence, save in cases of exceptional hypermnnesia, it is impossible for a rational person to remember even a short fragment of the talk of an incoherent patient ; and the person who has recovered from confusional insanity, or who has wakened from a dream, is rarely able, and at most with great difficulty, to remember any fragment of what he imagined or dreamed. For an analogous reason ordinary recollections, the evocation of which is bound up with the regular unfolding of the associative processes, suspend their ruling activity, or, at least, are unable to co-ordinate and to display their power, in the midst of the confused associations of delirium. There is oblivion of errors in the condition of lucidity, and oblivion of the truth in the morbid state.

The impossibility of a parallelism between an orderly series of psychical processes intensely illuminated by consciousness and an irregular complex of representations which, whatever may be their content, develop with unusual connections in the fog of semi-consciousness is perhaps the sole cause of the forgetting of acts performed during a masked attack of epilepsy. It is prob-

able that in these instances, as also in those of waking and of recovery after mental illness, the mnemonic impressions of what happened in the semiconscious state become atrophied in course of time ; and this would explain the rarity with which, upon recurrence of the attack, there are phenomena pointing to the revival of the impressions. On the other hand, some epileptics and some somnambulists repeat at every attack stereotyped actions and expressions that they forget when in the lucid state. This probably results from renewal of an identical evocative force in conditions morbidly favourable, always the same, and incapable of being produced in the waking state.

The course of the associative processes, without passing beyond physiological limits, is subject to remarkable variations through the influence of the affective state, no matter what the cause of this state may be. In depression of feeling of psychopathic origin there are revived by a kind of evocative spasm all the most painful memories, even though they are remote and insignificant, the little faults of youth, and the unhappy forebodings and the momentary vexations of the whole of the past life. This painful hypermnesia, which overwhelms the consciousness with memories that are true, but all of the same nature, and closes the door against those of an opposite kind, arouses in the patients, who are mostly melancholics, the retrospective illusion of having always been miserable and persecuted by a fatal destiny, which sometimes becomes the subject of a delusion.

On the other hand, in exaltation of feeling, principally in hypomania, the quickness of the associative processes favours unusual evocations, without impeding the revival of the various other records, and thus there is produced a state of actual hypermnesia which the patients, who are still lucid, are sensible of, and take pleasure in. Maniacs, in compensation for this, when they recover, forget, even to a greater extent than melancholics do, the things too hurriedly observed in the course of their illness, and often in the vague recollection of the well-being experienced during their state of exaltation can scarcely be convinced that they were really ill.

Among the disturbances of mnemonic evocation, there are to be considered the circumscribed amnesias and specially the aphasias that are determined by localized lesions. The lesion, generally a focal one, does not involve the exact seat of the images, but rather their paths of approach. Therefore the mnemonic imprints of the images are not obliterated, but the process of evocation is impeded as if by a nerve section. If the lesion is irreparable, the mnemonic image, the want of which

constitutes the single visible symptom of the disease, can always be revived by means of other evocative processes, provided that there are other anatomical paths of conduction, and that these have not been irreparably destroyed by the focal lesion.

In this way there are produced the forms of aphasia dependent upon partial defect of evocation. In all of these cases, as has been indicated, the muscular, acoustic, and visual images of speech are preserved, but their associative relations are interrupted, owing to the presence of internuclear focal lesions, and they may present the most odd clinical pictures. In some instances the patients understand very well what they hear, and are able to pronounce what they think and what they read, but they lose the power of repeating words that have been heard; or, without having word blindness or agraphia, they manifest inability to write to dictation; or the power to read mentally, to repeat words that are heard, and to speak spontaneously, is preserved intact, but the power to read aloud is abolished; or, lastly, there is lost only the power to copy.

It is, however, necessary to add that these isolated forms of internuclear aphasia are very far from common, and that some of them have only a theoretical existence. Often the lesions of the associative paths are multiple, and give rise to combined aphasias of internuclear conduction; more often still they are superimposed upon nuclear lesions of a centre, and in this case also the two symptomatic pictures are superimposed, and blend with each other. The complete obliteration of all the conducting paths that converge to a nucleus is clinically equivalent to a nuclear focal lesion, for it condemns the mnemonic images, which lie there without the possibility of evocation from without, to remain idle, and to undergo annihilation from atrophy.

Various other forms of aphasia from dissociation have been studied clinically. The anatomical lesion, instead of affecting the internuclear paths of speech, may intercept all, or a portion, of the supernuclear or transcortical paths, which Pitres has designated by the hybrid but clear expressions *ideo-nuclear* or *psycho-nuclear*.

The separation of the three nuclear centres of speech from the remainder of the cerebral cortex gives rise to *amnesic aphasia*. In this the ideas, as well as the various images of the words and the power to understand them, are preserved; but there is wanting the power of spontaneous evocation of the verbal images, or the translation of the ideas into words. The patients are able to repeat, copy, write words to dictation, and to recite from memory, but they cannot clothe their own thought in verbal form, not even mentally. When they attempt to express them-

selves in words, they exhibit *paraphemia*, *paraphasia*, and *paragraphia*. Sometimes these paraphasias, when called upon to give a reply, will catch the last word that they have heard, or the last that they have pronounced automatically. This phenomenon the German clinicians describe by saying that the word has remained entangled in the wheels of thought, and immediately been utilized (*haftengeblieben*).

Amnesic aphasia may present itself in attenuated and partial forms. In this connection there are distinguished the following clinical pictures: *autonomasia*, which is the impossibility or the difficulty of recalling substantives; *agrammatism*, which is the inability to give a grammatical form to sentences pronounced; the *systematic aphasia of linguists*, which is inability to remember the words of a particular language. All these cases imply abolition of verbal thought. It may happen that the psychonuclear dissociation affects only one or two of the nuclear centres. It is evident that in this case, if the translation of thought into verbal symbols of a muscular nature is wanting, those of a visual and auditory nature may remain, and *vice versa*.

The importance of the lesion will depend upon the habits that have been formed by the individual. There are persons whose verbal thought is carried on exclusively by muscular symbols or by images of pronunciation (*the oratorical type*). Others think of the words as if they heard them (*the auditory type*). Others, again, think of the words as if they read them (*the visual type*). The great majority, however, belong to the *mixed type*. In conditions of amnesic aphasia of partial form the patients endeavour to utilize, as far as possible, the remaining links of association. This is rendered fairly easy if the nuclear centre that remains connected happens also to be the one that is the depository of the verbal symbols that are most familiar to the patient. At any rate, whenever the recall of the verbal images still capable of recall does not take place with sufficient quickness and success, the patients are able to augment it by means of expressive movements, if it is required to think of words in order to pronounce or write them, and by the actual seeing of the alphabet, if it is desired to represent a word as if read.

All the forms of amnesic aphasia hitherto mentioned are determined by the separation of one or more centres of speech from the rest of the cerebral cortex—that is to say, from the other ideomnemonic centres without any distinction. Of course, in this way any idea, independently of the nature of the images that compose it, becomes unable to exercise an influence upon the centres, or upon a centre of language, and to find there its corresponding verbal symbol. It may, however, also happen that

such an incapacity of expansion affects only a single category of images, whilst the others continue to be transformed into words. The only distinct example of a condition of this kind is that to which Freund has given the name of *optic aphasia*.

Optic aphasia is often the precursor of psychical blindness, or of total amnesic aphasia ; but it is neither the one nor the other of these clinical forms. The patient clearly recognizes the object he perceives—for example, a watch : he tells the time it indicates and winds it up. Therefore he does not exhibit mental blindness. He has no difficulty in pronouncing the word “watch,” either by imitation, repeating the name after someone, or spontaneously, provided he is allowed to touch its surface or to listen to its ticking, or to make it the subject of a reply to an appropriate question ; therefore he does not exhibit amnesic aphasia—at least, as this condition is generally understood. Nevertheless, the patient is found to be incapable of designating the watch by its name, if the command for verbal translation comes exclusively from the visual image of the object. It is evident that in these cases of optic aphasia both verbal and optic images are properly formed, but that there is an interruption of the path of association between the centre of visual symbolism and the motor centre of speech. The two sensorial nuclei of language, as also the centres of tactile, muscular, and acoustic symbols, continue to exercise their normal influence on the motor centre for speech. Optic aphasia is, therefore, only a particular and partial systematic form of amnesic aphasia. The power of being transformed into mental speech or actual speech has not been lost by all of the images of which the mosaic of ideation is composed, but it has become diminished as regards the visual images. Often, indeed, with the advance of the lesion, patients who suffer from optic aphasia become the subjects of psychical blindness.

Irregularities in the Act of Mnemonic Recognition.—Errors confined to the simple act of recognition have almost no importance in the pathology of memory. The greater part of our ideas are simply memories that are not recognized as such, and only a small residuum of ideation is represented by complete records. Recall without recognition is thus the rule in psychical activity ; it constitutes the first degree of memory. Recall accompanied by recognition is merely a special variety of psychical activity, and forms the second degree of memory, or the complete, but not always the highest, result of this function.

If a past impression is recalled, but not recognized, it is thereby deprived of no more than a part of its value, and the amnesia is only incomplete ; so long as its power of being recalled is not lost,

the impression continues to be a part of the intellectual stock of ideas. Impossibility of recognition is therefore the result of a process that does not degrade, but to a certain extent actually elevates the memories; for it favours in a marked manner their transformation into more and more abstract and general ideas.

The process by which the function of recognition comes gradually to be lost is very simple. The imprints that correspond to the elementary images of the primary impression (which is really always complex) lose immediately or gradually the associative links that effected their cohesion with each other and with other contemporary impressions. This phenomenon of internal and external dissociation, in so far as it is a dynamic and momentary act, constitutes the process of abstraction that allows us to construct our general ideas; in so far as it becomes a permanent condition of things connected with an anatomical dissociation it facilitates this exalted and important function of the intellect. Owing to the dissociation and the impossibility of mnemonic recognition, the elementary images, which, by their union and external connections, constituted the complete and authentic record, being disposed roughly according to relations of contiguity, undergo an irreparable separation which allows of their contracting more stable and useful connections with other elementary images or with the symbolic complexes of other elementary images. The unrecognized fragments of the memory thus come to form or to confirm associations of resemblance and of causality that enrich the intelligence, instead of encumbering it uselessly with the recollection of place and time.

In this sense a first degree of mnemonic attenuation—that is to say, loss of the capacity of recognition—can therefore represent a physiological process which is of use, although not strictly necessary, in the evolution of the intelligence. Hence partial involution of a record (still capable of recall, but no longer recognizable) is not of itself to be regarded as pathological. It acquires this character only when it involves impressions that are very recent and of high personal interest. Now, in mental diseases it is not easy for amnesia to stop at the first degree, and hence, as a rule, with loss of recognition there is also loss of recall, through which complete forgetfulness is reached. Nevertheless, along with the other disorders of insanity there may also be manifested single errors of mnemonic recognition—errors that, on the one hand, merge with amnesias (incomplete and complete), and, on the other, with delusions.

In some instances, even in regard to important and very recent data, the patients remember the subject fairly well, but are

uncertain with regard to recognition. This is *incomplete amnesia*.

The same kind of hesitation may also arise in connection with representations or perceptions that are produced for the first time, but which assume the mask of old memories. These are paramnesias, false remembrances, errors of memory, illusions, and even hallucinations of memory. Better than by the expressions employed in orthodox psychology, this remarkable psychical state has been defined by d'Annunzio, in *Giovanni Episcopo*, as the feeling of *anteriority* of what is happening, or is about to happen, on account of which it is felt that one is assisting at the inevitable repetition of events that have already happened. It is characteristic of this paramnesic illusion that it is never complete (*dubitative paramnesia*), and the false recognition remains in the state of a simple tendency. In reality all this has very little to do with the pathology of memory; the representation that is the object of our doubts has a close resemblance to a memory, but it is not a memory, and it does not possess entirely even the appearance of one.

This phenomenon, which has been much studied, is connected with states of commotion and affective fatigue. It occurs in neurasthenia, the exhaustion psychoses, and, more commonly, in the short crises of depression that are so common in normal persons of refined mind.

The mistaking of a new perception, or of any representation, for a personal memory occurs fairly often in the insane, not in the form of a doubt, but in that of a certainty (*affirmative paramnesia*). Even in this case the false certainty does not depend upon the mnemonic function, which has not material on which to act when an anterior perception or representation is absent, but is the product of credulity, weakness of judgment, and auto-suggestion, which flourish in states of mental confusion, incoherence and defect. Affirmative paramnesia is, indeed, frequent in senile dementes, paralytics, aments, paranoiacs, and imbeciles.

In old persons, whose mind is weakened, and whose existence is constantly either one of sleep or of somnolence, hypnagogic memories are often mistaken for genuine ones, and the patients believe, or are inclined to believe, that what they simply dreamt about actually happened—for example, noises in the next room, visits of relations, night attacks by thieves, etc. Paralytics declare and believe with more or less assurance that they have been at a banquet, at a marriage, or on a voyage during the previous night, although they have not been outside the asylum. Paranoiacs, infatuated by their delusions, refer them to the past,

distorting its memories as they do the perceptions of the present. In like manner imbeciles, combining amnesia with credulity and petulance, become very effective self-suggestors, and dangerous witnesses in public trials. To all these cases of affirmative paramnesia there must be added the well-known falsehoods uttered in good faith by hysterical patients, who mistake the product of an impassioned imagination for a personal recollection.



CHAPTER VII

THE SENTIMENTS

The Physiology of the Sentiments.

THE sentiments, which accompany the representations, form the other side of psychical activity—a side which is sometimes conspicuous and predominating, often almost imperceptible, but rarely entirely absent, and which contains the *motives* of our conduct. Without this sentimental repercussion, which gives to the phenomena of which we are spectators a certain personal interest, and renders them pleasant or unpleasant, we should never emerge, even for an instant, from a state of passive and fruitless contemplation, and intelligence would serve no useful end.

Intelligence acquaints us with the real, reflecting its innumerable aspects by means of a series of internal representations, which correspond either literally or logically to the objective order of external phenomena, of which they are really a more or less faithful duplicate. Sentimental activity, instead of reflecting objects and occurrences as they are in themselves, indicates to consciousness what their value is to ourselves—that is to say, what they yield to us in the way of pleasure, or entail upon us in the way of pain.

This dilemma between psychical well-being and ill-being, which always presents itself in regard to everything that is capable of impressing itself upon consciousness, is only the translation in subjective terms of the alternative between good and evil to which our organism is continually exposed in the development and exercise of its functions. In order to render discrimination possible, it is not sufficient for occurrences to be merely figured in consciousness as representations; they must be felt as pleasant or as painful experiences.

In this way even the sentiments are included in the law of correspondence with the external world to which they are indissolubly bound, although by means of an indirect and entirely one-sided relation. In psychical pleasure and pain is contained

the indication—tacit, but rarely lacking—of the benefit or harm that the organism derives from excitations, and it is just in this precise and irresistible automatic indication that we must recognize the true biological function of sentimental reactions. From this function there spring the auto-suggestions that inspire, check, and guide our actions.

Indeed, the feeling we experience from a present or past situation is destined to become a guide for conduct in future analogous situations, which we can bring about or avoid, according as it seems to us we are likely to derive pleasure or discomfort from them. In the functional economy of the psychical processes, the sentimental reactions therefore form an intermediary element between thought and action—that is to say, the practical epilogue of all that we know and the necessary prologue of all that we do. In the general economy of the organism the sentiments constitute a powerful means of indirect protection, because underlying their immediate and visible object, which is the attainment of pleasure and the avoidance of pain, there is the biological law in accordance with which all that conforms to our organic needs appears in a pleasing colour, and all that is contrary to these needs is rendered repellent.

Even the simple exercise of the vegetative functions, provided they are carried out with regularity and with some participation of consciousness, as occurs especially after an illness, awakens a vague feeling of well-being that encourages us to extend our activity. Every smallest defect in the processes of metabolism is, in like manner, reflected in the cœnesthesis, disturbing our state of feeling, and making us inclined to rest and reflect. To the internal (endo-peripheral) influences there is added the action of external (epi-peripheral) occurrences. Whatever may be the state of mind that results from these influences, and no matter whether it is prolonged in consciousness for only a short time or is repeated as the result of successive mnemonic evocations, it always tends to govern us more or less permanently, until it is overpowered by a contrary and stronger impression.

Hence the stimuli that attain to a certain duration or intensity produce, as a rule, an increased tendency to sentimental reactions of the same nature—that is to say, to a given mood which is, as it were, the pre-established response to all new occurrences which do not, on account of their importance, impose a radical change in the direction of the sentiments. Thus there are states of good humour, or cheerfulness, and states of bad humour, or gloominess. Without altering the objective conception of things (excepting in pathological cases), the mood modifies within certain rational limits the sentimental point of view from

which we regard their relation to our own interests. There are persons who, on account of the unusual features of their coenesthesia, character, or fortune, present throughout life, or for periods of it, an habitual mood, which, owing to its being constantly above or below the common mean, seems to be superior to external and internal vicissitudes.

The single reactions of psychical pleasure and of psychical pain following immediately upon happy or unpleasant occurrences vary in intensity in some instances so much as to be completely inverted, both in different individuals and in the same individual at different times, and yet it may be impossible to infer anything therefrom regarding the nature of the psychical personality. Isolated disturbances of mood are not in general recognized as sufficient evidence of insanity or of mental anomaly. Only alienists (and not all of these) dare to regard as pathological those violent manifestations of feeling which, although outside the orthodox picture of mental disorder, suddenly contradict all previous conduct, or cause the patient to do things of exceptional import, which are yet evidently contrary to his immediate and remote interests.

A more ready and decisive judgment is generally given regarding those vivid and sudden extrinsications of feeling that we term *emotions*. Surprise, terror, joy, lust, etc., may denote an extreme degree of individual variation, either from the diffusion of their effects or from the singularity of their causes. Nevertheless, irregularity of emotional reactions depends much more upon idiosyncrasies of spinal and infraspinal innervation than upon anomalies of moral character, and the psychical phenomenon does not figure in it except as an occasional factor.

Physiologically, emotion is not merely the sentimental and immediate result of a surprising or pleasing representation, but it is, above all, the state of complex consciousness that is maintained and intensified by the sensory tribute that flows back from the viscera, in which there develop secondary reactions provoked automatically by the psychical state. The visceral reactions are produced in a rapid, intense, and multiple manner throughout the whole body, especially in the muscles, vessels, and glands, and they give rise to changes in the pulse and respiration, to trembling, cold sweat, sudden pallor, fits of laughing or of weeping, sudden diarrhoea, etc.; and we are not affected so much by what happens as by the visceral tumult that we experience.

From the point of view of innervation in general, rather than from that of psychology, we can regard as anomalous the emotion that is inadequate to the objective importance of the existing

struggle, danger, or circumstances, or of the unaccustomed functional act in which the organism is engaged. In many instances the exaggeration or insufficiency of the expression of the emotions of surprise, terror, joy, lust, etc., is dependent merely upon the exaggeration or insufficiency with which the secondary reflexes diffuse themselves throughout the field of visceral innervation.

Extreme oscillations of mood should undoubtedly be able, when they pass beyond the ordinary limits of intensity and duration, to exercise an important influence upon our happiness, conduct, and opinions. Normally, however, these generic dispositions of the mood vary to only a small extent. The larger oscillations are checked by innumerable resisting forces which healthy organisms hold in reserve, and which they put in action the moment that pain or pleasure, instead of serving as simple indicators, threaten to exceed their biological function and to impair the well-being that they ought to defend. The bodily and moral fatigue that follow periods of extreme happiness, the return of strength and self-esteem, courage, love of life, etc., that inevitably succeed paroxysms of despair, effectually carry out the work of reparation. Therefore changes in mood, though exposed to every accident of external circumstance, are able to fulfil a regulative function upon the sum of pleasures and misfortunes that come to everyone in the course of life; and instead of altering the features of the psychical personality, they tend rather to diminish inequality of personal lot and fortune, and also, to a certain extent, of individual characters.

This well-known law of compensation, according to which excess of pleasure mysteriously sharpens sensibility to suffering, and excess of psychical suffering leads to an unexpected reawakening of sensibility to pleasure, has caused some psychologists to interpret even the severe and prolonged alternations of mood which constitute *circular insanity* as effects of reciprocal reaction between opposed feelings. Even the possibility of such an interpretation shows how difficult it is to trace in the sentimental processes those gross and indisputable alterations that are so generally recognized in the ideational processes.

In complex situations the data furnished by the senses and by the intelligence among which we can wander with our presentiments are so numerous and different from each other as to tend to actual conflicts of tendencies, the strongest of which always prevails when the state of perplexity or of actual anxiety has passed away. Pleasure and discomfort, having become material for memory, prevision, and reflection, assume new aspects, and give rise to states of sentimental tension such as desire, hope,

etc., which impel our actions in the direction of conquest, or disgust or fear, which suggest movements of defence or abstention from action by the active intervention of inhibitory processes.

Besides the simple and irreducible forms of sentiment, one must take into account the *affections* and *passions*. Piety, sympathy, fear, anger, hatred, envy, jealousy, avarice, self-love, vanity, etc., are so many complex but precise states of consciousness in which the sentiment is associated in an enforced relation with particular representations, because the affective processes always presuppose a determinate object upon which the sentiment is specialized. All that is vague and indefinite in the general psychology of the sentiments tends to attain an almost vulgar clearness in the psychology of the affections, which, by the well-defined nature of their sentimental form, and the very sharp limitation of their representational content, are, to a certain extent, the plastic and often characteristic attitudes of the psychical personality. The affections acquire the importance of passions when they establish themselves in the consciousness as habitual and predominant tendencies, in which case they become a symptom of the moral character, and therefore a distinctive sign of the personality.

In the circle of human interests, besides the conservation of the individual and of the species, there is organized the need of social conservation, which allows greater expansion and security to individual interests. Therefore, alongside the egotistic, sexual, and family sentiments (the first two of which are common to all species of animals, the last to many) there arise in man also the social feelings, which, however, are among the latest to appear, in ontogenesis as in phylogenesis.

The classification of character has often been attempted, but always with criteria either empirical or plainly mystical. A classical ruin of ancient medicine is the doctrine of the four temperaments (choleric, sanguine, melancholic, phlegmatic), which has enjoyed for long an undeserved fortune, and which is still accepted by many—for example (*mirabile aictu*!), Wundt. The applications of this classification, which purports to be medical in nature, but which is only masked psychology, refer especially to the various moral characters. Ribot, abandoning the ground of pseudo-physiology, has completed a classification confined to anomalies of the personalities, and based upon affective incoherence.

It is very probable that the temperament and character acquire a distinct and personal form as a result of their dependence upon the more intimate special nature of the metabolism, the effects of which have an influence upon the general functional action

of the nervous system. Bradytropy and tachytropy are, perhaps, the two principal and opposed causes of the different affective temperaments. It is at least certain that the state of feeling may undergo very manifest oscillations in accordance with the physiological state of the digestive and circulatory apparatus, the modifications of the general nutrition, and the scarcely appreciable variations in the cœnesthesis, even when these changes are very far from constituting a disease or a pathological disturbance.

A series of obscure influences, similar to those that determine variations in mood and feeling, leads by continuous and uniform development to the regular metamorphoses of individual character that are connected with the developmental and involutional processes in the two sexes at various ages. The special traits of character connected with infancy, puberty, youth, adult age, and senility, as well as with manhood and womanhood, are very frequently and generally recognized. These types of character reappear in mental pathology, either in exaggerated forms like true caricatures, or persisting beyond the proper age, or occurring precociously, or inconsistently with the individual's physical sexual state.

In children prior to puberty there is a lack of the social feelings, which are in part dependent upon sexual instincts, and in part a late result of organized experience; affectivity, devoid of any altruistic motive, is purely inspired by the direct and urgent need of passive protection. Adolescence, with the first awakenings of the sexual instinct, develops the feelings of self-love, ambition, and vague aspirations to the inferior ideals of romantic and religious mysticism; and these initiate the differentiations between sex and sex (courage in the male, coquetry in the female), which in large part, however, are dependent upon the wide and artificial difference in their social destinies. Adult age attenuates, or, at least, systematizes, and submits to discipline the more clamorous of the reflexes that constitute the sexual instincts, and thus it permits of the organization and predominance of more temperate passions, which are more useful and more in harmony with the ordinary and lasting interests of the organism. Lastly, senility, by drying up the more active fountain of the feelings, sometimes eliminates their disturbing exuberances, and so determines a greater serenity of character; but much more frequently the devastating work of the involutive process, though it appears natural, greatly surpasses the limits of physiology, degrading the character to avarice, narrowness, and the animal selfishness of early infancy.

Moral imbecility, paranoia, juvenile and senile dementia, sexual

perversions, etc., often renew in an exaggerated degree, or in unseasonable conditions, the affective psychology of another age, or of a different sex.

The Pathology of the Sentiments.

1. *Pathological Variations of Mood.*—In certain categories of chronic lunatics there are manifested fairly typical varieties of habitual disposition which cannot be considered as symptoms, either of the psychosis or of one of its phases or stages ; but such varieties do not so exceed the average proportions as to constitute an anomaly, and are rather to be explained as a physiological correlative (in itself normal) of the morbid symptoms properly so called. There are cases of chronic bad spirits (*chronische Verstimmung*) that constitute an abortive but irreparable form of melancholia, or one of its sequelæ equally irreparable.

The gloominess, fearfulness, and pessimism exhibited by these anomalous persons, valetudinarians of feeling, of whom Philip II. of Spain was perhaps an example, do not attain the morbid proportions that are seen in true melancholia ; hence they are not diagnosed as such, and the patients are not subjected to treatment, or taken into asylums. Fairly constant, but not of a pathological nature, are the torpidity of cretins and myxœdematous persons, the liveliness of many imbeciles, and the deep seriousness of many intelligent epileptics. In these patients the bad spirits and the good spirits are a natural expression of the cœnesthesis, or of an affective state corresponding to the physical potentiality.

Slight variations of the mood are compatible with the most perfect integrity of the mental faculties, even though an adequate external or somatic cause cannot be found. Certain occurrences of trifling importance exercise an influence upon our state of feeling, even though their representational record is not focal in consciousness, and cœnesthetic changes also are often obscure and unperceived, or rather neglected, in the pictures of representational activity, whilst they strongly and deeply influence the state of feeling.

An exception to this rule occurs in the case of hysterical patients, whose state of feeling, independently of anomalies of character, varies suddenly and with oscillations that are too rapid to be referred to such unnoticed causes. Indeed, these patients do not know the cause of their depression or of their gaiety ; sometimes they endeavour to find it in actual events or disturbances which, however, are obviously not responsible for the disorder of feeling, or are, at least, simply the occasion of it. This

independence of the physiological factors concerned in changes of feeling is also shown by hysterical patients in their proneness to the manifestation of unseasonable emotions. They turn pale, tremble, fall in convulsions, and are strongly agitated by frivolous occurrences, or by very slight disturbances of the cœnesthesis induced by the sight or the thought of something repugnant.

Depression and gaiety are in these cases the expression of abnormal processes that take place in the brain apart from their physiological stimuli. They constitute a true error of sentiment, a kind of *sentimental hallucination*, which, like the sensorial hallucination, can be recognized as morbid, and even in exceptional cases rectified, but which, as a rule, causes errors of judgment by altering the signification and perspective of events ; it also leads to errors of conduct, inverting or exaggerating the adaptive reactions to an environment rightly perceived, but erroneously felt. Hence these patients very commonly exhibit in the passive field of sentiment sudden likes and dislikes, discouragements and enthusiasms, and rapid changes from modesty to petulance, and in the active field of conduct outbursts of laughter and of weeping, and the acts of anger and of self-denial that are so common in hysterical patients.

With less perfect gradation, owing to deficiency of representational material, but with equally sudden changes of scene, the state of feeling of apoplectic dementes and of senile dementes shows itself to be extremely unstable. In these cases, indeed, the morbid origin of the phenomenon is still more evident. The presence in these patients of organic cerebral lesions authorizes the belief that their changes of mood, which they show with such superabundance of expressive movement, are due to processes that are not only abnormal, but broadly comparable to those fairly well known and definite ones that determine the other symptoms of the disease, and which affect chiefly the circulatory apparatus. In these patients the emotions and the transition from depression to hilarity are facile and superficial. This is also the case, though not so constantly, with general paralytics. Therefore, whilst the sentimental crises of hysterical patients are often dramatic, those of senile, apoplectic, and paralytic dementes only give rise to grotesque and puerile contradictions.

In epileptics the mood is also unstable, but in a more rational way, although there are extremely quick oscillations ; the patients are usually taciturn and irritable, or, at least, of a serious turn of mind, with a tendency to be hypochondriacal. Sometimes, however, they exhibit a state of very slight mental confusion, which is perhaps an abortive equivalent of a fit, and experience for a short

period an extreme degree of good spirits in which they display a vulgar and disagreeable gaiety mingled with cruelty.

More common and more characteristic, and therefore more important in psychiatry, are those disorders of the state of feeling that are protracted for weeks or months together, taking the form either of sadness or of cheerfulness, and constituting the syndromes of *sentimental depression* and *sentimental exaltation*. The morbid and protracted absence of any sentimental reaction forms a third syndrome—namely, that of apathy.

Sentimental Depression.—Sentimental depression forms the prelude to many mental diseases (according to Guislain of all), the necessary phase of others, the exclusive symptom of simple melancholia, and the fundamental symptom of other varieties of melancholia.

The numerous symptoms included in the rich clinical picture of melancholia have their origin and multiply in the atmosphere of sentimental depression. In this oppressive atmosphere every psychical process makes its painful impression upon consciousness. The perceptions of the present, the contemplation of the past, the view of the future, the most harmless sensations, and the most trifling occurrences become a source of pain, which may range from deep and obstinate gloom to a state of desperation.

The sentiment, hidden sentinel of the organism, in this sustained and falsified inclination that it manifests towards evil, loses its capacity to signal the good, and, until the disease terminates, does not react to stimuli that should give pleasure, or, if it does react to them, it does so in a paradoxical way, causing pain.

The strain of mental pain may warp the patient's judgment of the world and of himself, and cause want of confidence and fears that grow into delusions. Before the mystery of a pain that has no visible or sufficient cause, these delusions constitute the morbid solution of a doubt that is subjectively insoluble; they rarely take a positive form, or that of a true delusion, as in paranoia, but tend to be arrested at the stage of irrational and painful hypothesis. If, then, the patient, preserving intact his power of judgment (as is frequent), abstains from delusional interpretations, his ignorance of causes is no less depressing than delusion, because it generates at least a rational apprehension of a pain independent of external and removable causes, and therefore due, perhaps, to the nervous constitution—that is to say, to a fatal personal characteristic—and thus the most bitter pessimism is engendered. In dealing with the pathology of the sentiments, it is perhaps not unfitting to quote an unhappy poet, Paul Verlaine, who knew

from his own experience even this note of the gamut of melancholia :

“Ce deuil est sans raison . . .
C'est bien la pire peine
De ne savoir pourquoi
Sans amour et sans haine
Mon cœur a tant de peine.”

The depression of spirits impels the patients also to commit serious errors of conduct, such as acts of hesitation, timidity, waywardness, fatalism, or renunciation, which place their interests in jeopardy. Among these acts suicide is not uncommon. If delusion is added to the sentimental disorders, or if, as occurs in *raptus melancholicus*, the painful thought upon which the mind is fixed dulls consciousness, then the aberrations of conduct reach the extreme limit of folly. There are to be observed patients who, in the depth of their desperation, instead of ending their life, as in their condition would perhaps be logical, prefer to mutilate their genitals, to proclaim themselves the doers of imaginary crimes, or to assault innocent strangers whom they have no grudge against, without any other purpose than that of securing at all costs some change of conditions.

Sentimental Exaltation.—Sentimental exaltation manifests itself by symptoms that are more or less exactly opposed to those of depression ; it is a frequent occurrence in progressive paralysis, an integral element of certain circular psychoses, and constitutes the whole syndrome in hypomania.

If the exaltation is slight, all the psychical processes take place with unwonted alacrity and exuberance, creating in the mind of the patient joy, satisfaction, and self-confidence. Like one who is drunken, the exalted person therefore becomes more expansive, more enterprising, courageous, petulant, and sometimes even more insolent, without being conscious that his change of character is of morbid origin. In most instances knowledge of having suffered from mental disorder is not present afterwards, and it is to be observed in those who have recovered only as a rational acquiescence in the opinion of others.

The good spirits of the hypomaniac seem, excepting for occasional slight abatement, to be inexhaustible ; they almost never leave him ; they make dangers invisible, misfortunes light, life easy, and its struggle pleasant, with nothing but certain triumph at its end. A sudden obstacle sometimes inflames his anger, but his capacity for rapid adaptation to new objectives, and his sense of his own superiority, inspire him with a tolerance, good-will, and readiness to forget, that render the maniac one of the most harmless of lunatics.

There are persons of slightly anomalous character who pass through life in a permanent state of mental exaltation. Perpetual schemers, always ready to enter upon a new career, unintentionally indiscreet, importunate without knowing it, they can draw themselves and others into great enterprises of a political, philanthropic, or financial nature, which often fail miserably. Such persons, indeed, gain fame, and are called enthusiasts; their sincere but theatrical conduct attracts the momentary attention of the general public, and in the end they are regarded as paranoiacs or cranks, whilst in reality they are anomalous persons in whom sentimental exaltation is a constitutional character, sometimes continuous, sometimes only periodic.

Such persons, indeed, may also manifest a slight degree of exaltation in a regularly interrupted form, and accompanied by perfect lucidity of intelligence. Their anomaly is rendered still more evident by the periods of equilibrium, or by the much sharper contrast that is presented by the periods of depression that may be intercalated between those of exaltation. In the phases of sentimental exaltation persons of this anomalous kind often pose as men of affairs, become scribblers, cavillers, and litigators, and start speculations, publications, polemics, and lawsuits, which they abandon, but take up again with the next attack. This proneness to ephemeral enthusiasms, to embarking upon the sea of adventure, and to romance, was recently described by Ziehen, under the name of *Ergriffenheit*, as one that is very common in paralytics, but rare in maniacs. For my own part, I think it is somewhat frequent in cases of constitutional hypomania, whether continuous or periodic; these lucid but restless ones, who are the despair of those who have to do with them, are to be found in all professions, in all classes of society, and in all gradations of intelligence and culture. Their lucidity increases the dangers that result from their inexhaustible activity.

A mine of similar episodes, but more serious and devoid of periodicity, is to be found (as Ziehen rightly states) in *progressive paralysis*. In the subjects of this disease the incipient decay of the intelligence reveals without possibility of error the morbid origin of the mental exaltation. This paralytic exaltation is like a gust of insane feeling which, blowing over an edifice already devastated, immediately involves incoherence and ruin. It therefore often leads to boasting of such a ridiculous kind, and to such open megalomania, that one can diagnose progressive paralysis, even in the absence of other symptoms, at quite an early stage. It is interesting to observe how in this disease the sentimental exaltation resists the painful appeal of an organism that is undergoing dissolution. It survives even in the terminal

phases, when the intellectual decay seems to have deprived the patient not only of every incentive to happiness, but even of every particle of material for sentiment of any kind. Thus the emaciated paralytic, incapable of moving or of speaking, at the point of death still mumbles in hardly intelligible words his brief formula of demential bliss.

When to sentimental exaltation there is added confusion of the perceptive and ideative processes, reaching even the point of dulling consciousness, a state of *furor*, which is blind and purposeless rage, sometimes results. The fury of maniacs and agitated dementals vents itself in brutal violence against everybody and everything. In many instances, however, it is only the artificial product of the bad treatment to which the patients are subjected at home, where their friends are terrified or ignorant. In former times this rôle of provocative agent was played by the regime of military severity which was mistakenly followed in asylums.

Exaltation of sentimental tone never attains to that continuity and coherence that belong to depression. Whilst depression of feeling gives rise to the very characteristic delusions of melancholia, and serves as the background for a series of very precise and rich clinical pictures, the repercussion of exaltation of feeling upon thought and conduct is more disordered and discontinuous. Momentarily, and also for days together, patients such as hypomaniacs at the height of their exaltation may be observed to be weeping and in a state of discouragement; paralytics in good spirits may have lost their loquacity and petulance; dementals may manifest their feelings of well-being by sarcastic and arrogant behaviour. Morbid elevation of spirits, like physiological happiness, has periods of fatigue, interruption, and contradiction, which are almost unknown to depression. Therefore the clinical importance of exaltation is less than that of depression.

Sentimental Indifference.—The total and continued absence of any sentimental reaction characterizes stupidity, or *amentia attonita*, in which suspension of the sentiments proceeds step by step with that of the ideational processes. It is the necessary correlative of every weakening of the psychical processes, and therefore it is met with also in old people on the slope of mental decadence. These patients, and more especially aments, often manifest, in association with anæsthesia of the sentiments, insensibility to painful impressions. At any rate, the inertia of their thought and of their conduct, and the presence of other more apparent disorders, deprive of almost all interest the purely negative alteration of the sentiments, which in these cases is an obvious consequence of a general inactivity.

In the course of melancholia, instead of the painful tension that

is its most common symptom, there is sometimes a drying up of feeling, on account of which the patients reproach themselves in the belief that they have become insensitive, and, more especially, devoid of affection. This *affective vacuity* is rather a morbid auto-suggestion than an actuality ; and it is at least the case that the melancholic who manifests, or believes he manifests, such loss of natural affection ends by finding in it reason for remorse, and always relapses into depression. That the affective insensibility is only seeming, or that it is at least intentionally exaggerated by the patients, is proved by the fact that they often falsely represent that they were hard of heart and careless in regard to their family, or to their friends, even before they became ill, thus giving an evident example of retrospective illusion induced by their pessimism. On the other hand, it is undeniable that some patients in a condition of depression completely neglect their family, and show themselves exacting and impatient to such a degree as to justify fully their confession of affective insensibility.

2. *Pathological Variations in the Sphere of the Emotions.*—In neuropathic children, much more commonly than in normal children, there tends to occur a very characteristic phenomenon—namely, that of *pavor nocturnus*. During sleep—as a rule, shortly after falling asleep—the child (from four to eight years of age) opens his eyes, sits up in bed, looks extremely anxious, moves his arms as if to thrust something from him, utters some unintelligible words, and cries for help, without recognizing friends who may be present. The attack lasts for half an hour or longer, and sometimes it is divided into two separate attacks ; then the child becomes quiet, and passes the remainder of the night in deep sleep. On awaking, he has no recollection of the occurrence. These attacks of night terror recur two or three times a week, but in many cases even every night. It is quite exceptional for them to occur when the child is asleep in the daytime, common as it is for children to rest during the day, and they never affect children when awake. The whole period during which the disorder occurs may extend to many weeks, months, and even years. I knew a nun, fifty-five years of age, of simple character, who preserved this morbid habit in adult life, and was obliged in consequence to sleep in a separate room. After the menopause she still suffered in the middle of the night from short attacks of terror, accompanied by crying out ; she was neither hysterical nor epileptic.

During these attacks of night terror hallucinations are almost always present ; the patients dream. Amongst their confused sentences one can catch allusive expressions that leave no doubt

in regard to this point. Marine monsters, wasps, chains, robbers, gipsies, witches, cemeteries, and all the list of fables with which children are commonly entertained in the daytime, may make their appearance during the night after some hours of sleep.

An endeavour has been made to connect night terrors with a single cause; some have attributed them to epilepsy, some to hysteria, some to somnambulism; others think they are due to dyspepsia, to adenoid vegetations in the nasal cavity, or to a morbid hereditary predisposition. I believe that each of these causes can determine the phenomenon, which at all events requires either very powerful abnormal stimuli, or an extraordinary relaxation on the part of the nervous centres, which ought, even during sleep, to give notice of these abnormal stimuli, and to suppress them. *Pavor nocturnus* is, indeed, really a morbid emotion—the least intellectual of the emotions, but, nevertheless, the emotion *par excellence*—namely, terror. The secondary but necessary stirring up of all the emotions is a disorder of the vasomotor, gastric, respiratory, and visceral processes, which follows an external impression and strengthens its action. In children out of health the sensation of visceral disorder is carried by way of the centripetal nerves to the brain, and there causes a bad dream. It is transformed by the visceral reaction into a catastrophe of external origin, and hence the manifestation of fear. If the visceral disturbance is great, the mental tumult that it induces shows how deep the child's slumber is, and how incapable the nervous centres are of resisting the centripetal stimuli. If the disorder is small, the emotion that arises in the centres implies a special anomaly of the sleep function, and is an evidence, prelude, or residuum of various neuropathies and psychopathies, among which epilepsy and hysteria are the most common. If nocturnal terrors continue in mature age, they indicate that the function of sleep has been arrested in its development at the infantile stage (*partial infantilism*).

Special liability to being upset by trivial causes—in some instances by specific causes—such as a particular colour, an insect, a face that is disliked, a particular sound, a disagreeable odour or taste, is one of the most characteristic stigmata of hysteria. Epileptics in their turn manifest upon the slightest cause of emotion evidence of visceral disturbance, which shows itself in sudden pallor, excited gestures, distressed visage, and tremor of voice and lips.

3. *Pathological Variations of the Affectivity and of the Habitual Character.*—The constitutional anomalies of character, in contrast with those of intelligence, are not generally recognized as symptoms of mental disease. It is necessary that they should

occur in association with delusions, intellectual deficiency, or dulling of consciousness, in order that the public, and even many alienists, may be able, ridding themselves of the prejudice of free-will, to refer them to a morbid cause, and therefore to assign them to mental pathology. Congenital and acquired deviations from the average type of the moral character are, indeed, so frequent in mental disease that there are no psychoses of which they may not be a symptom, prodroma, predisposing cause, or residuum. It is also doubtful if we are entitled to consider as entirely normal those persons in whom certain normal passions are excessive or lacking.

Some of these passions, such as irascibility, avarice, jealousy, and even the attachment of lovers, with its obsessional exclusiveness, come, indeed, very near to being pathological, whatever their intensity and duration. On the other hand, mental diseases, properly so called, although they may be associated with the most serious complications affecting the intelligence, do not create new and special desires, but merely rekindle in an extraordinary way and inflame to pathological intensity certain common passions, such as anger and lust, or else they simply cause displacement of the object, giving rise to affective perversions which manifest themselves especially in erotism and in phobias.

Anomalies of character often constitute a latent predisposition to mental disease, and become transformed into a true and actual psychosis only when they are further accentuated, or with the ripening of age, the supervention of some organic disorder, or the concurrence of unfavourable circumstances. The affective factor then leads the patients into irregularities of thought and conduct, contrary both to their interests and to their ordinary habits, and at length even in the public judgment the pathological nature of their disorder is recognized, and thus the right of existence of a pathology of character is granted.

In his classification of affective anomalies Ribot distinguishes three groups of abnormal personalities, namely—

1. Characters that become modified in successive periods of life, even until they reach the most complete antagonism (Francis of Assisi, Mary Magdalene).

2. Those that present coexisting but opposed tendencies, from which there arises either a permanent and hostile duality of the psychical personality (ascetic libertines), or a more or less happy conciliation by means of a logical subterfuge (scientific positivism and religious credulity, self-denial in public and immorality in private).

3. Unstable multiform characters, devoid of consistency, whose conduct is an enigma, and whose future it is impossible

to forecast. Their prototypes are hysterical, adventurous, and restless individuals, whose desires are excessive, and whose inhibition is defective, and who may be summed up in the expression *affective infantilism*.

Ribot's attempt at classification represents an important advance in pathological psychology, but it is certainly incomplete. To the characters that are anomalous in respect of successive or simultaneous contradictions of moral tendencies, it is necessary to add a category of personality which is not less firm and consistent than those of normal type, but in which there predominates a passion that is abnormal in nature, such as cruelty, anger, jealousy ; or in its degree, as lust and avarice. This last category of pathological personality, which, though omitted by Ribot, probably comprises the greater part of those predisposed to the constitutional psychoses, eludes as yet any attempt at delimitation.

The remote action of a morbid passion can be understood much more easily if regarded as a simple intellectual alteration in process. Behind the *imperative idea* there is to be discovered a *phobia*—that is to say, a special and original form of fear, which varies in regard to its object from case to case, but which preserves an unaltered profile in all the innumerable forms of obsession. By a process of affective dissociation, timidity of character, instead of manifesting itself as it logically ought to do in the presence of danger, is partially organized in reference to only a limited number of sensations or of occurrences, which are often almost devoid of any terrifying feature. Similar want of harmony and contradictions are often to be observed, but in a much attenuated and easily corrected form, even in normal individuals. There are very few timid normal persons who cannot boast of having at least a partial form of courage ; and there are few brave persons who do not present at least one very limited form of partial pusillanimity. If the lack of harmony becomes a little exaggerated, or emerges from the latent state—for example, upon the occurrence of an organic disorder or of nervous exhaustion—it forms the obsessive atmosphere of a phobia, from which there arises the imperative idea or impulse.

Similarly, the passion that warps the judgment is easily recognized behind the delusional conviction of the paranoiac, the doubts of the melancholic, and the ostentation of the juvenile dement.

The person suffering from delusions of persecution discovers plots, enemies, and allegorical warnings because he is suspicious, proud, and mystical. In some instances his hallucinations, taking their tone from his delusion, also betray the same emotional

origin. Between the ambitious and the persecuted type there is only this difference : that, whilst the latter is convinced of the reality of what he fears, the former is convinced of the reality of what he hopes. In the very fact of the excessive nature of this fear or of this hope is already contained the germ of delusion.

The ambitious megalomaniac dreams of alliances, dependents, and solemn consecrations, because he is vain, foolish, and stubborn, and of the many possible views that may be taken of his position in the universe, he accepts with assurance the one that is most flattering to his *amour propre*, even though it is the most ill-founded and improbable.

Hypochondriacs are possessed by a morbidly egotistical exaggeration of attachment to life, which in normal persons does not obtrude itself upon consciousness, excepting on the occurrence of danger or during temporary weakness, and without inducing convictions or doubts of a delusional nature.

In many forms of lucid insanity it is also common for patients to give way with early and secret ardour to various extravagances of fancy. The indefinite has a fascination that is felt even by normal persons of refinement, but degenerates and defectives delight in it even to raving. In times of anxiety and suffering they overflow with pious superstitions. The fear of death, horror at the death of others, or the expectation of some doom, throws weak-minded persons into the arms of religion. Children who have been left for some time in the dark sometimes become so awed by the sense of the unknown that they fall into a state of meandering mysticism. The mysterious impressions of voluptuousness that precede the attainment of adolescence expose to other dangers, and sometimes bequeath to consciousness supernatural ideas that become converted into delusions. Invalids, who have originally been persons of a mystical and anti-social nature, become isolated even intellectually, diverge more and more from the way of thinking that is common among ordinary people, who are mystical only from custom and for practical reasons. The lack of affection shown by the insane mystic may reach even a feeling of contempt for his own family, and lead him to disown his parents, and to believe himself to be the son of princes or of imaginary persons in high position.

Extravagant and impulsive acts are recognized even popularly as morbid manifestations whenever they constitute a metamorphosis of character so remarkable and baneful as to make the individual appear in an absolutely new light. His acts and feelings seem the products of another person, and would be inexplicable except as the result of some morbid factor. This factor is often of the nature of a traumatism.

Traumatic psychoses, even if they do not give rise to delusions and amnesias, are evidenced by passiveness of character, and sometimes by irritability, dipsomania, loss of moral sense, etc. The same more or less complete dissolution of character is often to be observed in chronic alcoholism. In some instances the patients, without actually becoming dishonest, begin to be careless about their duties, personal tidiness, or the rules of politeness, and become neglected-looking, cynical, and coarse.

In general paralysis also the disease at its beginning almost always deprives the patient of those inhibitory powers that ordinarily prevent the commission of thoughtless acts. General paralytics become venturesome in their business, somewhat unscrupulous, talkative, and sometimes communicative in regard to themselves, even to simplicity, because they have lost not so much their intellectual capacity as the moral interest that leads to reflection and inhibition. Although they are still able to understand the significance of their own actions and words, they resist a force of inhibition of which they no longer feel the importance. To them everything appears simple, open, and innocent. Their childish optimism renders them insensible to dangers and to misfortunes. Thus, paralytics, still lucid and physically strong, who in consequence of previous crises in their illness have lost employment or customers, leave efforts for the rehabilitation of their fortunes to their wives, whom they allow to guide them without any sense of humiliation and with complete passivity in the management both of their business and of their family.

The moral character undergoes remarkable and typical transformations in the involutive process of old age. There are individuals who, as they grow old, lose all feelings of affection. With the greatest tenacity they cling to their wealth and maintain their authority. They exercise a petty, headstrong, and crabbed tyranny over those who are dependent upon them, or over persons over whom they unfortunately have control. In some instances they take a dislike to their own children, and deny them what they require; or they become subject to strange reawakenings of erotism, vanity, and ambition; or, descending to the lowest degrees of selfishness, they cease to take an interest in anything save what happens within the limits of their own room, their desk, or their dinner-table. On the other hand, examples of an opposite type are also to be observed—aged persons who become more indulgent, amiable, generous, and especially more serene than they used to be. Even this kind of happy metamorphosis is, however, due to destructive lesions, because it is not really dependent upon new affective acquirements, but upon the disappearance of disturbing passions and preoccupations—that is to say, upon a

process of simplification of character, to be included in the pathological picture of cortical atrophy. There are some who lose in virtue (and this is the more general rule), and there are others who only lose some faults. These successive losses, if complicated by intellectual enfeeblement and by amnesia, as very often occurs, give an altogether special character to the well-known delusions of senile dementia.

The character of epileptics in its turn is marked by certain affective contradictions which would remain an enigma if it were not that they are explicable as an effect of their disease. It is well known with what ardour epileptics will perform certain formalities of religious rite, or carry out religious propaganda, whilst they break the most essential rules of morality (Samt). This inconsistency of character is the result of the action of two opposing influences. On the one hand, the limitations that their disease imposes upon them lead epileptics to look upon the world and themselves with a meditative austerity, which is impressed upon them by the greatness of their needs, and which is often a fundamental feature of their character; on the other hand, the very many vicissitudes of their malady entail a variety and violence of impulses that are capable of impelling them to actions entirely contrary to their true character. Thus are to be explained the changes erroneously regarded as signs of hypocrisy that make the same epileptic an abstemious person and a dipsomaniac, a bigot and a blasphemer, an ascetic and a satyr.

In hysteria, from similar causes, but with far more protean and irregular metamorphoses, the state of feeling also varies, as we have seen, and with the state of feeling the character likewise varies. With regard to the symptoms manifested by these patients, there is often an undue readiness to look upon them as unreal and dependent upon a tendency to mystification, because it is not understood that the character, like every other manifestation of nervous activity, is affected by pathological influences, whilst of all the psychical functions it is probably actually the most impressionable. In their quick transitions from faithlessness to loyalty, from hatred to love, from haughty cruelty to warm and unassuming kindness, hysterical patients are much more sincere than they seem. The metamorphoses in their character would not be regarded as morbid if they took place slowly along with the evolution or involution of age; but they cannot pass as natural when, not being simulated, they touch within a brief time the opposite extremes of the scale of passion.

The dislike that there is to the theory of morbidity applied to the character alone manifests itself still more strongly, and especially in those who know nothing about psychiatry, in regard to the

pure cases of moral insanity. This psychosis, which consists in the more or less distinctly congenital deficiency of the moral sense, or of the sympathy and solidarity that unites us with other persons, and even with the domestic animals, is readily understood and admitted when it is combined with imbecility—that is, with intellectual deficiency. If, however, the moral defect occurs as an isolated phenomenon without being accompanied and justified by lack of intelligence, the diagnosis runs directly counter to the absurd tradition of free-will, which remains strong in its double origin, empirical and metaphysical, and it becomes practically indefensible before judges or people saturated with juridical and religious Byzantinism.

Lombroso would seem to have elected to evade this preconception instead of combating it (it has been combated from the standpoint of psychology with much force by Enrico Ferri) when, in order to include criminality and moral insensibility in the domain of pathology, he strained his idea so far as to identify them with epilepsy. As a matter of fact, since the moral character is an organic tendency of cerebral activities, and nothing more, there is no need to identify the morbid fatality of its anomalies with gross monstrosities, traumatisms, or recurrent convulsive seizures, the existence of which in the majority of cases is hypothetical, and which are without influence upon the ethical degeneration. We ought, therefore, to guard against assuming to be abnormal the intelligent criminals, not few in number, who bear the mark of criminality unjustly—that is to say, in consequence of judicial errors, or owing to narrow interpretations of the law and of morality—and to reflect, on the other hand, that the majority of individual crimes are the expression of social anomalies and imperfections.

The most complete and obvious incoherence of character is that which is to be observed in juvenile dementes. These patients, though they often preserve intact their store of mental impressions, and at times converse with wit and write with seeming good sense, commit the most outrageous incongruities of conduct, and often go so far in their absurdities as to give rise to suspicion, as in cases of hysteria, of ostentatious purpose in their action. There is lack of formation or dissolution of those habits of systematic inhibition, the measure and direction of which constitute the chief distinctive features of the psychic personality; although consciousness preserves its ordinary lucidity, the patients give way to any extravagance of conduct their fancy may suggest, without heeding whether their actions will be beneficial or harmful to their more remote interests. Possessed of considerable experience, many acquirements, and even a certain amount of talent, juvenile

dements, by the obstinacy they display in not making use of them, seem the voluntary caricatures of imbeciles.

Imbeciles in their turn, even when they have reached an advanced age, are, though evidently involuntarily, the caricatures of children, whom they resemble in respect of their thoughtlessness, cruelty, and vanity. Paranoiacs also, owing to the faith that they have in their own fantastic ideas, cannot but induce an exaggerated growth of that mysticism which in normal people flourishes for a short time during adolescence, and generally dies down whenever adult age is attained.

Disturbances of affectivity and of character are apt to be confounded with those physiological oscillations that cause even normal persons to differ from each other and from themselves at different times. The mistake is fairly often made in regard to the slight and isolated alterations with which mental diseases so often begin. Moreover, even individuals who appear to be normal are sometimes subject to storms of passion so violent as to raise a doubt, which may sometimes form the subject of a judicial inquiry, whether they ought not to be looked upon and condoned as pathological phenomena. Certain explosions of hatred, love, lust, anger, and fear, especially when they occur in young persons whose ordinary character is not known, constitute a problem that is almost insoluble to the alienist who is called upon to give his opinion regarding them.

It may also happen that the manifestation of passion is the effect of a twofold cause : it may be due in part to a personality which, though extreme, is not decisively anomalous or psychopathic, and in part to an unusual and transient disorder which acts as a supplementary factor. This external factor, which in some instances is practically demonstrable, is also capable of acting alone. It is evident that certain temporary infirmities of the organism, such as neurasthenia, hysteria, alcoholism, drunkenness, neuralgias, etc., even though they do not affect the intelligence, and are very far from reaching the degree of true psychoses, greatly threaten all the nervous processes, including the affective processes. It should not be matter for surprise if at a time of pathological supersaturation the threat is realized, and there is constituted a perversion or exaggeration of the intensity of the passional reaction.

These and other refinements of moral casuistry have not yet passed beyond the threshold of literary psychology, which, indeed, has deserved well of psychiatry by its very felicitous anticipations. Alienists would not, however, be so often called upon to pronounce empty and irrelevant opinions upon the responsibility of lucid and passional offenders if the penal laws were broader and

more rational in their directive criteria. Under the influence of modern ideas, the courts readily pronounce irresponsible, and therefore not deserving of punishment, the most incorrigible criminals, because they display anomalies and signs of inferiority that are interpreted as a necessary and organic cause of crime. The rigors of the law are, on the other hand, preserved for passionnal offenders, who have the misfortune to resemble very closely the average type of honest and normal persons, and who therefore feel even more keenly the bitterness and shame of punishment. Nevertheless, the passionnal offenders are more deserving of sympathy, and much less dangerous, than the so-called born offenders.

CHAPTER VIII

MOVEMENTS AND OTHER EXTERNAL REACTIONS

THE PSYCHOLOGY OF MOVEMENTS.

INTELLIGENCE manifests itself principally by means of voluntary movements. A person's acts and words are the best index of his psychical condition. Any other process of centrifugal innervation, even the most trivial, can, however, when there is need, furnish indirect indications. The psychical influences penetrate from above into the diastaltic arches of vegetative life, and sometimes reveal themselves in visible reactions and characteristic disturbances. In psychical activity, it is always necessary to presume the occurrence of an antecedent event, which may be sensorial, arising from without, or cœnesthetic, arising within. However remote, indistinct, or forgotten this essential antecedent may be, it operates as a physiological stimulus, and reduces even voluntary acts to the level of reflexes, differing from the common reactions only in their greater complexity. From the secretory activity of a gland to the contraction of the smooth muscles, and from a simple voluntary act to a programme of conduct that slowly unfolds itself in the course of a human life—notwithstanding the relative autonomy with which the various nervous networks of the sympathetic, spinal cord, subcortical ganglia, and the cerebral cortex, perform their functions—there is therefore a continuous chain of similar and consistent reactions.

From this point of view it is the province of psychiatry to consider not only the motor manifestations that are the direct product of intellectual work, but also unconscious reflexes. In the movements of facial expression, in the reactions of the pupils, and in those with which the spinal nerves are concerned, we can read important comments upon the often obscure drama that is being enacted within. All these reflexes constitute a kind of dumb-show that may excel in evidence, as it always excels in simplicity, the superabundant and contradictory series of voluntary actions. Thus, there are utilized for the study of psychical facts all those phenomena of centrifugal innervation susceptible

of examination that can reveal anything regarding the state of the cortical organs—voluntary acts, instinctive acts, expressive movements, and even those common reflexes (secretions, muscular tone, nutrition) that have no psychical significance, but that are in some manner influenced by the higher centres.

Acts performed with the purpose of producing a definite foreseen effect, and in conformity with the desires or with the character of the person, are classified among the volitions. In many instances the uncertainty of the prevision and the conflict of contrary desires delay the decision, and cause us to lose sight of its inevitableness. We think that we *act*—that is to say, select freely from among various possibilities in consequence of an internal and unconditional initiative of our will. As a matter of fact, we can only *react*, obeying the preponderating desire in the way that our intelligence suggests to us as the most fitting.

The directive power of the will is strictly limited by the original structure of the brain and by the course of external events. Indeed, it is upon these two conditions that the general regulation of the sentiments (desires) and thoughts (previsions) that give origin to the volitions is dependent. More exactly, voluntary actions are to be interpreted as intelligent and obligatory responses to stimuli that continually impinge upon consciousness in the form of desires, and thus the manifestations of will do not differ objectively from other reflex phenomena, save in their slowness. Nor do they differ from them very much, even subjectively, if, as often occurs, no reason for preliminary uncertainty presents itself, and the process of conscious elaboration is reduced to the minimum; or when, as occurs in philosophically constituted minds, there is a clear idea of all exciting motives; or when we purposely try to test our own irresponsibility; or when the cause that occasions the action impels to conduct so repugnant to our habitual tendencies that we become obliged to recognize our passiveness. In all these instances voluntary actions blend with instinctive actions, and assume, even when viewed from within, the aspect of reflexes with consciousness, and nothing more.

Those movements that are carried out consciously under the impulse of a mysterious tendency, but without any clear prevision of the effects, are ascribed to instinct, and termed “instinctive acts.” Will is merely a lucid form of instinct, and instinct is an obscure and incomplete form of will. Will manifests itself in very varied and personal ways; instinct in uniform ways dependent upon the psychical type of the animal species.

On the other hand, the undeniable and often very remarkable adaptation of instinctive actions to biological ends, or their utility to the individual and to the species, has given rise to

much discussion as to the origin of instincts. Are they perfected automatisms, or degenerated volitions that have become automatic ?

Each of these two possibilities may be correct. Acquired instincts in many instances arise from voluntary acts which, as the result of repetition, become anatomically and psychically simplified. Thus, walking, dressing, and speaking are spinalized and bulbarized actions in which consciousness participates only to a limited extent and without any sense of voluntariness. But the congenital instincts, which, especially in insects, constitute one of the greatest marvels of adaptation, can only be explained as inherited, or as examples of an automatism the seeming obscurity of which is the result of selection.

That instincts are dependent upon the automatic action of natural selection, and not upon a pre-established and anthropomorphic or providential design, is proved by the fact that, notwithstanding their indisputable utility, they reach a state of comparative perfection only by degrees and through individual acquisitions. The bees of Mexico do not build cells of hexagonal form, which are the most economical, but cylindrical ones. The hornets build their cells of irregular form. The Australian cuckoo does not deposit its eggs in the nest of other birds. This shows that natural selection is carried out little by little, and that, when the struggle for existence is less keen, it allows the species and their instincts to remain in a phase of inferior organization, through which the more highly evolved beings and instincts have certainly also passed.

Hence, though in ontogenesis instinctive acts are sometimes the results of voluntary actions, in phylogenesis they are always the antecedents of these voluntary actions. Practically, therefore, the instincts and the will share the government of human actions, operating either in harmony or in antithesis, or even independently.

Everything considered, human conduct appears as an incessant and more or less coherent series of reflexes having origin partly in custom and tradition, and partly in fresh and personal initiative. At all events, whether they have an instinctive origin or depend upon a voluntary determination, our actions are only a continuous adaptation to the *hedonistic law* (of utility), according to which we always aim at attaining the maximum of satisfaction with a minimum of effort.

Direct and eloquent indications of the mental state, though of an involuntary and for the most part actually unconscious nature, are to be observed in the expressive reflexes—that is to say, in the facial movements and in those various internal reactions that

constitute a sort of complementary and secret expressive movement. Human physiognomy is an automatic semaphore that announces our more intimate feeling and passions with a delicacy and sincerity that are sometimes inconvenient, and which conscious language can scarcely express with equal force. Similar significance is often to be attached to blushing, pallor, modifications of pulse and respiration, sobbing, laughter, weeping, salivation, cold sweat, and other phenomena of a similar kind, all of which can be induced by psychical impressions.

In the various changes of facial expression exact and early indication is given of every kind and every shade of feeling. Darwin, indeed, maintained that certain gestures are inherited—for example, children born and reared in England, but of French parentage, shrug the shoulders in expression of nonchalance, though this gesture is one that is not used by English people. Apart from heredity, there are gestures that in infancy serve a certain end, and afterwards persist as expressions with a symbolic meaning. A foul smell induces as a reaction the opening of the nostrils accompanied by a forced expiration, whereby the undesirable odour that has been perceived is driven away. The same reaction is repeated through analogy when moral repugnance is felt. In order to fix a visual image better, we knit the brows, project the eyebrows, and half close the eyelids—that is to say, we limit the field of vision and cut off part of the light. A movement exactly similar accompanies every other effort of attention, even in listening or thinking. Darwin has even interpreted sardonic laughter, which was originally (and still is in the dog) a threat, as a kind of armed demonstration (the weapon is the canine tooth)—in fact, an exhibition of hatred and strength. Other movements are merely the motor expression of a feeling that has no direct means of relief, either through the path of least resistance or even by that of muscles that are ordinarily not engaged (Spencer). Hilarity is easily relieved by means of laughter, joy by means of movements of the hands that seem to rub an impalpable soap in an invisible water, and impatience by means of rapid, varied, and violent gestures that leave no doubt as to their significance.

Lastly, in the sphere of the sympathetic, spinal cord, bulb, and the brain itself, there is the incessant activity of centrifugal processes, which are neither determined by the will nor accompanied by consciousness, nor exactly in conformity with the psychical state. They are involuntary, unconscious, and inexpressive. Yet even these completely non-psychical forms of reflex activity constitute, if nothing else, an exact exponent of the organic conditions associated with their own respective apparatus of innerva-

tion, and thus they offer an indirect, but sometimes certain, index, if not of the psychical content, at least of the nutritive and functional energy, which, either by simple analogy or by a relation of physiological causality, holds sway in the cortical paths.

Indeed, in addition to the common analogous conditions that occur in the various segments of the cerebro-spinal axis as the result of general conditions (anæmia, exhaustion, intoxications, multiple new growths, etc.), we have to take into account the harmonies and the antinomies that are the expression of a more complicated solidarity, and which result from an exchange of excitatory (*bahnend*) and inhibitory (*hemmend*) influences between the processes of conscious innervation and those of automatic innervation. This twofold solidarity, little known and little studied in normal life, is sometimes clearly exposed to view in pathological conditions.

A simple analogy (without solidarity) is the mydriasis that accompanies coma in certain intoxications. In these instances there is a single morbid agent which affects two different structures. When, on the other hand, we observe a greater vigour of vegetative and peristaltic activity under the influence of psychical exaltation, and there is reason to believe that the morbid agent is not localized outside the brain, we have before us a very clear case of dynamic diffusion of an harmonious kind. Lastly, the classical example of dynamic diffusion of an antinomic nature occurs in the exaltation of the muscular tone in the spinal field exactly when the nervous functional power in the cerebral field is depressed by motor paralysis.

THE PATHOLOGY OF CENTRIFUGAL INNERVATION.

1. The Conduct.

The conduct of the insane is marked by many errors, both positive and negative, which are directly antagonistic to their interest and inconsistent with their previous character. These errors of conduct may be dependent, according to the case, upon three different kinds of causes—namely :

1. Morbid errors of the representations.
2. Affective disorders.
3. Intrinsic alterations of the will or of the instincts.

Practically, however, all the peculiarities of conduct that result from hallucinations, delusions, and blunting of consciousness, being merely logical corollaries of the intellectual disturbance, are comprised in the pathology of ideation (see Chapter V.). Similarly, morbid degrees of activity, inertia, or despair, induced

by states of exaltation, indifference, or depression of the sentimental tone, are to be included in the pathology of the sentiments (see Chapter VII.). Lastly, the hallucinated, the delusional, the confused, the exalted, the apathetic, and the depressed act as they feel, feel as they think, and think as they speak. Their actions can be understood and easily anticipated from their talk, and there is no need to study them, apart from their motives, as a special symptom of importance.

The pathology of conduct thus becomes considerably restricted, and identified with that of the will and the instincts.

Indeed, strictly speaking, true insanity of action, or impulsiveness, only exists when, in consequence of a mysterious anomaly of the mechanism of the will, there is a marked inconsistency between conduct and its subjective antecedents, it mattering little whether these are normal or morbid. Irregularities of instinctive manifestations do not require to be included in this chapter, because they almost never arise from lack of coherence of action and motive. On the contrary, they are the conspicuous confirmation or the first indication of a circumscribed perversion that concerns the affectivity. We are therefore confronted by a partial derangement of the desires, rather than by a derangement of action. Nevertheless, it is necessary that this anomaly, just because it is so equivocal, should be manifested and declared in action before its existence and degree can be determined with certainty, and this circumstance transfers the perversions of instinct from the pathology of the motives to the pathology of conduct.

It is probable that impulses, properly so called, spring *ex abrupto* from the motor centres in consequence of local and unusual stimuli, which have either been casually conveyed there by a morbid agent, or inevitably produced by a pre-existing lesion. At all events, in order to avoid conflict with difficulties incapable of solution, and perhaps uselessly pedantic, psychiatry should, as a rule, abstain from pronouncing definitely regarding the exact psychological genesis of a movement or behaviour that is sometimes an enigma even to the person immediately concerned. It prudently stops at the surface of the phenomenon, and in general ascribes to intrinsic absurdity of conduct only those motor processes which, whilst in respect of their complexity and of the correctness of the subject they resemble voluntary acts, are only, or only seem, reflexes of organic origin on account of their inexplicable frivolousness and incongruity. These false volitions, which pre-eminently deserve the name of morbid impulses, have a mechanism analogous to that of hallucinations. These arise in a similar manner—namely, by local and unusual

irritation, which arouses in the related centres images of objects that are not present.

The conduct of the insane, which without these distinctions would present a spectacle of innumerable aberrations incapable of classification, can therefore be studied conveniently from two separate standpoints—namely, that of *false*, or apparently false, *volitions*, and that of manifestations (volitionally regular) of *perverted instincts*, which otherwise would remain unobserved or uncertain.

Anomalies of the Will.

Fatalism, immobility, and total inaction, as manifested in *stupor*, are given the name of *abulia*, because in these cases it is believed that the consciousness is still awake, and the behaviour of the patients is only explicable as the result of a paralysis of the will. In support of this opinion the patients themselves sometimes bear testimony when they have recovered or are convalescent. The disease leaves them spectators, and often not indifferent ones, of what is going on, but it renders them incapable of reacting in harmony with circumstances. This incapability extends even to the most elementary initiatives.

The patients maintain for hours and days together the same position, do not reply to any question, tolerate moral and physical injuries, and persist in attitudes, even though uncomfortable and ridiculous, which have been passively imposed upon them (*catalepsy*). In some cases every action is inhibited, and the patients feel chained without knowing how (*Benommenheit*). Nevertheless, they are not incapable of elaborating the motives of an action or of recognizing its opportuneness and urgency. The consciousness of this moral subjugation gives rise to psychological suffering, and sometimes fears and delusions.

In other cases of *abulia* it is seen more clearly how the will is merely a resultant. Voluntary reaction is absent, doubtless owing to qualitative and quantitative limitation of the consciousness; the ideas are few and stereotyped, and arouse associations only among themselves. Although the patient who is the subject of *abulia*, and who is conscious, perceives and remembers the real or imaginary scenes in which he takes part, he chiefly employs his faculty of attention in a spastic mono-ideism of a fruitless and obscurely painful nature, which exercises a kind of obstructive effect upon the associative processes capable of suggesting or determining reaction. It may also happen that the limitation of consciousness concerns especially the affectivity, and in these cases the patients, although they understand and think, abstain from action owing to lack of interest. In short,

their irresponsiveness indicates either aridity of ideas or aridity of feeling. Of the moral anæsthesia there is confirmation in the fact that many patients affected by abulia present also analgesia and expressive immobility. It is evident that the paralysis affects also territories outside those concerned with the volitional process, and that abulia is only a special form of the torpidity that has impeded or arrested all the processes of innervation.

Between not wishing anything at all and wishing one thing only—that is to say, between abulia and *monobulia*—the difference may seem very small, but often it is very considerable. Indeed, in the term “monobulia” there may be included two somewhat different varieties of psychical state. There is a static or continued monobulia, which consists in the presence of a permanent and overmastering volition that inhibits and eliminates every other mental phenomenon. There is also a dynamic or discontinuous form of monobulia, which consists in a repeated and relentless return of the same volitional tendency. Sometimes this tendency ends by being translated into action, and it then constitutes, if not an absolute impediment to, at least a constant threat against, the production of other volitional and mental phenomena. Static monobulia coincides with what alienists have described as *katatonia*. Dynamic monobulia is the active and characteristic form of impulsiveness.

By *katatonia* is meant the persistence of a patient (as a rule, a juvenile dement, in some instances an hysterical subject, exceptionally an ament, a paralytic, or a melancholic) in an expressive, statuesque, and fixed attitude (Figs. 41 and 42). If one endeavours to alter the patient's posture, to make him come down from his ideal pedestal, there is encountered an amount of resistance that is extraordinary, but which is, so to speak, marble-like—that is to say, devoid of any accompanying expression of feeling or of intelligent resentment. If the patient makes up his mind to eat, to undress, or to change his position, he carries out the necessary actions with incredible slowness and solemnity, and in such a way as scarcely to alter his fundamental pose. The attitudes most commonly adopted by *katatonics* are those of preaching, threatening, praying, ecstasy, and suspicion. In some instances the gesture is enforced by a short and invariable word. An unfortunate student of medicine, who spent many years in the asylum of Genoa, uttered with clenched teeth the word “*Condanno!*” (I condemn!), and sometimes added “*porcaccioni!*” (dirty pigs!)

In all of its forms *katatonia* is a very obstinate symptom. Kahlbaum, who described it for the first time in 1874, endeavoured

to elevate it to the dignity of a special psychosis. Recently Kraepelin has revived the conception of Kahlbaum in upholding his contention that katatonia is a variety of *dementia præcox*. Katatonia has not thereby lost its importance; whilst it disappears as a psychosis, it acquires a still wider significance as a syndrome, for it includes not only the symptom described, but other motor manifestations of similar clinical origin.

Amongst the manifestations allied to katatonia, and bearing the name already suggested by Kahlbaum, there is especially to be mentioned *negativism*. Whilst ordinary katatonia is a plastic attitude towards an unchanging theme, negativism is a series

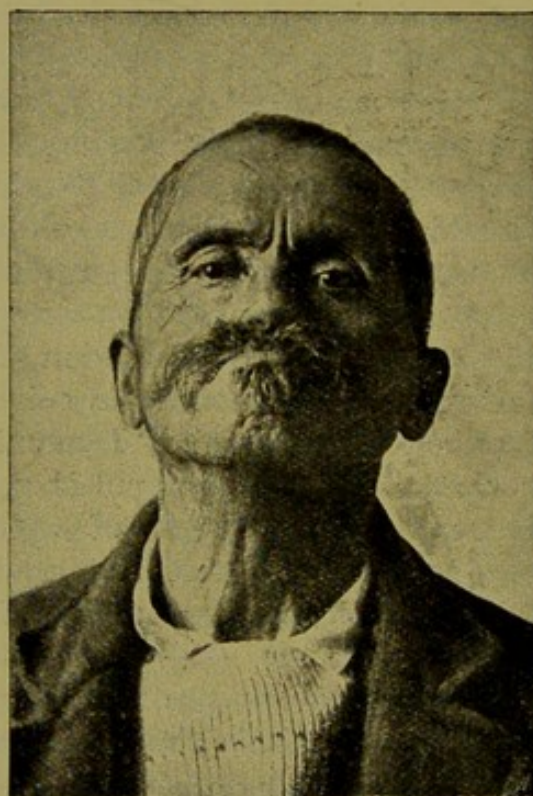


FIG. 41.—CASE OF PROGRESSIVE PARALYSIS IN A KATATONIC ATTITUDE, WHICH THE PATIENT MAINTAINED FOR SEVERAL SUCCESSIVE MONTHS.

of plastic negations, variable in theme, but not free; the patient poses now in one fashion, now in another, but always exactly contrary to the suggestions of others and of his environment. He is a systematic and paradoxical opposer, who neither speaks nor reasons, but energetically resists everything new, even in defiance of his own interests. Closing his mouth, he refuses the food that is offered to him, and eagerly stretches out his hands to that which is taken away from him; he will allow himself neither to be undressed nor to be dressed; he turns away his head and his gaze if an appeal is made to his attention; but he returns to a condition of intense thoughtfulness when he thinks himself alone

or unobserved. Sometimes he laughs or becomes angry, but never appropriately; motionless and fixed to his seat in spite of sun or bad weather, he leaves it, no matter how comfortable it may be, the moment he is encouraged to remain; when asked to wrap himself up, he responds by proceeding to divest himself of his clothing; at the first sign of the approach of someone to make a medical examination he hides his head under the bed-clothes (Fig. 43).

Both katatonia and negativism manifest themselves also in a modified form. Katatonia is sometimes displayed in extravagant and habitual peculiarities of gesture, of gait, manner, speech, and writing, to which are applied the names *systematized movements*,



FIG. 42.—KATATONIA.

This patient always stands erect, with his feet together and his arms fixed and approximated to the trunk; he holds his head rigid, and keeps looking down; for many years he has not uttered a word.

echopraxia, *echolalia*, *neolalia*, and *neographia*. Negativism may consist in absurd rebellions, of sudden but infrequent occurrence, which constitute the pathognomonic symptom of dementia præcox in all its varieties.

All of these symptoms have a common fundamental character. Monobulia, whether it continues without interruption, as in the classical katatonia, or rages in successive storms, as in other cases, is so mysterious in its cause, purpose, and mechanism, that it loses almost all the distinctive characters of volition. It is difficult to conceive of a wish that is not commanded either by previsions, even though erroneous, or by feelings, even though pathological, and the best conclusion that one can form regarding

such monobulias is that they are at the most *parabulias*. The enigmatical nature of the symptom does not, however, detract from its practical value in differential diagnosis.

Indeed, both the patients who suffer from typical katatonia and those who manifest the more or less intermittent forms of incompletely developed katatonia show neither terror, embarrassment, nor wonder on account of the extraordinary volition, to which, on the contrary, they yield with indifference and almost with complaisance. Sometimes they jokingly explain their



FIG. 43.—DEMENTIA PRÆCOX : KATATONIC NEGATIVISM AND PSEUDO-CONTRACTURE.

The patient cries and resists every time an attempt is made to alter her position.

conduct, giving improvised excuses which are untrue, and even more foolish than the katatonic action. Thus a juvenile dement, when asked why he would not walk, offered as an explanation his uncertainty as to whether he should take the first step with the right leg or with the left. This demential passivity forms a distinction between katatonic monobulias and obsessive monobulias, which have very different characters and which we shall study later in patients of quite another kind.

The most common *systematized movements* are those of kneeling, walking on tiptoe, giving the military salute inopportunately (even

to inanimate objects), pronouncing a stereotyped and insignificant sentence (for example, "Give me a shilling to buy a horse!"), putting on an incongruous and ridiculous combination of articles of clothing, persistently walking up and down the same short portion of a path, avoiding certain lines on the pavement, and collecting stones, straws, and even filth, but without any of the ideas that characterize collectionism. In some instances the systematized movement is a mnemonic residuum of actions to which the person has been habituated in his ordinary work. Thus a labourer, the victim of traumatic dementia following an explosion of a mine, placed his legs and moved his arms as if he were digging, and he continued to do this for ten years.

These movements are sometimes known as incoercible or imperative, but, as a matter of fact, they are so spontaneous, ready, and devoid of subjective distress that it is better to reserve the denomination in question for monobulias of a very different kind, which we shall describe as a symptom of neurasthenia. Sedative drugs, which are so efficacious in repressing acts of furor and in restraining patients from obsessive reactions, exercise no influence upon systematized movements. These develop in the background of consciousness, in the sphere of automatism. They are therefore more resistant to therapeutic measures, and cannot be overcome by imperative suggestion.

Echopraxia is a special form of systematic motor derangement, and consists in the intentional imitation or repetition of the gestures of others. This annoying repetition may extend to all sorts of actions of other persons, or may be limited to speech (*echolalia*). In the latter case there is to be distinguished an echolalia which is *verbatim* and an echolalia which is only approximate, in which the patients express certain original ideas in a more or less intelligent manner, and repeat only in part the sentences that they hear. *Neolalia* and *neographia* are only systematic disorders of ordinary speech and writing, which give rise to a sort of jargon with terminations and interpolations that remind one of the talk of young children. This individual and more or less comprehensible jargon, which the patients persist in speaking and writing on every occasion, and often throughout their whole life, as if it were in universal use, and without troubling themselves whether it is understood or not, is one of the most certain symptoms of dementia præcox.

In cases of dementia præcox, whatever the clinical variety to which they belong, absurdity of behaviour spreads a shadow of katatonia even beyond the limits of the katatonic variety. It is a result of disaccord between what the patients think and feel internally and what they actually do and desire.

Thoughtless, angry, irritable, and unreasonable behaviour is morbid, but it is not absurd if the consciousness of the patient is burdened with mistaken convictions, unusual passions, and general disorder. Sufferers from dementia præcox, however, commit extravagances of conduct deliberately and without any purpose, either serious or frivolous, remote or immediate. These extravagances take especially the character of katatonic parabulia, for the patients who perpetrate them enjoy ordinary lucidity of consciousness and full equilibrium of their sentimental faculties. They narrate incredible tales without shame, without blushing when they contradict themselves, and without any expectation of being believed; they suddenly commit acts of violence, not instigated either by hatred or anger; sometimes they begin an attempt at suicide, from which they desist without any change of feeling; they decline comfort and amusement without being influenced either by scruples or by a desire to make an impression; and they do not value either their own interest or the opinion of others. Their behaviour, though voluntary in appearance, is the negation of will in substance, since it is contrary to what economists call the principle of hedonism, which consists in the constant pursuit of the greatest good, or, at the worst, of the least evil.

It is probable that this disorientation of conduct and of action is dependent upon dulling of the feelings, which are the source and reason of every normal initiative. Owing to the perpetual opposition that they encounter—from themselves rather than from others—the victims of dementia præcox are typical negativists, and the absurdity of their actions exhibits itself to the full in katatonia. Katatonia, negativism, and systematized movement in their various forms are only special examples of the phenomenon that we have spoken of as absurdity of actions.

Obsessive monobulias are of a very different nature from the monobulias and parabulias of katatonia. Although obsessive monobulias are usually arrested in the state of a simple tendency, the consciousness of the patient is always lucid, and leaves no doubt regarding the condition of his will. They are certainly morbid volitions, but they differ from the blind impulses of katatonia in being as much elaborated and as strongly resisted as some normal volitions, and even more so. The morbid origin of these true *obsessions* is evidenced by the characteristic circumstance that the patient feels himself to be invaded and dominated by a will that is foreign to his psychical personality. It causes him annoyance, displeasure, horror, fear, or despair, according to the representational content of the obsession.

These obsessive monobulias are the product of constitutional and acute neurasthenia, melancholia, hysteria, etc.—in short,

of the lucid psychoses. They arise in the form of a simple representation, and they become included in the category of painful obsession the moment they acquire, through repetition, an irresistible hold. They differ from common obsessions only in that, instead of referring to an abstract subject, they represent an action which the patient feels driven by logical necessity to carry out. From similar necessity it also happens, though rarely, that the tension effectively transforms itself into the accomplished volition.

A doctor, thirty-seven years of age, who at twenty-seven had suffered from severe neurasthenia accompanied by insomnia and phobias, suffered from a new attack. He had exaggeration of the patellar reflexes, quivering of the eyelids when the eyes were closed, sexual weakness, anæmia, constipation, and fear of becoming insane. To these symptoms there was added from time to time the impulse to kill his own little daughter, the first and only child of a recent and happy marriage. "The idea," he wrote despairingly to me, "suddenly comes into my brain like a red-hot iron. I feel it arrive; I see it gain force. It makes me run to the child's room, and impels me to commit . . . what I do not wish to commit. I take my child in my arms, and am on the point of throwing her down the stairs or out of the window, according to the place in which I happen to be. Hitherto, by supreme and un hoped-for effort, I have succeeded in conquering myself, and have clasped my darling child in my arms and kissed her as if to ask pardon for what I did. No one has read in my face the horror that seizes me. I look a normal man, but perhaps I am not. Is there a frontier that separates me from insanity, or have I already crossed it?"

Obsessive monobulias are therefore the pathological example of hesitation concentrated upon a single voluntary act the representation of which repeats itself in incoercible form. This cruel hesitation is referred to in the fine line of Dante :

Il sì e il no nel capo mi tenziona.
(*Yes and no dispute within my brain.*)

From the same soil of neurasthenia and melancholia there spring, however, much more often the multiple manifestations of a vague perplexity or of *dysbulia*. The patients are vacillating, owing to a painful indecisiveness of their judgments and desires, which restrains them from any complete volition, even in regard to the ordinary and innumerable actions of daily life. To this wretched indecision the picturesque line of another poet, Francesco Petrarca, fittingly applies :

Nè il sì, nè il no nel cor mi suona intero.
(*Neither yes nor no sounds complete in my heart.*)

Dysbulia brings the element of distress into the picture of neurasthenia, and increases it in that of melancholia, already nearly supersaturated with it. From the conduct and words of these patients it is easy to realize the profound bewilderment they

experience, in spite of the futility of the ever new hesitations that occasion it.

The neurasthenic who suffers from dysbulia is fickle and contradictory ; he wishes at the same moment to rest and to work, to eat and to fast, to set out and to stay. His chief desire is to consult the doctor, but his decision is put off from day to day upon pretexts so frivolous that they seem to be pretences.

The melancholic who suffers from dysbulia, as is very common, feels himself arrested at every step by a painful uncertainty. When confined in the asylum, he is equally pained by writing to his friends and by leaving them without information, by following advice that seems to him too generous, and by transgressing the dictates of humility that he has imposed upon himself, by getting up or lying down, by speaking or remaining silent, by living or dying. The thought of any kind of act arouses in the tired and easily pained mind of these patients the idea of a contrary act ; there is a kind of representational negativism, which must not be confused with the illogical and automatic opposition of patients suffering from negativism properly so called.

Melancholics are subject to a series of anxious dilemmas (the *delusion of negation* of Cotard, more correctly *doubt*) ; the ordinary result is inertia with intense depression. Persons suffering from katatonia, on the other hand, are the irreconcilable executors of an impulse that they do not examine, and which perhaps they do not even understand. The will of melancholics is broken up into two contrary tendencies of equal force, which render it impotent in regard both to affirmation and negation ; the will of those suffering from katatonic negativism is rendered unnatural by a blind and continual negation, which, being almost devoid of volitional and intellectual character, denotes a defection of ideas *en masse*.

Anomalies of the Instincts.

The only absolutely certain evidence of the disorder to which the instincts are subject in the insane and in perverts is to be found in their conduct. The useful and hereditary tendencies that constitute the heritage of the human species undergo profound alterations in the form of deficiencies, excesses, and partial or total perversions.

1. *Conservation of the Individual.*—Conservation of the individual is connected with a series of instincts, among which there stands out as the most fundamental and immediate that of attachment to life, which Schopenhauer endeavoured to exalt on metaphysical grounds as the explanatory principle of the universe, and which Zola has depicted in a manner true to

psychology and in charming colours in the most beautiful of his romances, "Joie de Vivre." The poverty of our imagination allows us to contemplate death with a degree of stoicism, provided that it appears a long way off; but this stoicism vanishes, or is weakened, when the individual is placed in imminent danger, as in epidemics, shipwrecks, great fires, etc., which drive individuals or crowds to a madness of self-preservation that is sometimes brutal, destroying every altruistic consideration.

In the insane and in degenerates attachment to life persists almost always in a very intense form. The general paralytic, reduced to the lowest depths of physical and moral degradation, manifests a remarkable satisfaction in being in the world, and would spend all the small amount of energy he possesses in defending his existence if it should be threatened. This is also true of those fanatics of life, the hypochondriacs, and of many senile demented. The opposite condition, which is, indeed, more characteristic, is, however, not unknown. I do not refer to the melancholics who commit suicide in order to terminate unendurable sufferings, or to those neurasthenics who prefer suicide to tormenting, incessant, and uncontrollable fears of death (*thanatophobia*), because these patients yield to a rational impulse arising from despair, which, under the burden of a great misfortune, can be similarly produced even in normal persons. I refer to those lucid, but anomalous, persons (neurasthenics?) who end their life in a moment of sudden impulsiveness, without any adequate motive, as the result of some trivial opposition, consideration of honour, a bet, or through the suggestions of a place, weapon, or family tradition. Sometimes the case is that of couples, amorous, but without reciprocity of passion, or of children between five and ten years of age, or of families in which there may occur two, three, or even seven cases of suicide from imitation (Maccabruni), sometimes in the same circumstances, with the same revolver, and on the occurrence of an anniversary or of a particular date.

Around this fundamental instinct of attachment to life there flourish others of an accessory nature which serve the purpose, not so much of defending life directly as of making it full and more vigorous, because they secure for the individual physical integrity, a supply of food, the possession of what he has gained for himself, cleanliness of body, and sexual independence. All of these complementary instincts are liable to excesses, injuries, and perversions which are commonly associated with the more severe forms of insanity.

The *instinct of corporeal integrity* is violated by those patients, generally unconscious, who, aided by a condition of analgesia, mutilate themselves, without any purpose whatever, in a horrible

and more or less dangerous manner, as by evulsion of teeth, amputation of their genitals or of their fingers, enucleation of the eyes, burning of the skin with lighted cigars, etc. In some cases of profound melancholia the instinct of corporeal integrity is worse than suspended, being actually inverted; the patients, without any intention of a definite attempt at suicide or expiation, give way to meaningless acts of impulsiveness which appear to be inspired by a paradoxical feeling of *algophilia*. Tattooing is common among persons associated in close corporations, either compulsory or secret—sailors, soldiers, prisoners of various kinds, habitual criminals, and prostitutes and their parasites. This sacrifice, small though it is, of cutaneous integrity, in homage to a vulgar and often obscene symbolism, is only possible among groups of persons of low type; it constitutes an artistic affirmation of that primitive and little sympathetic solidarity that forms the so-called *esprit de corps*. Tattooing is a sign of depravity, either congenital or acquired, or both.

The *instinct for food* is often violated by the insane, who manifest *sitophobia*, *coprophagia*, *pica*, *bulimia*, etc. The refusal of food, or sitophobia, is in some instances merely a method of suicide, or it may be inspired by fear of poisoning; often, however, in unconscious patients it is the automatic expression of a coenesthetic alteration almost always connected with the innervation of the stomach, which is the true and only seat of hunger (the so-called organic tissue-hunger as a subjective sensation is a myth). Hysterical patients also suffer from periodic lack of appetite, which may reach the degree of sitophobia.

Coprophagia is with certain paranoid dements a kind of religious rite. Idiots and demented also devour straw, hair, and tobacco from *ageusia*.

As to the transitory perversions of taste that are to be observed in adolescents and hysterical patients, which impel these persons to eat ashes, earth, salt, vinegar, etc., they do not correspond to unusual or latent needs of a chemically imperfect organism, but are aberrations devoid of any biological purpose (*dysgeusia*).

Insatiable hunger, or bulimia, is a significant and very common symptom in paralytics, as also in idiots, who often, in consequence of their gluttony, die from suffocation or from secondary intoxications. The same danger also threatens many epileptics in the recurring periods of voracity to which they are subject.

The *instinct of property*, which is one of the oldest and which does not extinguish itself, but increases in dignity, in passing from the historic form of conquest and of the *jus abutendi* to the aspiration after other more developed forms better subordinated to the general interest, represents a preliminary phase of the

instinct of self-preservation, because it stimulates the individual to obtain, secure, and accumulate for himself the means of existence and of enjoyment for the future. In the degenerate, the avaricious, and the jealous this instinct is often uncontrollable, and becomes, on account of its excesses, the predisposing cause of delusions ; in other words, it is the sign of a paranoiacal constitution.

From the clinical point of view the most remarkable product of the exaggeration to which the instinct of property, always very strong is liable is the so-called *querulant delusion*. The querulants or processomaniacs, notwithstanding the fact that they have good intelligence and complete lucidity, are so infatuated and devoid of moderation in the judgment of their own interests that they are unable to recognize the limitations imposed by the interests of others and by the precise terms of the law, and, interpreting the law in entire good faith, but with all sorts of cavils, they plunge into ruinous and endless litigation.

This delusion, which constitutes a variety of paranoia, continues for years in a latent state ; but in time its progressive character impels the patients to litigious actions, which, although they may still come within the bounds of law and logic, leave no doubt as to their morbid origin. Incomplete or occasional processomania occurs also, apart from paranoia, in maniacs, especially in the periodic form of mania ; the rapid disappearance and repeated interruption of the mania prevent the development of the delusion throughout the prolonged stages of judicial procedure.

The instinct of property asserts itself in odd fashion in *collectionism* (Mingazzini). The collector gathers rags, string, stones, pieces of glass or paper, and other useless and insignificant objects ; he fills his pockets, his shirt, or his mattress with them. He employs all the available hours of the day in this one occupation. He resists with fury any seizure of his treasure, or he permits it to be scattered without showing annoyance, and begins the work again. This phenomenon is a symptom of an extreme degree of irremediable degradation. It is, indeed, recognized that all the insane collectors—that is to say, both the true or specialized collectors or the *monocollectionists*, and also, to a greater extent, the false or eclectic collectors or *polycollectionists*—are to be included in the two classes of idiots and demented, the chief among the latter being paralytics. This involutional manifestation of insensate avarice displays itself suddenly and without any precedent, and it is one of the most tenacious symptoms in the last stage of general paralysis.

In paralytics, however, the opposite symptom, that of prodigality, is more common. Maniacs are also often very prodigal,

especially those who are subject to fits of periodic mania. Such prodigality is not really in antagonism to the instinct of property, but rather confirmatory of it, because fundamentally it is only the abusive and optimistic manifestation of this instinct.

The action of this instinct of property and its pessimistic conception are to be seen, on the other hand, as one of their most characteristic symptoms in melancholics, who imagine themselves ruined, reduced to beggary, and about to die with hunger, and who on this account abstain from spending any money, and, through fear of having to pay for them, refuse even the gratuitous medicine and food of the hospital. The *delusion of poverty* is only a special form of melancholic micromania, and disappears when the attack of depression passes off.

To the instinct of property we must also attribute, at least in part, the *delusion of jealousy*—that is to say, the unjustified, absurd, or obsessive suspicion regarding the fidelity of husband or wife. This suspicion, which almost always passes into paranoiacal certitude, arises not so much in consequence of exclusiveness of affection as from a despotic conception of legal possession of the wife, analogous and historically coeval with the *patria potestas*. If, however, it seems difficult to understand how delusions can arise from an exaggerated feeling of paternal authority, which is softened by affection (very rarely lacking) for the children, it must be borne in mind that in old people, whenever the affectivity disappears, there become at least visible the very distinct germs of an authoritative delusion, which fails to become systematized solely owing to lack of activity and of intellectual coherence, but which is composed of envy, vanity, and lack of trust, like the delusion of jealousy.

The *instinct of bodily cleanliness*, when it becomes exaggerated, as it does almost exclusively in neurasthenics, gives rise to *misophobia* or *rupophobia*, which is one of the most common forms of obsession, and which impels the patients to wash themselves a hundred times a day. In a family consisting of two rachitic old women and a brother, who was also rachitic, I have observed misophobia as a chronic condition, communicated by reciprocal suggestion. In the more severe cases of amentia, in delirium tremens, and in the confusional attacks of progressive paralysis, the patients, on the contrary, become incessant daubers (*Schmierer*), and smear the furniture and the walls with their own fæces. So extreme an expression of filthiness is possible only in patients who are unconscious or semiconscious; among lunatics who are comparatively lucid, cases of dementia præcox alone can behave in a similar manner with any appreciation of what they are doing.

Modesty, by restraining the instinct of reproduction, comes to the assistance of prudent discretion, and helps to make sexual selection more deliberate. In this way the interests and independence of the individual are not completely sacrificed to the continuity of the species. An excessive degree of modesty leads to a state of temporary or perpetual impotence, or at least to an extraordinary frigidity in not a few of the more lucid and sensitive patients, such as neurasthenics, paranoiacs with mystical and humanitarian delusions, and also in those higher degenerates who, but for this salutary restraint, would be impelled to acts of sexual perversion. On the other hand, modesty is absent or is destroyed in psychopathics characterized by a profound degree of intellectual deficiency. Idiots and cretins, who in the majority of instances are sexually impotent and harmless, may, when they are in this respect exceptional, commit rape, or incest, or abuse themselves in public. General paralytics, alcoholics, and senile demented do not readily reach this state. As in them the sexual power is almost always weakened, the manifestations of their immodesty tend to be limited to low talk and incomplete attempts at seduction of minors, or to acts of obscenity devoid of judgment or restraint, such as exhibitionism, which is intentional public exposure of the genital organs.

2. *Conservation of the Species*.—The genetic instinct, inasmuch as it satisfies a form of sensibility, is merely the expression of an individual need, but its most important effect is that of binding the individual to an abstract interest, for it impels him to promote, without thinking of it, the continuity of the species. The progress made by human intelligence has served to transfigure even love, giving it a spiritual character, which tones down and hides its brutality without diminishing its effectiveness.

The psychology of love includes two very similar problems—namely, the mechanism of the passion episode and the gradual development of the amorous spirit.

From the first erotic impressions, from their adorned remembrance, and from the æsthetic reflections that every human being accumulates, treasures, and co-ordinates in the secret storehouse of his own consciousness, there arises a growing excitement, which, by a series of sentimental sophisms, is resolved into an imperious, definite, and more or less continuous auto-suggestion. This process of erotic saturation proceeds by preference in the name of a living idol, which the enamoured person adopts as the symbol of sexual felicity, and to which he dedicates the tribute of an ardent, special and exclusive worship: "To her who alone seems to me to be woman," says Petrarca.

Even, however, when the specific infatuation has gone and the

idol has fallen, there almost always remains amid the ashes of the spent passion a mnemonic remnant that exercises a lasting influence upon succeeding amours ; the idol changes, but not the worship. Through an involuntary process of mental abstraction, a few bodily requisites, which are associated with the lost and idealized moment of a remote sensual past, and which it is desired to attain again in a new realization through the renewal of the joy of that moment, are assumed as emblems of sexual perfection, and therefore as points of aim for amorous aspirations. In this way—that is to say, in large part by chance—consistency is assumed by the innumerable idiosyncrasies which cause the eroticism of each individual to incline towards distinct ideals, and which determine the variety of amorous feelings.

The erotic ideology of the human species is therefore poly-systematic ; but the erotic ideology of each individual tends to become monosystematic. It is owing to the capricious multiplicity of the systems that it is possible to have among human beings a degree of distribution of the fortune of mating, for the desires of the enamoured, instead of being alike, and instead of converging, as might appear natural and inevitable, upon the few recognized paragons of womanly grace and manly strength, are able to spread, happily in various directions, among the numerous ranks of average individuals. It is thus owing to the individual peculiarities of erotic symbolism that most lovers, in place of professing amorous eclecticism, woo a more or less invariable ideal, so that the stability of conjugal relationships is favoured. Thus people in general practise and submit to the law of sexual selection, on the one hand, with a variety of tastes that increases the factors of human fecundity, and, on the other, with a fixity of purpose that saves from dispersion.

Yet this state of things, along with the various advantages (and perhaps also disadvantages) that it presents from the social point of view, contains the germs of serious dangers for the individual. The biological purpose of love is often completely lost sight of ; in the wanderings of amorous thought the genetic fire very easily loses its natural orientation, and associates itself with a sterile and compromising ideal. It is in this way that sexual perversions take origin.

Excessive symbolic abstraction is, indeed, a form of aberration, for it restricts to an extreme degree the field of sexual selection. The extreme symbolists (Binet very appropriately terms them *fetishists*) systematically fall in love, not with a person or a beautiful face, but with a little foot, a white hand, a long tress, a prominent breast, or a mellow mouth. Their irreconcilable peculiarity leads them to go in search of this partial requisite ;

if this desired feature is absent or poorly represented, they despise the most complete and exquisite beauty ; if the one very doubtful virtue is present, they adore any carcass.

All perverts are particularists, but, except in the foregoing case, excess of fetishism is always combined with aberration. In some instances the erotic fancy, tired of fixing itself upon the image of a circumscribed but living and palpitating portion of the human body, goes a step further in the abstraction, and attaches itself to a related inanimate object, such as a lady's shoe, provided that it is bright and elegant, a perfumed glove with many buttons, a smart corset, or a pair of drawers with trimmings. If the human being who possesses one of these things, and who wears them in the manner idealized, does not exist, or is not approachable, the ungratified fetishist often ends by satisfying himself with isolated and empty symbols ; a boot-shop, a warehouse of ladies' outfits, or a press filled with linen clothes, has to his eyes the value of a harem.

In other cases sexual excitement is caused by contacts, or by the thought of contacts, that have no relationship, either direct or demonstrable, with the sexual act. The name *masochists* is given to the perverts who experience the greatest voluptuousness by being touched or daubed by the saliva, urine, or fæces of their consort. It may be that masochism is a pathological derivative of the humility or of the reciprocal confidence which, even in normal persons, is not devoid of a special erotic activity. *Sadists*, on the other hand, experience the need of using violence, threatening, beating, and sometimes killing their victim, or giving vent to their lust upon the exposed viscera ; they perhaps represent only the monstrous degeneration of bestial passion.

The most common and best-known form of erotic aberration is homosexuality—*contraire Sexualempfindung*, or inversion of the sexual tendencies, which consists in the deviation of the amorous ideals to the sex to which the patient belongs, and which is given the name of Greek love in men, and Lesbian or Sapphic love in women. The difficulties that these inverts require to overcome in order to find those with whom they can reciprocate, and the struggles that they have to maintain with themselves in order to resist the baneful passion, aggravate this form of perversion, as also all the others, even to obsession.

Homosexual aberration is of two degrees. In the first the male invert does not seek the symbol of voluptuousness in the woman, because he has already found it in the adolescent of his own sex ; the female invert does not delight in the caresses of the male, because she finds those of other women better suited to her timidity. So long as the anomaly remains within these

limits there is really only a half homosexuality ; the psychological dispositions of the two sexes are not contradicted, for the male is not less aggressive and the female not less passive than usual. A similar state of things is readily produced where the foolish system of ecclesiastical seclusion is in force. It is not, however, irremediable, but generally disappears at the first breath of promiscuous and unrestrained life. Yet there are cases in which, through the association of a precocious sensuality and an exuberant fancy, the first erotic images in the nascent state, inspired by a bad ideal, become at once surrounded by so brilliant a halo that they defy any physiological opposition.

Homosexuality undergoes its complete rotation from one sex to the other when the male invert, previously active, makes passivity his only aim, and becomes a *cinedo* or *passive pederast*, with all the instincts of the woman ; or when the homosexual female, previously passive, adopts the behaviour of the male, and makes approaches to women with all the arts of the male. By audacity upon audacity, sophism upon sophism, obsession upon obsession, the invert seeks to produce in others the particular excitement that he wishes to experience himself, either because from the vivid representation of the voluptuous feelings of others he extracts keener pleasure than from experiencing them himself, or because, by this change of amorous parts, it is more easy to find an accomplice. Among homosexual individuals there are to be found various kinds of psychopaths, including constitutional neurasthenics, paranoiacs, superior degenerates in the full vigour of their intellect, and also inferior degenerates at the level of imbeciles. All of these persons can be divided into two classes—namely, *militant* inverts and *idealistic* inverts.

The figure of the confirmed sodomite, with painted face, long hair, sinuous outline, short step, and effeminate dress, does not always represent the summit of homosexuality, for more often it betokens moral and intellectual imbecility cynically abused. The passional type of invert, and still more the semi-invert who hides his peculiar tendencies, and represses them, or who awaits with trepidation the unknown companion with whom he will be able to satisfy them without danger and without shame, divining the consent implied by a look or by a sudden blush, is found, as a rule, among men of refinement as an effect of sedentary habits. In the fifth century scholars were specially affected in this way ; at the present day it is the genius with an undue sense of his own superiority, and in all times monks. Cases are not uncommon of idealistic perverts (and chiefly those of the first degree) who sacrifice their erotic chimera to social considerations or to scruples of conscience, and who, not succeeding in correcting

it, are able at least to impose upon themselves an austere chastity throughout life, which becomes at once the cause and the effect of *neurasthenic crises*. These crises, of which it is not difficult for the doctor to detect the secret significance, are the sole phenomenon that betokens an anomaly that remains unnoticed by all others.

Perversions of all sorts may also occur in persons who have been accustomed to a perfectly normal exercise of the sexual functions. They are sometimes to be observed in chronic and acute alcoholism, in progressive paralysis, and in senile dementia, as a consequence of intoxications that act on the brain in two ways—namely, on the one hand, by irritation of genetic sensibility, and, on the other, by paralyzing the psychical personality, and therefore the inhibitory restraints which normally take the form of modesty, æsthetic reserve, and moral coherence. Such cases, which are frequent, have nothing in common with perversions of juvenile origin; rather than as an indication of the psychical constitution, they are to be regarded as a fortuitous effect of the mental disorder. These same toxic agents, if their local action upon the genetic sensibility is more marked, are able to produce (and this they more commonly do) the opposite phenomenon—namely, impotence. In fact, the most common sexual symptom in alcoholics, paralytics, and senile demented is the dissociation of two processes normally parallel; imagination is tumultuous, and the physical reaction is lethargic.

Also to be considered as perversions are onanism in adult life and obsessive exaggeration of similar practices in adolescence. The abuses of onanism, and sometimes also their total and sudden cessation, exercise a characteristic influence on the course of dementia præcox.

2. Motor Expression, Speech, and Writing.

The irregularities, sometimes very slight, of these essentially expressive processes concern not so much the matter expressed as the form of expression. The content of the motor, verbal and graphic expressions, which constitutes feeling as regards facial expression, and thought as regards speech, belongs, if it is morbid, to the pathology of sentiment and to that of thought. Of these very numerous profound internal anomalies there will be mentioned here only those that manifest themselves in a characteristic and exclusive manner, either in expressive movements, or in speech, or in writing, and which without such expression would remain unknown. The form of the expressive processes, on the other hand, being simply movement, belongs wholly, if it is altered in character, to the pathology of centrifugal innervation.

Anomalies of Expressive Movement.

In children any kind of pain, physical or mental, manifests itself noisily by means of crying. In adults crying is very rare ; but there is no shade of distress, however slight and momentary, that does not betray itself in the darkened countenance, in spite of every effort to hide it. Distress of countenance is merely a partial weeping, without tears and without sobbing. The wrinkled brow, the drooping corners of the mouth, the elongated face, the head inclined upon the chest, the drooping eyelids, and



FIG. 44.—SIMPLE MELANCHOLIA.

the dull look, constitute the complete expression of psychical pain. The maintenance of such an expression is a certain sign of sentimental depression, and very probably an indication of melancholia (see Fig. 44).

There are melancholics who from time to time shed floods of tears, as children do. The partial contraction of one or of a few muscles is, however, sufficient to render evident to others, in spite of any protest to the contrary, the depression of spirits, or the sense of humiliation, that gnaws the mind within. When the

two corrugators act, the eyebrows are drawn towards each other and downwards towards the root of the nose, and the skin over the glabella becomes puckered in longitudinal furrows; in some instances even the most severe forms of melancholia reveal themselves only in this slight but perpetual knitting of the brow. This attitude has been given the name of *omega*, or sign of Schüle, although more often it takes the form of an M or of a quadrilateral figure without the lower side (Fig. 45).

Psychical pain manifests itself still better by means of another muscle—namely, the triangular muscle of the chin, which is bilateral, and serves to lower the angle of the mouth. This muscle,

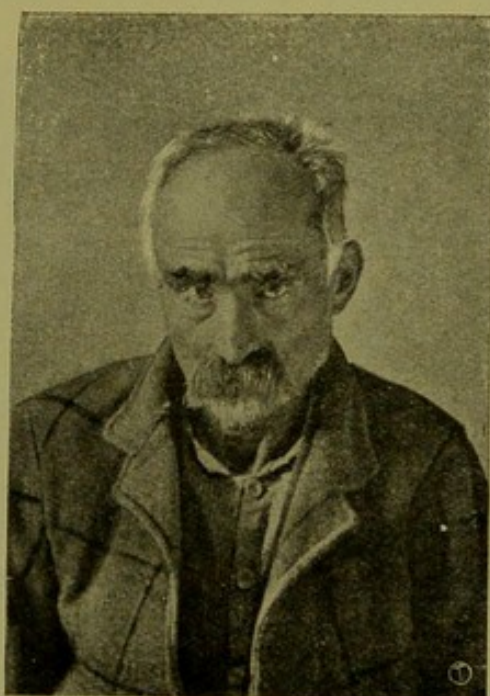


FIG. 45.—MELANCHOLIA WITH STRONGLY MARKED EXPRESSION OF SADNESS: HYPOCHONDRIACAL DELUSION.

as Duchenne has remarked, is less under the control of the will than the others. According to Darwin there are certain nerve cells which, in consequence of a habit of infantile origin, when an unhappy or distressing thought crosses the brain of a healthy adult, immediately transmit to all the respiratory muscles and to those of the face an order to contract and to prepare themselves for a fit of crying. The will intervenes and at once pronounces a counter-order; but if the pain is somewhat intense, as in melancholia, the counter-order is never obeyed fully, and the two triangular muscles of the chin are, of all the muscles of the face, the least ready to obey. Their contraction determines the so-called lengthening of the face, which is the most demonstrative evidence of sadness, because, in contrast with corrugation of the

brow, it can neither be dissimulated nor simulated by the action of the will.

So long as any trace of pained expression remains, even though the other symptoms of melancholia have disappeared, or are latent, it is useless to regard the case as recovered. Indeed, the melancholic patient who has really recovered is completely changed in appearance. In his smooth brow, his smiling mouth, and his firm carriage of head and body there is evidence of a profound and calm satisfaction that is the true antithesis of his former state.

The painful and almost defensive self-absorption of melancholics is in marked contrast to the lively, not to say impudent,



FIG. 46.—STATE OF MANIACAL EXCITEMENT: BROADENING OF THE FACE.

expansiveness of exalted patients, which varies in different instances (like the mood), and includes the happy and the angry types. The classical outward expression of mirth is laughter; a smile is only incomplete laughter; and a fixed expression of good humour is only a half-smiling attitude of the face, without participation of the diaphragm. To produce this attitude of quiet hilarity there is required the co-operation of the same muscles as those that are concerned in laughter, but not of all of them. They act, indeed, only partially, and their contractions are hardly perceptible. In consequence of these muscular actions, the face, which in depression is elongated, in joy becomes broadened; the corners of the mouth are raised, the nose shortens,

the cheeks are extended laterally, and the external angles of the eyes contract, as if the individual were about to smile (Figs. 46 and 47). Although he tries to repress a smile, the good humour manifests itself still in the more vivacious look and the more open eyes.

In maniacs, and more particularly in hypomaniacs, the muscles of laughter are always in action, especially the great zygomatic and the triangular muscle of the nose, even when the person is not laughing. The eye is more open and the glance is more mobile.

In some instances maniacs show a slight tendency to eroticism. Their lively countenance assumes an expression partly languid and partly malicious. The same thing is seen in hysterical



FIG. 47.—CIRCULAR INSANITY : MANIACAL PHASE.

patients. The superior rectus and the great oblique hide a part of the iris under the immobile lid, and the fleeting glance, sometimes at the same time tremulous, seems lost in an amorous dream ; but with this mystical and indefinite contemplation there alternate glances *ad hominem* that are too precise to permit of mistake as to their meaning. These movements of the eyes are so instinctive that even imbeciles are able to adopt them in their elementary manifestations of coquetry (Fig. 48).

A similar expression, but exaggerated to an extreme degree, is to be observed, only for an instant, and always accompanied by nystagmus, in the period immediately preceding the hypnotic state, constituting a sort of hypnotic aura. It is also seen more continuously, for hours together, either with or without nystagmus, in the phases of ecstasy that form part of the major hysterical

fit. St. Catherine of Siena is thus represented in the celebrated fresco of Giannantonio Bazzi.

Strong contraction of the elevator muscle raises the upper eyelid, and leaves uncovered the white of the sclerotic above the iris. This produces a spirited and strange expression which is never observed in normal persons, even in unusual circumstances, and which, according to the movements that accompany it, can express horror, fear, or anger. Owing to the lack of such associated movement, it expresses nothing in patients who are suffering from exophthalmic goitre. The expression of these patients is due to active contraction of the elevators of the lids,



FIG. 48.—IMBECILE WITH EROTIC TENDENCIES IN ATTITUDE EXPRESSIVE OF COQUETRY.
There were in this case no evidences of cerebroplegia.

and to the passive effect of the exophthalmos. In exalted patients, however, the widely open eye is often a prelude of furor, and even a very slight flash of indignation is sufficient to produce it. Furor expresses itself thus only in maniacs. Indeed, though furor also shows itself with equal violence and unreasonableness apart from mania, in alcoholism, epilepsy, and progressive paralysis, it is very rarely that an equal intensity of expression is attained. The state of confusion, or even of unconsciousness, that accompanies the episodes of exaltation in these last forms of disease gives rise to such disorder of expressive movements that it is incompatible with a determinate expression.

In the case of paralytics there is another reason on account of

which any facial expression of feeling, rather than being obscured, is entirely lacking. These patients, though they not uncommonly have fits of insane anger and of unbridled gaiety, are affected even in an early stage of the morbid process by a pathognomonic *amimia* (Fig. 49). Their face, somewhat drooping, is an unchangeable and expressionless mask, wanting in mobility and tonicity, especially from the eyes downwards (Fig. 50). This is not because the processes of expressive innervation are interrupted or arrested, but because they reach the face with extreme and evident slowness one after the other. On account of the slowness of the movements, their successive occurrence is rendered very evident, and that effect of combined action which is manifested by many contractions occurring simultaneously is absent. Owing to this partiality of muscular contractions there is an absence of that expressive radiation which is the necessary complement of an expression that is really felt, communicated, and æsthetic.

Amimia can be made apparent by asking the patient to perform some unusual combined movement, such as that of opening the mouth and shutting the eyes, or *vice versa* (Morselli). Such associated movements, which normal persons succeed in performing perfectly at the first attempt, are difficult to paralytics, who, indeed, can only carry them out by applying the greatest attention to what they are doing. The deficiency of innervation is observable chiefly in crying, and even more distinctly in laughing. The laugh of the paralytic is discordant and imperfect, however clamorous it may be. Sometimes only the eyes and the diaphragm take part in it. Weeping is then nothing more than a big sob with a little flow of tears. The expression of the lesser degrees of sorrow and pleasure is so colourless and unrecognizable that it is sometimes impossible to say whether the patient is pleased or grieved. In other instances, there is manifested a strange contrast between the thoughtful brow and the gay or indifferent expression of the face (*dysmimia*; Fig. 49).

Amimia is much more rare, but sometimes equally profound in old-standing cases of epilepsy; it indicates that the nerves concerned in the convulsions, or rather the nuclei of origin of these nerves, are beginning to be the seat of organic lesions.

There are impassive persons in whom amimia is a congenital condition, constituting an external sign of emotional aridity. In hereditary imbeciles and simple-minded persons a monkey-like *hypermimia* is common. In senile involution the motor innervation loses its power to express the various shades of emotion by minute and complementary movements (amimia of delicate expressions); but it acquires, as if in way of compensation, a greater force in the expression of fundamental feelings by means

of principal movements (hypermimia of the coarse expressions), as Tonnini has very well observed.

This fact is not unknown to actors, who, in playing the part of old persons, take full advantage of it, making themselves what might be termed *macromimics*. Hypermimia, when not simulated, is a help in the diagnosis of cerebral arterio-sclerosis, or of premature senility. It perhaps results in this way: owing to involution of their special (cortical?) centres, the expressive movements lose the faculty of radiating separately, and can issue only in masses, setting out from a single subcortical centre, which

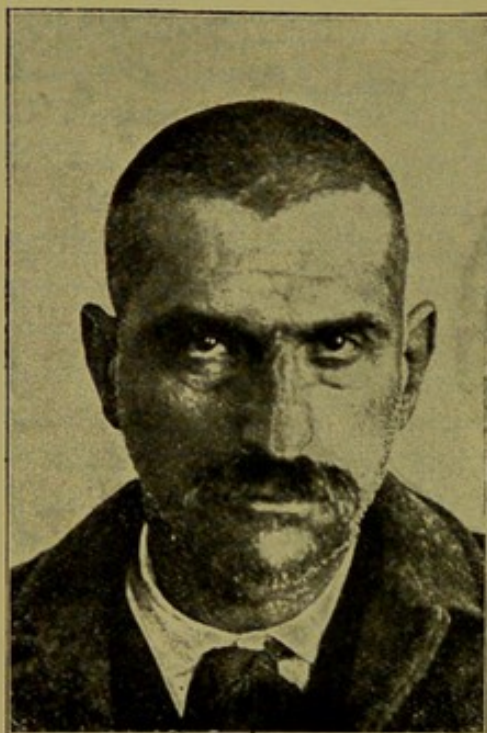


FIG. 49.—PROGRESSIVE PARALYSIS :
AMIMIA.

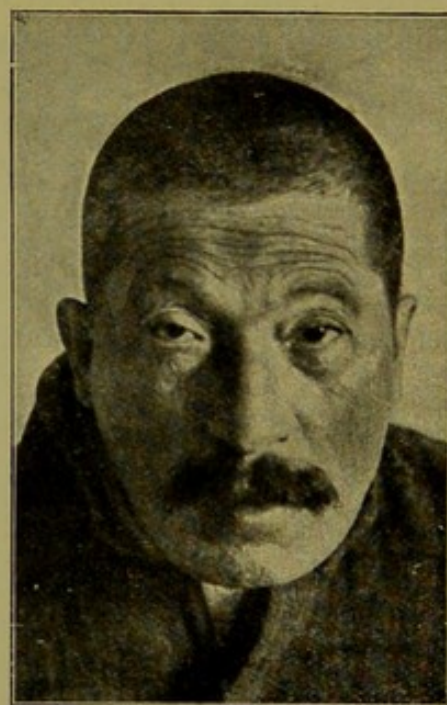


FIG. 50.—PROGRESSIVE PARALYSIS :
COMPLETE AMIMIA IN THE FIELD
OF THE INFERIOR FACIAL, WITH
PRESERVATION OF MOTOR INNER-
VATION IN THE UPPER PART OF
THE FACE.

is the seat of the coarser and more forcible, and therefore somewhat less differentiated, reactions.

The exaggeration of facial expression reaches its height in hemiplegics without paralysis of the facial nerve. Facility in laughing and in weeping is, indeed, an important indication of apoplectic dementia. It may express itself in true fits of laughing and of spasmodic weeping (Figs. 51 and 52). This symptom appears to be comparatively frequent in left hemiplegia, and for this reason it has been supposed that the centre for motor expression is unilateral and localized in the right hemisphere. According to both Brissaud and Bechterew, who arrived at a like conclusion

independently of each other, the centre for expressive movements, or at least for laughter and weeping, is situated in the optic



FIG. 51.—APOPLECTIC DEMENTIA: MOTOR EXPRESSION IN THE ORDINARY STATE OF REST.



FIG. 52.—THE SAME PATIENT IN A FIT OF SPASMODIC WEEPING, PROVOKED BY A SIMPLE EXPRESSION OF SYMPATHY.

thalamus. If this is so, it would appear that the childish expression of aged apoplectics is not due so much to the condition of

psychical decay as to a purely local and perhaps unilateral irritation of the optic thalamus.

This localization of laughter and of weeping plays a part as a mechanical cause of a quite special syndrome, which occurs in hysteria and also apart from hysteria, and which consists in fits of spasmodic laughter or (more rarely) of spasmodic weeping, or even of alternate laughing and weeping. There are neuropathics in whom every laugh assumes the character of a prolonged, exhausting, and uncontrollable attack, not very different from a Jacksonian seizure. In the *Morgante Maggiore* of Pulci, the giant Margutte, a grotesque person, dies from convulsive and interminable laughter brought on by seeing a monkey wearing shoes. Noiseless and causeless laughter is frequent in dementia præcox, and, indeed, is a pathognomonic sign of it, and important in the distinction of this disease from simple stupor.

Constitutional neurasthenia is the ground upon which especially flourishes another peculiarity of motor expression—namely, *tic*. This consists in the involuntary, intermittent, and habitual spasm of one muscle or a few muscles, the physiological contraction of which has an expressive significance. In their origin, indeed, these spasmodic contractions are only gestures or expressive attitudes, usually asymmetrical. A morbid preoccupation with the character of obsessive phobia renders them in course of time uncontrollable. The most frequent situations for these tics are the face, arms, shoulders, and muscles of respiration. The patient winks continuously, or he raises his shoulder and twists his neck as if he were being annoyed by a shirt that is too tight, or in talking he intercalates noisy inspirations (a habit that is somewhat common among North Germans), or he sucks his saliva with a corner of his mouth. Tics are almost an ordinary phenomenon, though a passing one, in boys of from seven to ten years of age; girls almost never exhibit them. In place of gradually disappearing, however, they sometimes persist and constitute a sign of neurasthenia, when imprudence on the part of parents or guardians, and a neuropathic constitution in the child, favour their becoming habitual. In the insane tics must not be confounded with systematized movements.

Anomalies of Speech.

Acquired Defects of Articulation.—The articulation of words suffers its greatest alterations in progressive paralysis. In the early stage of the disease the patients speak with considerable fluency, but every now and again they stumble in a scarcely perceptible manner, especially when they try to pronounce several

labial and lingual sounds that follow closely upon each other, as in the words "British Constitution." This phenomenon, known as *dysarthria*, is a delicate diagnostic test of the presence of the paralytic process. Some paralytics can no longer emit more than a series of inarticulate and unintelligible sounds; this implies that from the difficulty of *dysarthria* they have passed to one of *anarthria*, and that the disease is very near its terminal stage. Even in this stage, however, absolute *anarthria* is not very common.

Another disturbance of speech that is characteristic of advanced general paralysis, but much more frequent than *anarthria*, is *bradylalia*. This is determined, not so much by paresis, as by an intentional tremor of the muscles concerned with speech. The tremor is especially marked when the patient begins to speak, and it is very distinct in the orbicular muscle of the lips; it may, however, extend to the tongue, to the soft palate, and even to the vocal cords. In this last case, not only is articulation altered, but also phonation.

Dysarthria, *anarthria*, and *bradylalia* are often associated, not only with one another, but also with *amimia*; they constitute also a rare, but clearly and typically marked, symptom in epilepsy, in which they always betoken a slow and irreparable process of physical and mental decay.

The intentional tremor in cases of *bradylalia* is not to be confounded with that of an emotional nature, which can be observed as the result of timidity in persons who are not ill. As a rule, normal persons who are thus taken unawares by tremor of the voice and lips show by their face that they are embarrassed, and they either make excuses or stop speaking. On the other hand, paralytics and epileptics in whom *bradylalia* is habitual are unconscious of their defect, and continue to utter slow, laboured, and monotonous sentences with a sententious and impassive air which displays lack of any emotion.

In rare instances tremor, or rather a degree of ataxia, gives rise to a form of *acquired stammering*, which can be observed in cases of encephalopathy with organic lesions, as a result of muscular spasms, especially in the sphere of the hypoglossal nerve. These spasms reach their extreme degree in *aphthongia*, which renders speech impossible.

Likewise melancholics, cases of *amentia attonita*, hysterical patients in a state of ecstasy, and epileptics in a condition of post-convulsive confusion, usually speak with extraordinary slowness. This *bradylalia* of psychical origin is, however, very different from the *bradylalia* of organic origin. The patients, who are deeply preoccupied or confused, introduce pauses, sometimes

of long duration, between one sentence and another, and even between individual words ; these, however, are not broken up, and their pronunciation is not uniformly lengthened out. In melancholics bradylalia is a product of special psychical inhibitions, such as diffidence, shame, intolerance of effort, imperative hallucinations, etc. There are, however, melancholics who do not suffer at all in this way, and who speak fluently. In amentia attonita the speech is retarded only as a result of slowness of the ideational processes.

In hebephrenics there may also be observed, amongst the various peculiarities that they habitually manifest, a form of *ostentatious bradylalia*, marked by illogical pauses and prolonged periods of silence, dependent upon neither organic nor emotional causes. The irregularity of the pauses and their capricious character render it easy to make a differential diagnosis between this and the phenomenon of scanned speech which is special to disseminated sclerosis. Scanned speech is due to slowness of the expiratory movements that determine phonation ; it is very well revealed in polysyllabic words, such as "Constantinople," or by asking the patient to pronounce repeatedly and rapidly a particular vowel, which healthy persons are able to do at the rate of six or eight times per second, whilst those affected by disseminated sclerosis can only attain a rate of two or three per second.

The difficulty of speech may reach complete *aphasia*. Attacks of acquired aphasia, besides occurring in apoplectic dementia, are to be observed as ephemeral episodes in progressive paralysis, uræmic psychoses, and senile dementia (perhaps owing to uræmic complications).

Congenital Defects of Articulation.—In imbeciles it is common to find, in large numbers and well accentuated, those congenital defects of pronunciation, or *dysarthrias of letters*, that are in exceptional cases to be observed singly even in normal persons. These defects in normal people have almost always their origin in imitation ; more rarely they are dependent upon a very partial and limited incapacity in regard to the carrying out of certain very special movements of the tongue. In imbeciles imperfections of pronunciation depend rather upon a general arrest, or, in other words, upon an inability to progress, whereby many processes of motor innervation, including those of phonation and articulation, are prevented from differentiating to any degree of perfection. Not only, however, do imbeciles pronounce words badly—that is to say, like children who have little more than begun to speak—but they often show a similar ineptitude in their muscular movements—for example, in walking (Morsell and Tamburini), running, dancing, gesticulating, threading a needle, shutting one

eye only, extending two or three fingers of the hand, singing and reciting.

The most common congenital dysarthrias of letters are *stammering*, *rotacism*, *lambdacism*, and *lisp*ing. The term "congenital stammering" is applied to that difficulty in pronouncing certain letters, especially labials, linguals, and nasals (the so-called explosive sounds), which exhibits itself in delayed articulation, either with spasmodically violent utterance, or with reiteration of particular sounds. Rotacism is inability to pronounce *r* correctly; the letter is either entirely omitted, replaced by a *v*, or transformed into a grating *rh* of laryngeal origin. Lambdacism is omission or mutilation of *l*, which is pronounced like *d*, *g*, or *ng* (nasal). Lisping is essentially incorrect pronunciation of *s*, which is converted into *f*, or into a hissing sound, as if issuing from a small linear opening, or even into a *ch* aspirate ("quecht" for "quest"). All of these defects may be overcome momentarily by an effort of attention.

In very well-marked cases of imbecility that reach the degree of idiocy imperfections of pronunciation are overshadowed and obscured by *alalia*. There are, however, very few idiots who are unable to speak on account of actual deficiency of ideas. Alalia depends much more often upon local lesions, resulting from infantile cerebroplegic processes, which produce it either directly by implication of the centre for articulation, or indirectly through the sensory centres of language.

A morbid condition which has been known clinically for centuries is that of alalia, with complete deafness, or *deaf-mutism*. There are, however, between deaf-mutes, on the one hand, and simple imbeciles, on the other, not a few intermediate cases of partial deafness which present forms and gradations of great interest, although they are not easy to study. It has been shown by Mygind, Liebmann, and Urbantschitsch that a considerable number of deaf-mutes—indeed, about one-half—have slight power of hearing. Their auditory defect has chiefly the character of psychical deafness (Heller). They are not able to understand sentences, but they understand words or single vocal sounds—for example, the vowels, or even particular noises, such as that of clapping the hands, a call with loud voice close at hand, or certain musical sounds when heard alone. This partial power of hearing is, indeed, utilized equally with that of the sight and muscular sense in their education. A peripheral affection of the auditory nerve, such as results from an otitis during infancy, may also give rise to deafness for language and consequent alalia, with seeming complete deaf-mutism, but without tonal deafness and without any important diminution in the intelligence (Righetti).

If the more severe cases of partial deafness are mistaken for ordinary deaf-mutism, it is very probable that the less marked cases are erroneously ascribed to imbecility, or at least to congenital motor aphasia.

Forms of Dysphrasia.—The term *dysphrasia* has been applied by Kussmaul specially to those habitual abnormalities of speech that depend, not upon defective power of articulation or of representation of words, but upon a slight anomaly in the process of thinking—an anomaly that manifests itself in a characteristic defect of speech.

The most limited and harmless form of dysphrasia is *intercalation*, which consists in the illogical but involuntary interposition of a given word between the phrases of a conversation, and sometimes even between the syllables of other words. Intercalation is simply a verbal tic. The word that degenerates into an intercalation is one that was originally used correctly, or at least as a pardonable pleonasm. In some instances it is the deliberate corrective of an utterance that is too slow, or interrupted, or stammering; but the excessive degree of preoccupation assumes the character of a phobia, and makes the corrective more tenacious, and therefore more harmful, than the defect, because use changes to abuse, and abuse to incoercibility. Speech, like motor expression, is a function so automatic that it easily becomes independent of attention; from this facility dependent upon automatism arises fluency of speech, but together with fluency also the almost unconscious repetition of phrases, of commonplace remarks, and of intercalations, which, indeed, in the case of many persons, represent 90 per cent. of their conversation.

A form of dysphrasia very much deeper and more significant is *neologism*. It is not that the invention of words in itself is a morbid symptom; on the contrary, there is no word that has not at one time or another been coined by some isolated inventor, and the vocabulary is simply an accumulation of neologisms that have become more or less ancient. Pathological neologisms have, however, an imprint of their own that betrays their illegitimate origin. The normal man, who, respecting certain etymological laws, cares to take the trouble to create a new word, almost always succeeds sooner or later in putting it in circulation. His neologism takes origin from an individual thought and requirement that are not solitary, because they correspond in some measure to the thought and the need of people in general. This correspondence gives it wings with which to spread abroad, and so to perpetuate itself in ordinary use, and sometimes to find a place in the dictionary of the recognized language. If the new word, having been given every opportunity, does not catch on, its author,

if healthy minded, either repudiates it or forgets it, but the lunatic insists upon it with an obstinacy that ranges from simplicity to impudence, which betokens a mystical faith in the virtue of words, and hence a mental disposition that is plainly psychopathic.

Morbid neologisms have a significance that varies greatly in accordance with the psychosis from which they spring, and thus they constitute a valuable element in differential diagnosis. Sometimes they are the lost sentinel of a concealed delusion, which would escape notice but for this revealing sign (*paranoid neologisms*). In other instances the word invented by the patient does not reveal anything new, but simply shows the degree of morbid predominance to which certain hypochondriacal apprehensions can reach (*neologisms of neurasthenics*: De Sanctis). Or, lastly, they are not words regularly coined and habitually used, but verbal transpositions, mutilations, and embellishments that come and go in the course of logorrhœic improvisations. Such are the ephemeral neologisms of amentia and mania. We may also regard as neologisms those words of the common tongue to which the insane systematically attribute a meaning that is different from the usual and more or less recondite, but in conformity with their delusion—for example, “physics,” “magnetism,” “allusion.”

Multiplicity of neologisms leads to *neolalia*, which implies a general transformation of behaviour. For this reason neolalia has already been considered among the anomalies of conduct. This symptom has little in common with that of isolated neologism, which is almost always single, and, in fact, whilst the latter specially occurs in paranoia and in neurasthenia, systematic neolalia is only met with in cases of dementia præcox, being, indeed, a well-known characteristic of the more severe cases of hebephrenia.

Sometimes a very obstinate and always a very important symptom of mental disorder is *voluntary mutism* without emotional depression. The Germans call it *mutacism*. It is to be observed in paranoiacs, who adopt it as a more or less appropriate means of showing dignified resentment; it occurs more commonly in cases of dementia præcox, in consequence of a whimsical vow, or as the expression of blind negativism, and in hysterical patients as a psychical paralysis, or as a localized abulia, which is capable also of determining in analogous manner a simple state of *aphonia* (with preservation of the voice in the cough). All of these voluntary mutes are commonly able to convey their thoughts pretty well by means of gestures, writings, or drawings, which leave nothing to be desired in regard to their promptness, clearness, and abundance. These periods of silence sometimes last for many years.

Anomalies of Writing.

In the writings of the insane there are to be observed irregularities of form that depend upon disorders of movement, and peculiarities of matter that depend upon disorders of thought. The latter would not require to be dealt with here were it not that sometimes they reveal themselves only in the writing, either owing to the fact that the patient is dead or at a distance, or because in his speech and actions he does not betray the hidden error that he confides to paper.

Among the irregularities of movement, *tremor* is important. The autographs of alcoholics have a value that is not inferior to that of a tracing recorded upon a Baltzar cylinder. When the writing is examined closely, it is seen to be composed of strokes that are regular but finely undulating, almost as if from a kind of intentional ornamentation. The writing of aged persons shows similar oscillations—that is to say, such as are not sufficient to deform the outline of the letters. These minute oscillations acquire a certain degree of importance as diagnostic evidence in cases of incipient and still doubtful premature senility. In these

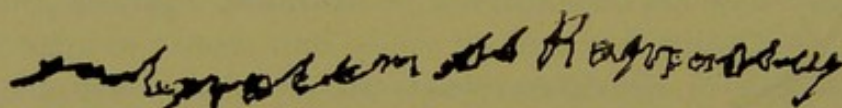


FIG. 53.—WRITING OF A PARALYTIC. SIGNATURE: "THOMAS RAMSAY."

cases there is evidently a tremor that the patients are unable to control, but which allows of their writing fairly well and without very great diminution of speed. These facts regarding the writing enable one to distinguish the tremor of alcoholism and that of senile involution from the controllable tremor of paralysis agitans, and also from the polymorphic and hyperbolic tremor of writer's cramp, which is simply a part of a much more general disorder—namely, of a professional ataxia of monospastic and often painful type.

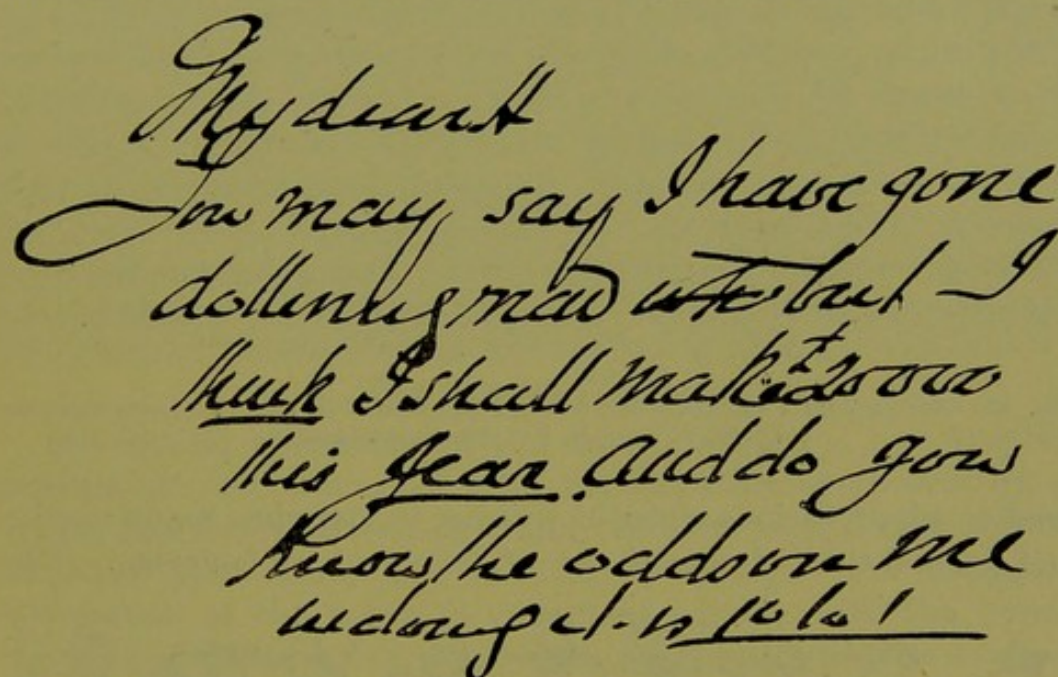
In cases of early general paralysis the tremor assumes a specific character, because it involves exclusively the abductor muscles of the hand, and therefore the ascending strokes of one or more letters.

When the progressive paralysis is more advanced, the stage of *graphic ataxia* is decisively reached. A crude but significant sign is *macrographia*. A person who has difficulty in writing endeavours to overcome it by writing in large characters. This expedient is instinctive, and it is adopted without thinking, even by persons who are not suffering from general paralysis, in order to make up for defect of vision, of muscular power, or of attention.

In the writing of advanced paralytics, the following alterations

of form may generally be noticed : the loops and turns are angular or too wide, or wanting in roundness ; one letter is much smaller than the next, and larger than the next again ; the descending strokes are here and there divided into two branches, because being too heavily pressed upon, the points of the pen are too widely separated, and the whole of the ink with which it is loaded is exhausted immediately ; the various lines are not parallel, and there are some that even tend to cross each other.

In the terminal stages of general paralysis the ataxia is so pronounced that sometimes the patients are unable even to hold the pen rightly. To render the writing still more irregular and almost indecipherable, so that a true dysgraphia is reached,



My dear
 You may say I have gone
 dellus mad etc but I
 think I shall make you
 this year. And do you
 know the odd one me
 wonder if it is 1661

FIG. 54.—POSTCARD WRITTEN BY A GENERAL PARALYTIC AT AN EARLY STAGE OF HIS ILLNESS, SHOWING MACROGRAPHIA (WHEN COMPARED WITH HIS PREVIOUS WRITING) AND MEGALOMANIA.

incapacity of the muscular apparatus is not of itself sufficient ; there is required also disorder of the representational centres (Fig. 53). This specific disability is not in every case dependent upon destructive lesions ; it may be due to transitory alterations similarly localized. This occurred in the case of a paralytic who at a comparatively early stage of the morbid process was reduced almost to agraphia, and seemed insusceptible of improvement ; nevertheless, he afterwards became able again to write a few words.

Among the disorders of thought that are capable of producing characteristic alterations in the writing are to be mentioned lack of attention, volubility, and the systematized impulsiveness of persons suffering from dementia præcox. General paralytics, from lack of attention, are especially prone to omit letters and

syllables, or to repeat them, forgetting that they have already written them (Fig. 55). Maniacs, on account of their volubility,

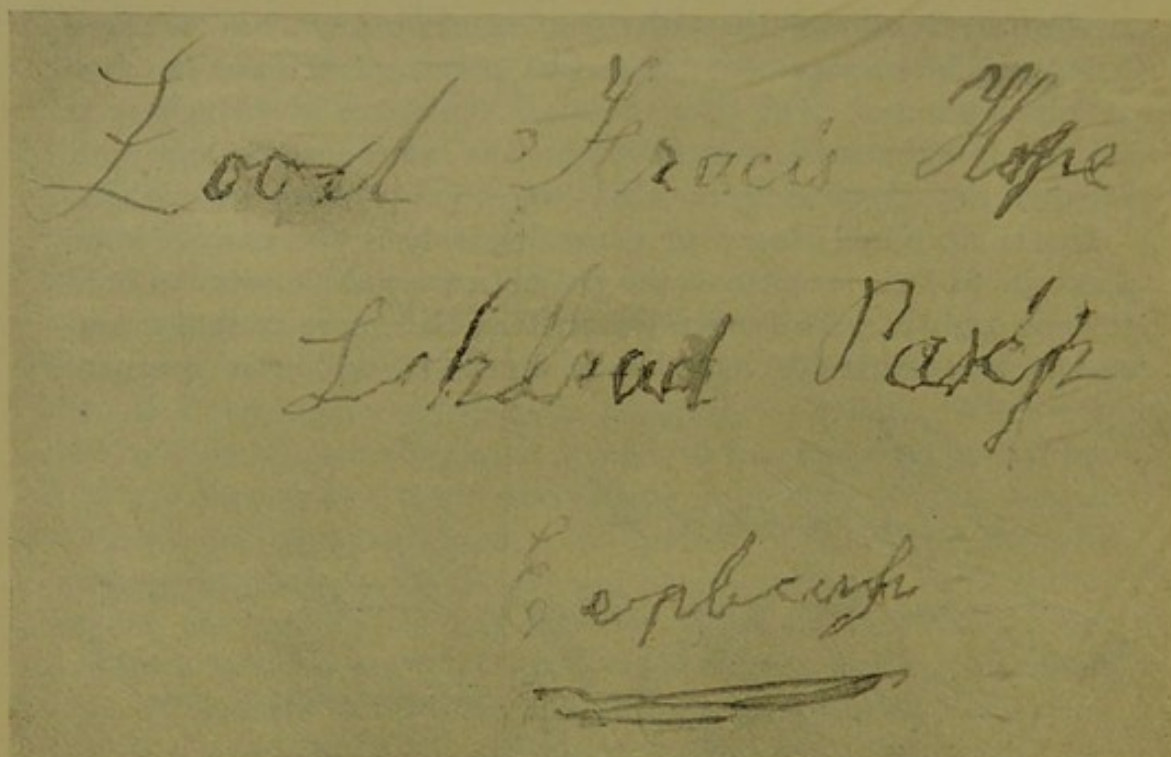


FIG. 55.—ADDRESS OF A LETTER WRITTEN BY A GENERAL PARALYTIC: "LORD FRANCIS HOPE, HOLYROOD PALACE, EDINBURGH."

tend to adopt various styles of writing, to underline many words, and to make too frequent use of points of exclamation. The

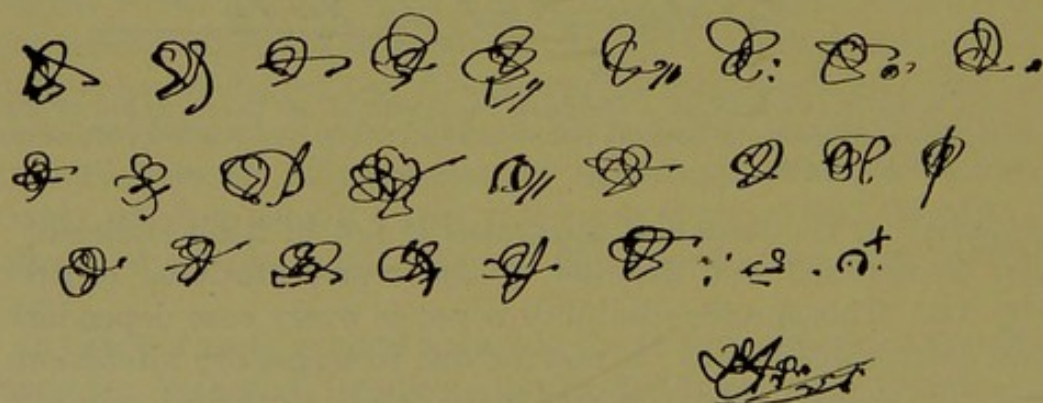


FIG. 56.—PSEUDOGRAPHIA IN A CASE OF DEMENTIA PRÆCOX.

The patient habitually intermingles these signs with the ordinary letters. As a rule he interpolates a character of the above nature between every eight or ten ordinary words (these being also devoid of any significance). Here the pseudographic characters occur one after the other; the three lines were preceded by twelve others of a similar nature. Each of the characters, notwithstanding the constancy of type, is distinct from the others.

subjects of dementia præcox, on account of their systematized impulsiveness, are distinguished by their use of true forms of

neographia with phantastic alphabets (Fig. 56), or of a kind of paragraphia in which the letters are excessively adorned with flourishes, or consist exclusively of capitals, or are an imitation of printing, arabesque, or uncinata, without any regard being paid to the prolixity and inexpressiveness of the style.

There are many persons who with the left hand are able to produce only *looking-glass writing*—that is to say, letters written from within outwards, as is done with the right hand; thus the characters are reversed, like those of a lithographic block. It would seem that when the left hemisphere sends a command to the right hand, the right hemisphere feels in a vague way the same stimulations to movement, and preserves the remembrance of them in a latent state, so that it is able to reproduce them when required. Looking-glass writing is therefore an evidence of the muscular automatism that presides over the function of writing independently of the visual images. From this it follows that all conditions favourable to automatism in general, such as inattentiveness, somnambulism, hypnosis, and mental diseases accompanied by clouding of the consciousness, render easier the special form of automatism that consists in looking-glass writing.

3. The Common Reflexes.

The morbid alterations of the motor, secretory, and trophic reflexes are not connected with psychopathic symptoms by a simple and direct relationship, and therefore they do not tell us anything as to the *quality* of these symptoms. For example, contraction of the pupils is consistent equally with the hypochondriacal delusions of progressive paralysis, with the exalted delusions of the same disease, with the mental disorder of chronic alcoholism and delirium tremens, and with the lucidity of spinal tabes. The information that is yielded by the observation of these reflex disturbances is, however, none the less valuable. Although it leaves open the question of the psychopathic picture, and often also the name of the mental disease, it offers us a solid ground for the estimation of the nutritive and structural state of the neuraxis, and therefore also of the cerebral cortex in particular. From the conditions that are present in the organs of external reaction we can infer existent or impending corresponding lesions of the psychical centres, even when these have as yet given no psychopathic manifestation, or when there are only symptoms of doubtful significance.

Visceral Reflexes.—Constipation is somewhat frequent in states of depression. It is one of the characteristic symptoms of melancholia, in which it is, indeed, almost never absent, and of neurasthenia, in which, however, it is not quite so common. In hysteria

there is often habitual constipation, or there may be periods of constipation alternating with periods of diarrhœa. This fact depends, however, in part upon the circumstance that hysteria almost exclusively affects women, and that women are more subject to costiveness than men, perhaps on account of their comparatively sedentary mode of living. Hysterical subjects may go for ten to twelve days without having a motion; they frequently suffer from meteorism. They have sometimes also the power and the habit of swallowing air. This causes a temporary dilatation of the stomach, and the air is allowed to escape in very noisy eructations. Of much greater frequency, however, is a degree of inability to swallow, not merely air, but food itself. This is due to a state of contraction of the œsophagus which produces oppression, tachycardia, and uneasiness (*œsophagism*). Such periodic disturbances must not be confounded with the inability to swallow that occurs in bulbar paralysis and in cases of cerebral tumour, and as a sequel of diphtheria.

Intestinal paralysis is often a consequence of diseases of the nervous centres associated with organic lesions, as in progressive paralysis, cerebral apoplexy, tabes, and meningitis, and more especially in some spinal affections localized in the dorsal tract, in which lie the centres for the abdominal muscles. In states of profound unconsciousness, in post-epileptic and post-apoplectic coma, in severe amentia, in senile dementia, in advanced progressive paralysis, and in idiocy, there may be intestinal incontinence without diarrhœa. In the same cases there may be enuresis (without polyuria). Colliquative diarrhœa is one of the chief symptoms of certain specific intoxications, such as that of pellagra; but in pellagra the opposite symptom—that is to say, obstinate constipation—is not infrequent.

Vomiting is an important symptom of various psychopathies. It is obstinate, but without nausea, in cases of cerebral tumour; it occurs, also unaccompanied by nausea, but in the form of crises, in progressive paralysis and in uræmia; in some cases it is uncontrollable, as in hysteria; it is daily (matutinal) in chronic alcoholism, in which the ejected matter is chiefly composed of mucus.

Mericism is a voluntary regurgitation, moderate in degree and slow, but rather pleasant, of food from the stomach to the mouth, in which it is masticated and tasted a second time, as in rumination. This remarkable habit is special to certain idiots and demented of a very low type.

Tendon Reflexes.—The interest of the clinical examination centres in the patellar reflexes. In progressive paralysis these

are often abolished, more often exaggerated, very rarely normal, and they indicate the existence of various lesions, either of the pyramidal tracts (generally secondary, sometimes also primary), or of the posterior columns (tabo-paralysis), which, when ascertained to be present, contribute in an important manner to the unification of the pathological picture of the disease and to its diagnosis in individual cases.

In addition to exhibiting the more or less constant and at least always slowly developing irregularities of the patellar reflexes dependent upon genuine and characteristic progressive lesions, paralytics are subject to analogous but transitory irregularities of these reflexes, which develop suddenly and sometimes even asymmetrically. These are dependent upon circumscribed but reparable lesions of the cerebral cortex. Similar phenomena are to be observed in association with the apoplectiform and epileptiform seizures that are produced by the same cause—that is to say, by the action, sometimes irritating, sometimes paralyzing, of the pathogenic agent.

Exaggeration of the knee-jerks is a constant symptom of infantile cerebroplegia, in which it often persists after the paralysis and the hypertonus have gone as the last and the most tenacious evidence of a spent process. It is always bilateral, and often of equal intensity on the two sides, even in cases in which the paralytic, spastic, or choreic phenomena are of hemiplegic form. This symptom constitutes a valuable sign, both of an antecedent infantile cerebroplegia in certain cases of imbecility that would otherwise appear idiopathic or hereditary, and also for the differentiation of the late effects of an infantile paralysis with cerebral lesion from those of an exhausted process of anterior poliomyelitis.

The patellar reflexes are not uncommonly exaggerated in neurasthenia, in which it is, on the other hand, exceptional for them to be diminished or abolished. In general, save in cases of actual degenerative or destructive lesions, the spinal reflexes are only rendered more active by slight exhaustion, irritable weakness, semiconsciousness, and partial inactivity of the cerebral centres, which possess inhibitory powers. Before these reflexes can manifest distinct depression, it is necessary to have total inaction of the brain, as in profound narcosis and deep sleep.

Great briskness of the patellar reflexes serves to confirm the diagnosis of pellagra, even long after the cessation of the acute intoxication, diarrhœa, and delirium. It would appear that this symptom is indicative of a primary lesion of the pyramidal tracts, the implication of which is a remote effect of the poison that has entered the organism.

Ankle-clonus and vibration of the patella merely serve to con-

firm the fact of exaltation of the reflex activity of the spinal cord, and therefore they are in general observable only when the knee-jerks are exaggerated.

Babinski's sign consists in extension of the great toe when the sole of the foot is stroked. In normal conditions, the only reaction is flexion of the toes. This symptom occurs when there is a lesion of the pyramidal tract, whether accompanied by contracture of the limb or not. It is an excellent diagnostic sign for the differentiation of organic paralysis from hysterical paralysis.

Reflexes of the Pupils.—There is no reflex irregularity of the pupils that may not present itself in typical form in mental diseases. There may be myosis, mydriasis, rigidity, asymmetry, the Argyll-Robertson phenomenon, inversion, etc. For the most part, these irregularities depend upon lesions, irritative or paralyzing in character, and bilateral or unilateral in distribution, of the oculo-motor nerve, or of its nucleus of origin; also in a particular manner of the tracts and nucleus which are specially concerned with the reaction of the pupil to luminous stimuli. Indeed, the irregularity of the pupils is almost never accompanied by either strabismus or ptosis, and often the pupils that react badly to light are in no way paralytic or contracted in relation to stimuli of other kinds.

Along with the specific lesions that we have mentioned there may be other lesions of the pupils, resulting from disturbances of a general nature, which involve either the brain or the sympathetic. Senile degeneration of the sympathetic is probably the cause of the myotic condition of the pupils that so often occurs in aged persons.

Myosis is an early sign of tabes and of progressive paralysis, and occurs also, though less commonly, at a later stage. In chronic alcoholism myosis is also present, but at a more or less advanced stage. Mydriasis is more frequent in the terminal phases of progressive paralysis. It is also necessary to remember that the pupils dilate temporarily (for some days to a week or longer) in consequence of the use of certain drugs. Not only atropin, hyoscin, hyoscyamin, and duboisin, but likewise bromide of potassium has the power of producing mydriasis. According to some, indeed, this is the sign by which it may be inferred that the action of bromide of potassium is efficacious.

In mental diseases that depend upon organic lesions, and also in hysteria, there are various disturbances of the motor function, including paralysis, paresis, contractures, and tonic and clonic spasms. It is unnecessary to deal with these symptoms here, as they have not in psychiatry a value different from that which they are recognized to have in ordinary neuropathology.

CHAPTER IX

THE CLASSIFICATION OF MENTAL DISEASES

IN ordinary pathology, contrary to what obtains in mental pathology, diseases are so clearly distinguished one from another that there is no great need to classify them. For example, infections by schizomycetes, the reactions produced by animal parasites, and poisonings, either of external origin or resulting from the action of autochthonous toxines, form a natural series of diseases that almost classify themselves. The question of their arrangement is so little in dispute that its discussion is rarely entered upon. Equally obvious and admissible is the classification of diseases according to their seat—as, for example, diseases of the heart, of the respiratory organs, of the digestive system, of the liver, kidneys, nervous system, and skin. The subject may also be regarded from still another and quite different standpoint, not less defensible than the preceding, and diseases classified according to the mechanism of their origin—for example, as neoplasms, inflammations, and so on.

This multiplicity of criteria, which overlap without conflicting, does not alter the boundary-lines that separate the various diseases. The individuality of any single disease is indeed strengthened by the number of positions that it can assume without being lost sight of in the midst of all the other diseases, according to the temporary criterion that may be adopted for the discussion of clinical material. Neither is the matter affected by the circumstance that certain maladies with characteristic lesions and course are in many instances divided into numerous and very distinct clinical varieties. Thus the conception of pneumonia remains unaltered, even though it has been divided, in accordance with its etiology, into various forms. Pneumonia is still pneumonia, whether it is due to the diplococcus, to inspiration of septic material, to paralysis of the vagus, or to the bacillus of Pfeiffer.

In mental pathology the question of classification is more complicated, because the diseases with which it has to do are

less distinct. Apart from progressive paralysis, pellagra, alcoholism, senile dementia, infantile cerebroplegia, and a few other disease forms, which are established clinically because their pathological anatomy has been ascertained, only syndromes are known. As, however, the costumes in a theatre serve to clothe the most different personages, so the same syndrome may sometimes be the outward expression of the most diverse diseases. Mental depression, exaltation, confusion, unconsciousness, systematized delusion, lucid obsession, immorality, inconsistency of conduct, etc., are syndromes that are indefinite, unless they are connected with some lesion, with a theory of pathogenesis, or with a previously observed and determinable course. These psychopathic manifestations are not diseases, just as fever, weakness, convulsions, and acetonuria are not diseases. The conception of disease implies a constant and definite, or at least approximate, correspondence between the symptoms and the organic morbid processes. Owing to the absence of such correspondence, or doubt as to its existence, the phenomena of insanity cannot all be included in a single view. Each person sees them from his own standpoint, and classifications are consequently either fallacious or incomplete.

In a series of cases of insanity there often appears to be a very large variety of mental diseases, merely because psychical phenomena are normally very numerous, their morbid alterations endless in number, and the individual manifestations of insanity correspondingly varied in character. The delusions of general paralytics become complicated as the social scale is ascended; those of paranoiacs become refined with education, borrowing the terminology and sometimes the theories of modern science; the melancholia of a thinker whose mind has been nourished on philosophy is very different from that of a peasant. On the other hand, the exciting causes of diseases in general, including those of the brain, are simple and, to a certain extent, uniform. It is true that the cortical nerve cells, in contrast, for example, with those of the liver and with the fibres of the heart, are not functionally equivalent; but in relation to the exciting causes of disease they exhibit almost the same vulnerability, whatever be the psychical treasure they contain. Neither individual superiority of talent, nor the hierarchical superiority of one cell over others, appears to increase the power of resistance to the action of a poison. The morbid processes are therefore like a gust of wind which, striking a chess-board, knocks over indifferently the bishop or the pawn. What is of importance is the position and the value of the piece in the one case, and the position and the nutritive state of the cell in the other. In determining the

characters of the symptomatic picture, the number and quality of the cells that are spared are of great importance; in the morbid process only the number of the elements affected is of account.

Broadly speaking, we must also take into consideration the anatomical and functional characters of the cells, because it cannot be denied that these elements exhibit certain specific affinities. Thus there are diseases that affect by preference the motor, the sensory, or the psychical cells. The particular psychical value of the affected cell is not, however, a fact accessible to pathological anatomy. Thus it is that mental diseases, notwithstanding that their pathogenesis and pathological anatomy may be well known and almost constant, even though they profoundly affect the intelligence, always seem more personal and varied than ordinary diseases do. Their pathogenesis is poor, whilst their symptomatology is rich—even, indeed, too rich.

In the classification of mental diseases there are therefore two opposing tendencies: on the one hand, the symptomatologists, or the practical alienists, are prone to multiply distinctions and clinical forms; on the other hand, the anatomists, who represent a more scientific and more objective tendency, are inclined to simplify by synthesis. The latter arrive at a psychology that is, perhaps, less subtle, but nevertheless more accurate.

It sometimes happens that all agree in recognizing the same syndrome, and in coming to the same diagnosis in certain cases, but the course taken by the disorder in the individual cases turns out to be different, and it is therefore possible that the diseases are really not the same. For example, an adolescent, an adult, an old man, may present all the characteristic signs of melancholia, and we unhesitatingly classify all three as melancholics. Nevertheless, it is probable that the first will become an incurable dement, that the second will recover, and that the last will remain melancholic until his death, without ever reaching a condition of demential incoherence. Can it be maintained that the pathogenesis is the same in the three cases, and that we are really dealing with a single disease? Even if this view is admitted, owing to the deficiency of post-mortem evidence, and on account of the similarity of the symptoms, it is probable that the morbid processes in these three cases of melancholia are really different.

In other instances it is not the age, but a special and more intimate factor, that determines the fate of patients affected seemingly by the same psychosis. There are partial mental disorders of a constitutional nature which continue throughout

life, and which develop gradually, and without the intervention of any ascertainable cause, in the form of paranoiacal delusions. The same symptoms may occur transitorily as the result of intoxication, or of anæmia in mild cases of amentia, or they may manifest themselves in a chronic form, but preceded by other acute and sudden disorders which constitute a true disease—as, for example, in hebephrenia. In this instance the most important factor is an individual one.* In consequence of a strong predisposition to delusion, there is produced a paranoiac who exhibits delusions spontaneously; from a weaker and obscure predisposition there will result a case of amentia with occasional delusions of toxic origin, but paranoid in character; in consequence of a complex predisposition, barely recognizable in early life, dementia præcox will develop, accompanied by more or less chronic paranoid delusions.

It may also happen in mental diseases, and still more commonly in nervous diseases, that the character of the symptoms depends not so much upon the nature of the morbid agent, or the psychical constitution of the individual, as upon the part of the nervous system in which the disease is localized. An apoplectic focus, a tumour, a traumatism, or a transitory and circumscribed irritation of uræmic origin, may occasion the same syndrome if they implicate the same elements or the same systems.

It is because of this lack of directive criteria that psychiatry, with a zeal that would be superfluous in any other department of medicine, endeavours to delimit boundary-lines and trace connections among the clinical types with which it has to deal. The classification of diseases, which elsewhere in nosology is a pleonasm, is in psychiatry an inexorable compulsion by no means always happy in its results, but, nevertheless, necessary, or, at least, serving a useful purpose, in so far as it authorizes the recognition of certain psychoses and demonstrates the practical value of psychiatry. This remarkable contrast between the almost indispensable utility of a classification and the almost insurmountable difficulty in carrying the work to a successful termination, explains the tenacity exhibited by alienists in their continually renewed but ever imperfect endeavours to arrive at one.

In order to avoid falling into errors and incurring just criticism, we must be content with a classification that is in no sense strict, but is rather eclectic and essentially provisional, even if it has to be of the nature of a mere catalogue. When mental diseases become better understood, their co-ordination and arrangement will appear spontaneously; but we can predict that they will be less complex than in the artificial classifications hitherto adopted

or suggested by alienists under the influence of theoretical conceptions. The indefiniteness of the boundary-lines between the various psychopathies has caused the alienist to be carried away by the temptation to exercise the imagination and to draw up artificial schemes, but the progressive increase of our knowledge, by narrowing the horizon of the imagination, however serious and rational its exercise may in many instances have been, will restrict efforts to classify mental diseases within those limits of moderation that contemporary psychiatry has too often overstepped.

The immediate object of a nosological classification is twofold. In the first place, it is necessary to distinguish diseases from each other, and thereby to affirm their separate existence, to study their number, and to give them names (for in psychiatry nomenclature is not a matter of indifference). In the second place, in order that there may be available for purposes of instruction something more than a mere list of names, it is necessary to form into groups those diseases that have some common element, and to break up these groups into special subgroups. Every time that we make an attempt to co-ordinate clinical phenomena, says De Sanctis, a philosophic element enters into our studies. When applied to mental diseases, this work of co-ordination always involves the use of criteria that are in large part hypothetical, and which may be erroneous. To construct complex, detailed, and rigid classifications upon ground so precarious is to risk losing the capital of present and possible investigation in an enterprise that is almost certain to yield an elusive and only temporary profit. A touch of reality is generally sufficient to destroy the most elaborate classification. Even the most simple and unpretentious enumeration of the various forms of mental disease implies some attempt at classification, and is exposed to the danger of being destroyed by the first afflux of new ideas and new clinical methods.

The chief fault of all the classifications hitherto employed has been their want of moderation. Esquirol's classification, which was generally adopted throughout the first half of the nineteenth century, although extremely incomplete as an enumeration, was certainly bold in its grouping. It did not contain progressive paralysis and persecutory paranoia; the forms of mental disorder characterized by imperative ideas and the periodic psychoses were also absent. It divided all psychoses into *partial mental disorders* or *monomanias*, of which the most conspicuous example was ambitious monomania, and *general mental disorders*, the most prominent type of which was mania. As part of this preconception, monomania was divided into three forms—namely, the *intellectual*, the *affective*, and the *impulsive*.

Intellectual monomania was the modern ambitious paranoia, which is often confounded with the megalomania of progressive paralysis. Affective monomania was melancholia or lypemania. Impulsive monomania comprised an endless number of cases, in which there occurred acts that received a similar interpretation, and were regarded as pathognomonic of the condition, whether they were the outcome of a lucid and persistent obsession, the expression of a delusion, or a sudden and automatic outburst resulting from disorder of consciousness, merely because they gave rise to fear, hilarity, or wonder. This diagnosis was generally regarded as sufficient for all the extravagances of insanity, which came to be classified as pyromania, necrophilia, homicidal mania, coprophagia, wandering mania, etc.

The best feature of Esquirol's classification was its distinction, simple though it be, between imbecility (congenital) and dementia (acquired).

There followed the still more simple scheme of Griesinger (1855-65). This, though simple, also contained errors. The forms of systematized delusion, which are now regarded as primary and included under paranoia and dementia præcox, were interpreted as terminal results of melancholia and mania. It also seemed to Griesinger that all mental diseases might be divided into two groups—the emotional or primary, such as hypochondria (neurasthenia?), melancholia, mania, and agitated monomania (progressive paralysis?); and the intellectual, or secondary, such as dementia, systematized insanity, and partial dementias.

In this antithesis there is a certain amount of exaggeration, but it is not without the intuition of a truth that had previously been unknown.

We must regard as arbitrary the absolute separation of the affective disorders from the intellectual, in the sense that all the affective psychoses are primary and acute, while the intellectual disorders are secondary and chronic; but it is in accord with the facts that disorders of the affective faculties characterize the onset of mental diseases, and that disorders of intelligence are in larger measure the gradual and late product of a character that is morally anomalous, or the epilogue of morbid passions that slowly reach their height, warping the judgment.

As an example of an individual classification, that of Guislain may be given (1830-60). After having defined in abstract terms the few fundamental alterations of each psychical function that can be imagined as possible, Guislain sought to recognize in the simple occurrence, or in the twofold, threefold, or fourfold combination of these more or less theoretical alterations, the

disease forms that actually occur. Phrenalgia corresponded to melancholia (termed by Schüle *dysthymia*); phrenolepsia was ecstasy, or suspension of intellectual activity, combined with general rigidity; hyperphrenia, which was regarded as the most frequent of the psychoses, was equivalent to exaltation or mania; paraphrenia comprised impulsiveness and other disorders of the will; ideophrenia consisted in irregularity of the ideas; aphrenia was dementia. This scheme accorded ill with the special facts of which it was intended to be the accurate synthesis, and it stopped short in the field of general psychical pathology without the possibility of emerging from it. With the exception of melancholia and dementia, the clinical pictures of Guislain are abstractions, and do not correspond to the complete, coherent, characteristic, and essential courses of the various forms of mental disease as they actually present themselves.

The classification of B. A. Morel, which is based upon etiology, adopts more suitable criteria, and has been much richer in its influence upon the progress of psychiatry. In 1857 this eminent alienist initiated along with his classification what was then a new idea—namely, that of *hereditary degeneration*. But he did more than this: he grouped together the *toxic insanities*. He did not, however, mention the auto-intoxications, and it was hardly possible that he could have done so at that time. He classified mental diseases in six groups, thus:

1. Hereditary insanities (represented by the neuropathics, the eccentrics, lucid and chronic delusional cases, imbeciles, and idiots).
2. Toxic insanities (from alcohol, opium, etc.).
3. Insanities resulting from other diseases (cases of hysteria, epilepsy, hypochondria, etc.).
4. Idiopathic insanities (progressive paralysis and other cerebropathies).
5. Sympathetic insanities (resulting from extracerebral diseases).
6. Terminal states (dementia).

In diseases of the first group there was to be observed a tendency to hereditary transmission in progressively severer forms, as well as their earlier occurrence in each succeeding generation. From simple neuropathies to eccentricity, from eccentricity to systematized delusion, from this to insanity marked by severe disorder of conduct, to imbecility associated with sterility, there was a complete fatal progression in moral and physical decadence leading to extinction of the family line, and constituting the phases of a genuine family disease—*psychical degeneration*.

This conception of psychical degeneration was the pivot of

the classification of Krafft-Ebing, which from 1880 to 1890 was greatly in favour in the German and Italian schools of psychiatry, and which is one of the most complete and consistent that we possess. The boundary-lines of the various psychoses were suitably delimited; the psychoses of fixed ideas (whether of neurasthenic or of degenerative origin) were sharply separated from paranoia, in accordance with the teaching of Westphal; rarely occurring mental disorders, such as reasoning insanity, were also given a place, as were also others of difficult interpretation, such as moral insanity. All the traditional errors of psychiatry were not rectified, however. Among the acute psychoses there was left undifferentiated a form of dementia or stupor, theoretically curable, which Kraepelin afterwards included among the forms of dementia præcox as a katatonic variety little amenable to treatment. Paranoiacal delusions were also mixed up with the paranoid. This error was corrected also by Kraepelin, who demonstrated the difference of origin, nature, and clinical significance of these two symptoms, which ought, therefore, to be separated, notwithstanding their resemblance.

According to Krafft-Ebing's view, *melancholia* and *mania* are accidental diseases which affect previously sound individuals without predisposition, and thus represent the antithesis of the degenerative and hereditary psychoses. Periodic and circular insanities, like paranoia and moral insanity, are quite different from melancholia and mania occurring as a single attack, or with only a few irregular recurrences. Now, the modern tendency, after the accurate observations of Kraepelin and the abundant confirmation that they have received from all sides, is rather to refer melancholia and mania to a constitutional diathesis in which heredity is not excluded. Thus there is removed the chief ground for the contradistinction (which formed the original part of the classification drawn up by Krafft-Ebing after the model of that of Morel) between the so-called *psychoneuroses*, or the acquired and curable diseases, on the one hand, and the *psychical degenerations*, or constitutional and hereditary diseases, on the other. This classification of Krafft-Ebing's is as follows :

1. *Psychoneuroses* : Melancholia, mania, stupor or acute curable dementia, hallucinatory delusion (*Wahnsinn*), secondary systematized insanity (*secundäre Verrücktheit*), terminal dementia (*Blödsinn*).

2. *Degenerations* : Reasoning insanity, moral insanity, insanity of fixed ideas (which may also have as its foundation simple neurasthenia), paranoia, periodic and circular insanity, hysteria, epilepsy, hypochondria.

3. *Cerebropathies* : With predominance of psychical symptoms, dementia paralytica, cerebral syphilis, chronic alcoholism, senile dementia, acute delirium.

4. *Arrests of psychical development* : Imbecility, idiocy, cretinism.

The criticism passed upon Krafft-Ebing that he has failed to recognize the constitutional and perhaps hereditary character of melancholia and mania is at any rate one that is warranted up to a certain point. Fundamentally, the organic predisposition to melancholia, to mania, or to both of these psychoses, does not imply any vice or defect inherent in the character and intelligence, and therefore it has nothing in common with the perversions and congenital defects of degenerates. When, however, Krafft-Ebing says that the melancholic and the maniac do not resemble their previous selves, whilst the degenerates merely show gradual and anomalous accentuation of their previous personality, he enunciates an incontrovertible truth, and makes a distinction that it would be wrong to desire to banish from psychiatry.

The classification of Krafft-Ebing, slightly modified in the last edition of his treatise, was for ten years the guide used in the studies of Italian alienists—at least, in the field of classification—and has been regarded as the authoritative confirmation of the theory of degeneration, although this theory has nowadays become somewhat too popular through the work of Max Nordau and other armchair evolutionists, who seek by too easy roads to discover the cause and psychological laws of crime, insanity, and moral and mental anomalies. On the other hand, for the purposes of statistical researches, which require unity of criteria and of nomenclature, the classification of A. Verga is in use. According to this old, if not antiquated, classification, mental diseases or *phrenopathies* are divisible into the congenital and the acquired. Imbecility, idiocy, and cretinism (*phrenasthenias*) are congenital. Among the acquired there are to be distinguished the simple and the complicated. *Simple insanities*, which have purely psychical manifestations, include moral insanity, cyclical insanity, mania with and without furor, intellectual monomania (the modern paranoia), impulsive monomania (which has now disappeared from nosology), simple melancholia, and melancholia accompanied by stupor, and primary and secondary dementia. *Complicated insanities*—that is to say, those which present also sensory, sensorial, and motor symptoms—include sensorial insanity (acute, with hallucinations), hypochondriacal insanity, hysterical insanity, puerperal insanity, epileptic insanity, syphilitic insanity, alcoholic insanity, pellagrous insanity, paralytic insanity, and senile insanity.

As a matter of fact, the classification of A. Verga continues in use in those registers of the Italian asylums from which the Government obtains its demographical information. As the beacon-light for the scientific advance of psychiatry, the classifica-

tions most commonly followed are, however, those of E. Morselli and E. Kraepelin.

According to Morselli (1885-98), mental diseases may be arranged (chiefly for the requirements of teaching) in groups, subgroups, sections, and subsections.

First Group.—Phrenasthenias, or arrests of development.

1. Idiocy.
2. Cretinism.
3. Imbecility in its different degrees.

Second Group.—Paraphrenias (anomalies of cerebral development).

First Subgroup.—Psychical degenerations.

1. Criminal psychoses.
2. Foolishness or insane temperament.
3. Reasoning insanity.
4. Inversion of the sexual instinct.
5. Primary degenerative paranoia.

Second Subgroup.—Constitutional psychopathies.

Section I.—From slight neuropathic constitution.

1. Rudimentary paranoia (fixed ideas).
2. Periodic insanity.

Section II.—From strong neuropathic constitution.

1. Epileptic insanity.
2. Hysterical insanity.
3. Hypochondriacal insanity.
4. Choreic insanity.
5. Neurasthenic insanity.

Third Subgroup.—Critical psychopathies.

1. Hebephrenia.
2. Climacteric insanity.
3. Senile dementia.

Third Group.—Phrenopathies (affections of the completely developed brain).

First Subgroup.—Psychoneuroses.

Section I.—Typical primary forms.

First Subsection.—With fundamental change of feeling.

1. Simple mania.
2. Simple melancholia.
3. Acute mania.
4. Acute melancholia.

Second Subsection.—Without fundamental change of feeling.

5. Acute sensorial insanity.
6. Stupor or acute dementia.
7. Katatonia.

Section II.—Typical secondary forms.

First Subsection.—With allegorical delusion.

1. Secondary systematized insanity, or secondary paranoia.

Second Subsection.—Without allegorical delusion.

2. Secondary dementia.

Second Subgroup.—Cerebral psychopathies, or encephalopathies with psychoses.

Section I.—Chronic cerebral psychopathies.

First Subsection.—Typical forms from primary lesions of the cortical centres.

- 1.* General progressive paralysis.

Second Subsection.—Atypical forms from secondary lesions of the cortical centres.

2. Hemiplegic dementia.
3. Tabetic dementia.
4. Dementia from disseminated sclerosis.
5. Dementia from chronic meningitis.
6. Dementia from cerebral tumour.
7. Acute senile dementia.

Section II.—Acute cerebral psychopathies.

1. Acute delirium.

Section III.—Specific cerebral psychopathies.

1. Syphilitic insanity.

Third Subgroup.—Toxic encephalopathies.

Section I.—From abuse of nerve stimulants.

1. Alcoholic insanity.
2. Chronic nicotinism.
3. Morphinism.

Section II.—From damaged foods.

1. Pellagrous insanity.
2. Ergotism.
3. Lathyrism.

Section III.—From abuse or excessive action of drugs.

1. Morphia insanity.
2. Chloroform insanity.
3. Ether insanity.
4. Iodoform insanity.
5. Chloral insanity.
6. Bromide insanity.

Section IV.—In consequence of certain occupations.

1. Lead insanity.
2. Carbonic oxide insanity.

The classification of Kraepelin (1897) is more simple, and has already taken the place of honour previously held by that of Krafft-Ebing. Its originality consists in the very great extension accorded to dementia præcox (hebephrenia, katatonia, and paranoid dementia), in the disappearance of secondary dementia, and in the reduction of mania and melancholia to simple phases of a manic-depressive psychosis of a more or less periodical nature. Melancholia as a condition *per se* is recognized only as occurring in the aged.

A. Acquired Mental Disturbances.

I. STATES OF EXHAUSTION :

- (a) Delirium of collapse.
- (b) Acute confusion or amentia.
- (c) Acute dementia.
- (d) Chronic nervous exhaustion (acquired neurasthenia, hypochondria).

II. POISONINGS :

1. Acute poisonings.
 - (a) Febrile delirium.
 - (b) Infective delirium (from micro-organisms).

2. Chronic poisonings.

- (a) Alcoholism.
- (b) Morphinism.
- (c) Cocainism.

III. DISORDERS OF METABOLISM :

- (a) Myxædematous insanity.
- (b) Cretinism.
- (c) Demential processes, dementia præcox, katatonia, paranoid dementia.
- (d) Dementia paralytica.

IV. INSANITY FROM ORGANIC DISEASES OF THE BRAIN :

Diffuse lesions : Gliosis of the cerebral cortex, diffuse cerebral sclerosis, late hereditary syphilis, cerebral arterio-sclerosis, encephalitis, multiple sclerosis.

Circumscribed lesions : Tumours, abscesses, hæmorrhages, embolisms, thromboses, head traumatisms.

V. INVOLUTIONAL INSANITIES OF OLD PEOPLE :

- (a) Melancholia.
- (b) Senile dementia.

B. Mental Disturbances dependent upon Morbid Predisposition.

I. CONSTITUTIONAL :

- (a) Periodic insanity, maniacal form, circular forms, depressed forms.
- (b) Paranoia (*Verrücktheit*).

II. GENERAL NEUROSES :

- (a) Epileptic insanity.
- (b) Hysterical insanity.
- (c) Nervous disorders resulting from fright.

III. PSYCHOPATHIC STATES (degenerative insanity) :

- (a) Constitutional depression or congenital neurasthenia.
- (b) Obsessive insanity. (*Zwangsirresein*).
- (c) Impulsive insanity.
- (d) Sexual inversion.

IV. ARRESTS OF DEVELOPMENT :

- (a) Imbecility.
- (b) Idiocy.

This scheme of Kraepelin's has the merit of being founded upon general clinical criteria, the employment of which removes psychiatry from its former position of isolation. It arranges mental diseases in a way that is not very different from that commonly adopted for diseases of the viscera—that is to say, specially according to the causes and the lesions.

On the other hand, it is not to be forgotten that every disease is presented as a succession of symptoms. Now, if we adopt Kraepelin's very minute subdivisions, we shall find it difficult and often impossible to observe in the clinical pictures any real, constant, and characteristic differences corresponding to differ-

ences in causes and lesions. For example, what difference is there between amentia and acute dementia? Kraepelin himself now recognizes their identity, and in the sixth edition of his treatise suppresses acute dementia; but he does not simplify the group of cases in which the always chaotic delusions of exhaustion, infections, poisonings, and auto-intoxications are repeated without variation; and this superabundance of clinical types, which appear as if they were reproduced with their labels attached, is observable also in the case of other psychoses which have been made the subject of too much analysis, with the object of discovering a symptomatic dress corresponding to every lesion and to each morbid agent.

Kraepelin's revised classification, published in 1899, is not yet free from this defect, although it has this great advantage—that it has consolidated the picture of dementia præcox.

- I. INSANITY FROM INFECTIONS :
 Febrile delirium.
 Infective delirium : initial, smallpox, typhoid fever, rabies.
 Infective states of exhaustion.
- II. INSANITY FROM EXHAUSTION :
 Delirium of collapse.
 Acute confusion (amentia).
 Chronic exhaustion of the nervous system ; acquired neurasthenia, hypochondria.
- III. POISONINGS :
 Acute poisonings.
 Chronic poisonings : alcoholism, morphinism, cocaineism.
- IV. THYROID INSANITIES :
 Myxœdema.
 Cretinism.
- V. DEMENTIA PRÆCOX (hebephrenic form, katatonic form, paranoid form).
- VI. DEMENTIA PARALYTICA.
- VII. INSANITY FROM ENCEPHALOPATHIES—(a) *Diffuse* : cortical gliosis, late hereditary syphilis, cerebral arterio-sclerosis, perivascular gliosis, sub-cortical encephalitis, multiple sclerosis ; (b) *circumscribed* : tumours, abscesses, hæmorrhages, embolisms, thrombosis, head injuries.
- VIII. CRITICAL INSANITIES OF INVOLUTION : Melancholia, presenile delusion (or of persecution) (*Beeinträchtigungswahn*), senile dementia.
- IX. MANIC-DEPRESSIVE INSANITY : Maniacal states, depressive states, mixed states, circular insanity.
- X. PARANOIA.
- XI. GENERAL NEUROSES : Epileptic insanity, hysterical insanity, nervous disorders from fright.
- XII. PSYCHOPATHIC STATES (DEGENERATIONS) : Constitutional ill-humour, obsessive insanity (*Zwangsirresein*), inversion of the sexual instinct.
- XIII. ARRESTS OF PSYCHICAL DEVELOPMENT : Imbecility (apathetic, erethistic, moral), idiocy.

Likewise in this second scheme the syndrome of amentia is contained in several diseases, which therefore, from the point of view of psychiatry, ought to be grouped together. Both in in-

fective delirium and in febrile delirium there is more or less profound, continued, and violent mental confusion, and this is all that we can recognize to be present with an equal degree of probability in the two series of cases. Febrile delirium and infective delirium, and even the delirium of collapse, are therefore only acute amentia.

On the other hand, acquired neurasthenia of chronic course, in which the patient is always lucid, has little in common with these confusional and acute forms of insanity, and it is therefore difficult to understand why it should be so closely conjoined with them. It seems to me that it would be more appropriate to place beside amential delusions that form of systematized delusion which is dependent upon exhaustion, and which is commonly recovered from, though it may reveal a condition of latent paranoia or of paranoiac predisposition.

The group of mental diseases due to disordered metabolism is justified so far as regards the inclusion of myxœdema and cretinism, but not so fully as regards dementia præcox, the origin of which is obscure and perhaps hereditary, whilst its syndrome is somewhat changing in character, and its results are various.

Further, who can say that the affective psychoses, and more especially circular insanity, are not also metabolic diseases? Gliosis of the cerebral cortex and the other psychopathic processes that depend upon organic diffuse lesions of the brain also present a difficulty. What are the differences in their clinical phenomena, whereby the identification of these (supposed) separate diseases can be rendered easy, certain, and decisive prior to the autopsy? Kraepelin's classification is therefore not a scheme of psychoses which are already known and verified, but a programme of studies and researches, from which, it seems to me, there should emerge a classification of mental diseases of a less analytical character.

It may further be asked regarding this scheme, Why is cerebral arterio-sclerosis separated from senile dementia? And why does the involutional melancholia of old people, which is so rare and so colourless, compared with the ordinary melancholia of adults, alone survive as an autonomous disease, whilst the classical forms of melancholia, so much more common and distinctive, are lost in manic-depressive insanity? The approximation of manic-depressive insanity to paranoia also appears strained, for, although both diseases may be of a constitutional nature, the paranoiac exhibits certain fixed peculiarities of character and intellect of which there is not the slightest trace in melancholia and mania, either during the seizures or in the course of the very long intervals between them; and whilst the paranoiac passes

almost imperceptibly from a state of lucidity to one of delusion, which is a laboured and intense concentration of his habitual thoughts, the melancholic and the maniac are to be regarded as individuals, psychically normal, who from time to time, or it may be only once in their life, become the subjects of an emotional crisis, and are so changed as to appear almost as different persons. Therefore to approximate to paranoiacs the melancholics and the maniacs, branding these also with the mark of degeneration, is not only arbitrary but erroneous.

The distinction between congenital neurasthenia and obsessive insanity (*Zwangsirresein*) in Kraepelin's classification seems also superfluous. It is simpler to recognize merely a single form of neurasthenia with or without complications. The milder degree of constitutional neurasthenia does not go beyond the sphere of sensibility and affectivity; the other, more marked, causes disturbance of the association of ideas, and generates obsessive images. If the obsessive image refers to an act to be done, and is so imperative that the will of the patient is not able to curb it, the neurasthenia reaches a third degree, rather than a third form, and notwithstanding the lucidity of the neurasthenic, becomes impulsive insanity.

Apart from the problems related to the subdivision of mental diseases, there is one that concerns in a general way the conception of mental disease. Upon the boundaries ascribed to this conception depends the more or less wide extent that will be given to psychiatry.

Are emotional disturbances without delusions to be regarded as mental diseases, or are they not? A similar question may also be asked regarding the chronic general amnesia without impairment of intelligence that occurs in aged persons, partial amnesias, aphasias, astereognoses, word-blindness, anomalies of character, extreme varieties of emotional disposition, the criminality exhibited by persons who are intelligent and not devoid of emotional feeling, inversion of the sexual instinct, paranoia without fixed delusion, *folie de doute*, and numerous phobias, which, though chronic, neither impair intellectual activity, arrest its progressive development, warp the character, affect conduct, nor deceive the critical faculty of the patient, who, indeed, unsparingly passes judgment upon them, and suffers from them. If psychiatry ought to concern itself only with lunatics in the strict sense of the term, and if by insanity we are to understand with Morselli a disease or anomaly of the whole human personality, it is certain that the psychopathic states just enumerated would not fall within the province of the alienist. Emotional disturbances, amnesias, aphasias, neuras-

thenia with obsessive ideas, etc., would come under the observation of the general practitioner. Paranoia without delusion, sexual inversion, criminality, and anomalies of character would be comprised in the psychological ranks of anthropology as extreme deviations of the human type. For my part, I do not think it is expedient thus to narrow the domain of psychiatry. Every disease that has as its characteristic manifestation blunting of the intelligence, or change in the character (as in intoxications, traumatisms, and states of exhaustion); every partial but sudden and systematic loss of memory and of special faculties (as in aphasias, amnesias resulting from destructive foci and paralysis of psychical origin); every unaccountable change of disposition (as in the affective psychoses, hysteria, the neurasthenic prodromata of many serious diseases and constitutional neurasthenia); every reaction of the will that is inadequate, unusual, and unreasonable, even if occurring singly (as in the initial phases of dementia præcox and senile dementia, in hysteria and in alcoholic and epileptic degeneration), belong by full right to psychiatry, even though they do not lead to disintegration of the psychic personality.

At the same time, disintegration of the psychic personality is an element of the highest interest in psychiatry; and thanks are due to Morselli for having emphasized this fact by regarding the personality as the subjective synthesis of a sentient and reactive organism. It is, however, to be added that this synthesis, which is always indistinct, is not constantly present, and is rarely actively operative in the healthy and normal man; it is likewise not very easily recognized in the mentally afflicted patient. The daily variations of the personality in normal people and in the insane are not to be mistaken for transformations of a complete and pathological nature. There are still the extraordinary and radical transformations of the personality, as well as the teratological manifestations of analogous bodily changes. Now, instead of being regarded as a generic criterion of insanity, these complex variations can be utilized to discriminate between serious insanity, or insanity that involves asylum treatment, and the slighter diseases or anomalies that do not sanction deprivation of liberty. In the insanity which necessitates asylum treatment—that is to say, in cases in which the personality is substantially changed—we recognize that the patient is civilly and penally irresponsible. In those mental disorders that leave intact the original personality, and in the slighter mental anomalies that render it only partially different from the average type of the ordinary individual, civil and penal responsibility is retained (though possibly weakened), because

the patient retains the capacity to live in freedom, and even to be a useful member of the community.

Current psychiatry takes account only of the cases of gross insanity with disintegration, defect, or anomaly of the personality of such a nature as to necessitate the sending of the patient to an asylum, and to involve the temporary or permanent loss of his civil rights ; but scientific psychiatry ought to concern itself also with minor abnormalities which, merely because they do not distinctly alter the type of the personality, are not, and, indeed, do not deserve to be, called insanity. Thus we cannot regard as true insanity, or as alterations of the personality, disorders of feeling and abnormalities of character which those who are the subject of them, though ill or abnormal, are fully conscious of, and which do not blunt or warp their judgment in regard to themselves ; but such disorders are, nevertheless, mental diseases or anomalies, lucid insanities—if the term may be allowed—or partial insanities. Moreover, even in the most severe disorders of the intelligence and of the sentiments it is not uncommon for the antecedent normal personality to gain the upper hand from time to time ; and it is not to be forgotten that, within certain limits, as Morselli has remarked, the personality is continually in process of modification, even in the normal individual, and that at no moment is the biographical succession of these incessant variations in all respects identical. Only the very severe metamorphoses and anomalies of the personality that are clearly of a pathological character, since they render the individual incapable of appreciating his own immediate and remote interests, are capable of being utilized by the alienist. What they prove, however, is merely the existence of certain mental diseases ; they are not an essential feature of every psychical disorder.

In the light of these considerations, what at the present time are the requisites of a good classification ? In the first place, it must present mental diseases in their totality, but without distinctions of a one-sided or theoretical nature. Further, a directive thread should determine their order, approximating similar forms and separating those that are dissimilar. For this purpose the most useful criterion is that of *causes*.

The cause of a mental disease can be recognized in most cases. It gives a certain special character to the course of the disorder, and it is at present the basis of our prognosis, treatment, and differential diagnosis. There are psychopathies of which the cause does not reside in the mental constitution of the individual. The mind of the patient, as ordinarily manifested, does not seem different from that of other persons, but an external agent has affected it and caused an acute disturbance. There is no

alcoholism without alcohol, or pellagra without mouldy maize. It is true that in the presence of a poison the individual constitution always counts for something. Thus some constitutions have a fatal attraction towards alcohol, and there are persons who, either for pleasure, from force of circumstances, or even unconsciously, take large quantities of some particular poison into their bodies without suffering any intellectual damage, whilst others cannot tolerate the smallest dose. In any case, however, the individual constitution is never of itself sufficient to produce the psychosis, which is always of a specific nature; and if it merely acts as a contributory cause, it has no connection with the constitutional features of the intelligence and character. These psychoses, due to an external cause, are to be considered as simply accidental. Their course, as a matter of fact, if the action of the pathogenic cause comes to an end, is acute and short; and it is prolonged indefinitely only when the morbid agent affects a brain that is not yet fully developed, so as to produce organic changes that are not easily repaired—for example, a diffuse process of gliosis. It may be attended with a fatal result when the intoxication is very severe, and causes high fever or collapse, as in the grave forms of amentia that are grouped together under the term “acute delirium.”

There are other psychopathies the occurrence of which is also due to external causes, but which of necessity require the active co-operation of the affected organism. Under the stimulus of an infection, of an intoxication, or a visceral lesion, the organism develops secondary toxins or autotoxins that are capable of affecting the psychical functions. Among the psychopathies thus caused there are other forms of amentia, as also myxœdematous idiocy, cretinism, progressive paralysis, and uræmic insanity. These psychoses likewise are exogenous rather than endogenous in nature, and they do not require a degenerative soil for their development. A condition of cachexia is in most instances sufficient; psychical degeneration is absent, or is not demonstrable, or if, in exceptional cases, it is present, it does not appear to be in the least necessary. It is, at any rate, always ineffective without the co-operation of external causes. These psychoses may be classed along with those due to external poisonings or to primary toxins, but they represent a transition to a category of mental diseases the genesis of which is more intimate—namely, to those due to mixed causes. Before reaching the group in question, we come to the cerebropathies of infancy and of adult life, the immediate cause of which is an important and ascertained complex of cerebral lesions; but behind this cause, which may be regarded as internal, there is

almost always another which is external and fortuitous. The cerebropathies of children are often dependent upon infections, traumatisms, or difficult birth. In senile dementia the primary cause is almost always a more or less premature cerebral arterio-sclerosis, which is often hereditary, but just as commonly due to syphilis, alcoholism, or (in the last analysis) to external and accidental causes. Such hereditary predisposition to arterio-sclerosis, and likewise the specific hereditary predisposition to cerebral arterio-sclerosis, though internal with regard to the organism and to the brain, is external with regard to psychical development, not affecting it in any way so long as it remains merely a predisposition. The intelligence of those liable to senile dementia is normal; it becomes damaged in consequence of existing arterio-sclerosis, as it would by a traumatism or by a casual disease. The same may be said with regard to dementia the result of cerebral hæmorrhage, in which case the fragility of the vessels, although constitutional, leaves the intelligence and the character intact so long as it does not manifest itself in the occurrence of apoplexy.

At the opposite extreme to these accidental and exogenous diseases which affect brains previously healthy, and putting aside for the present the intermediate forms which will be considered further on, there are other psychoses which manifest themselves in persons mentally abnormal or imperfect, whose ancestors have already, generally in smaller measure, paid their tribute to psychiatry. In these instances one has to do, rather than with true diseases, with inherent anomalies of mental development, which there is reason to regard as indicative of decay of the stock.

Paranoia, hysteria, constitutional immorality, sexual inversion, chronic neurasthenia with obsessive ideas, hereditary weakness of intelligence, and dementia præcox, are constituents of this group, formed by those who are predestined to insanity. Such persons become mentally disordered, apart from the action of any recognizable determining cause. For a time the existence of insanity may be doubtful, the patients often wavering between disease and normality. Sometimes they may exhibit mental disease of another type, but of brief and transient course. With the exception of a portion of cases of dementia præcox, none of these degenerates reach a state of complete loss of intelligence.

Between the psychical degenerations and the accidental psychopathies there are the affective psychoses, which in one respect present the characters of constitutional diseases, for they show a strong tendency to recurrence, sometimes at irregular intervals. On the other hand, they manifest themselves as acute

diseases, in so far as they affect individuals whose intelligence has developed normally, and, when recovered from, leave the intelligence unaltered in its vigour and special features. Whilst the constitutional nature of the affective disorders, which may even take the form of strictly related attacks of melancholia and mania (circular insanity), alternating throughout life, may lead us to suspect an endogenous cause, we must recognize that this cause is very different from that visible anomaly of psychical development out of which the degenerative psychoses arise. The victims of melancholia, mania, and circular insanity usually become ill after the age of thirty. In their personal history there is no evidence of mental decadence, eccentricity, or deficiency. Their attacks are often of only very rare occurrence—in some instances, indeed, single—and the long period of emotional equilibrium that follows an attack is in sharp contrast with the short period during which the disease is active. There are individuals who even during the height of the emotional storm never exhibit delusions, and the subjects of circular insanity, notwithstanding the indefinite repetition of their attacks, may never display any serious error of logic, any marked disturbance of judgment, any delusion, or any absurdity of conduct.

It is true that a small proportion of melancholics, maniacs, and sufferers from circular insanity become the subjects of true paranoid delusions, show blunting of conscience, commit criminal acts, mutilate themselves, become violent in their conduct, and commit suicide; but if these morbid manifestations indicate inferiority, and even perhaps a degenerative constitution, it must be admitted that it is a condition that might have remained latent perhaps throughout the whole of life without the occurrence of the acute psychosis. On the other hand, all those—and they form the majority—who, when suffering from an acute attack of mania or melancholia, do not manifest impairment of judgment, hallucinations, or delusion, give proof of an intellectual robustness and, one might even say, of an anti-degenerative constitution that places them in a sense farther from degeneracy than normal persons. In these instances, therefore, the etiological criterion, instead of asserting itself generically and uniformly in the *disease*, shows itself case by case and under two different aspects in the *patients*. Melancholia and mania as clinical abstractions are psychoses, in part constitutional and in part acquired; but melancholics and maniacs as individuals are in different instances either predestined or accidental sufferers.

In some instances the two kinds of causes—the endogenous and the exogenous—operate together upon the same individual, and their exact respective influences cannot be determined.

Thus the affective psychoses form an intermediate and somewhat ambiguous group of diseases due to mixed causes.

In accordance with these criteria, and taking into account neither the various possible reactions of the organism to the possible causes of the psychoses, nor those disorders that occur only very rarely, but the actual clinical phenomena that are commonly observable with their natural boundaries, we can enumerate mental diseases in a definite order which, provided we have the key, indicates to us their probable cause, and therefore their nature.

POISONINGS.	{	1. Pellagra.
		2. Alcoholism.
		3. Morphinism, cocaineism.
TOXIC INFECTIONS AND AUTO- INTOXICATIONS.	{	4. Amentia { Hallucinary.
		Apathetic.
		Slight (acute systematized insanity).
		Very severe (acute delirium).
		5. Uræmic psychoses.
		6. Thyroid psychoses { Acquired myxœdema.
		Cretinism (endemic and sporadic).
		Exophthalmic goitre.
		7. Progressive paralysis.
ENCEPHALOPATHIES.	{	8. Infantile cerebropathy (acquired idiocy).
		9. Cerebropathies of adults { Cerebral tumours.
		Head traumatism.
		Cerebral syphilis.
		Apoplectic dementia.
		Senile dementia.
AFFECTIVE PSYCHOSES.	{	10. Melancholia.
		11. Mania.
		12. Circular psychoses.
CONSTITUTIONAL NEURO- PSYCHOSES.	{	13. Constitutional neurasthenia (obsessive psychoses).
		14. Hysteria.
		15. Epilepsy.
DEMENTIA PRÆCOX.	{	16. Hebephrenic form.
		17. Katatonic form.
		18. Paranoid form.
DEGENERATIVE MENTAL ANOMALIES.	{	19. Perversion of the sexual instinct.
		20. Constitutional immorality.
		21. Paranoia.
		22. Intellectual feebleness (hereditary imbecility).

In this scheme the pathogenic causes, distinctly external and accidental as regards the diseases due to intoxication, become more and more constitutional and internal, but in such a way that only the last-named disorders, which are anomalies rather than diseases, can be called absolutely degenerative.

In pellagra, from liability to which no eater of damaged or

immature maize is exempt, the individual constitution has not the slightest importance. In alcoholism it sometimes has a secondary importance, as in cases in which there is a pre-existent nervous instability that induces a demand for strong stimulants. Amentia, which comprises most acute cases, and, strictly speaking, also those of pellagra and alcoholism, is still a psychosis due to external causes, and one in which the individual constitution exercises an influence which is by no means constant, and which is sometimes, indeed, extremely doubtful. Next come the thyroid psychoses, progressive paralysis, infantile cerebropathies, apoplectic dementia, and senile dementia. In these instances there is an organic substratum that modifies the general constitution of the patient, and forms, independently of any external cause, a soil favourable to the development of chronic mental disorders. But it is a substratum that is prepared after birth, and one that almost always requires for its development the intervention of external factors. When such a substratum is fully prepared, we have still only a simple predisposition to mental disease. There are persons who suffer from exophthalmic goitre, myxœdema, endemic goitre, metasyphilis, infantile cerebroplegia, arterio-sclerosis, or intracranial tumours, and who are neither insane nor mentally deficient.

Melancholia, mania, and circular insanity require a place of their own. The frequency with which these affective disturbances recur in the same individual indicates the existence of a melancholic diathesis and of a maniacal diathesis, whilst the occurrence of circular insanity, in which attacks of mania and melancholia alternate repeatedly, shows that the two diatheses, although opposed, may be associated. On the other hand, when we consider that there are melancholics who have only one or two attacks of melancholia in their life, that a similar statement may be made with regard to mania, that melancholics and maniacs are mentally normal during the sometimes long intervals between their attacks, and that melancholia may most evidently and indubitably be induced by external causes—as, for example, great grief—we are bound to conclude that in regard to these forms of mental disorder the etiological law is made by the patients themselves, and not by the disease. For the patients it imports now one result, and now another. If there is a pre-existing melancholic diathesis or maniacal diathesis, or both, there is certainly an inherent predisposition, but it is not one of a psychological nature. Between his attacks the melancholic is not more staid than the normal person, the maniac more violent, nor the victim of circular insanity less stable.

The genesis of melancholia is not, therefore, to be found in an

emotional bias towards gloom. Mania does not have its source merely in volubility and hilarity of disposition; both depend upon conditions with which the whole organism is probably concerned, perhaps upon special products of organic metabolism, the place of origin of which is never the brain, but which, gaining access to the blood-stream, exercise a more or less continuous influence on the cerebral functions. In these cases the brain is only the organ that serves to indicate the existence of a general auto-intoxication, the causes of which are to be sought in the organic constitution, not in the psychical structure.

It may be, however, that metabolism is normal, but that there is on the part of the brain a special reactivity and sensitiveness to the normal toxins. In this second case also the cause of the affective psychosis is internal with respect to the organism, but it is external with regard to the subjectivity of the patient. Moreover, to the constitutional cause, which may be of a degenerative and psychical nature, there is often added a fortuitous factor—that is to say, some external occurrence which places melancholia among those diseases that are not an inevitable fate of the individual.

The neuropsychoses, constitutional neurasthenia, hysteria, and epilepsy, indicate a special and individual excitability of the nervous centres, and often of certain special centres. This excitability represents a true variety of nervous constitution, which for the most part exercises a direct and permanent influence upon the mental constitution. The epileptic is prone to outbursts of passion; the hysteric is of an emotional disposition; the neurasthenic is normally over-sensitive, a valetudinarian, and full of scruples, and it is therefore not surprising that the majority of cases of neurasthenia occur among the studious and the sedentary. In the neuropsychoses there is manifested, if not psychical degeneration, at least nervous degeneration. In these instances we have to do with intelligent brains which, however, display an excessive motor reaction, and are too prone to modify in useless ways the play of the automatic processes, or too sensitive to fatigue.

Mental degeneration, and not merely nervous degeneration, is manifested with considerable clearness in dementia præcox. This disease, which is eminently a psychical one, occurs often in more than one member of the same family. It begins, as a rule, in youth. It runs a chronic and progressive course, excepting in a few somewhat rare instances in which recovery takes place, or the disease recedes without the occurrence of complete repair. It is a true failure of mental development. The psychical functions, which in phylogenesis and ontogenesis represent an organiza-

tion that is of wide utility to the species and to the individual, fail to carry out their mandate, and act in opposition to the interests that they were intended to protect and promote. A person afflicted with dementia præcox, when he has reached the terminal stage of the disease, or even sooner, is inferior to the least intelligent of the lower animals. Not only does he fail to do what he ought to do, but he does things that he should not do. His consciousness suggests to him only useless and mistaken reactions. In this respect dementia præcox is a true degeneration, but it is at the same time also a true disease. It begins suddenly ; it progresses and remits ; it may cease, and repair take place ; it is often attended by temporary wasting and by periods during which the patient puts on flesh ; it is often associated with hyper-excitement and with loss of the sexual instinct ; it leads to attacks of true mental disorder, as in mania and amentia, and in many instances it terminates in a complete destruction of intelligence, which has the appearance of, and really is, the epilogue of a true disease, and not the natural termination of a mere developmental aberration. The cause of dementia præcox is, therefore, in all probability, pathological rather than developmental, and general rather than cerebral. The psychical degeneration exists more in the final result than in the premorbid period, and in the prodromata, which are obviously of an acute nature.

Aberration of intellectual development is seen more clearly in perversion of the sexual instinct, which, as a rule, is congenital ; in constitutional immorality, which renders the individual similar to the brutes ; in paranoia, which makes him resemble primitive man ; in hereditary intellectual weakness, in which the patient remains mentally a child. These are the true psychical degenerations. They are not the result of shipwreck or of accidental or reparable disaster, but of a false course having been set ; they are paraphrenias or anomalies of development. Mental disease in the strict sense of the term is predisposed to by these constitutional anomalies. This, however, is not all. In such combination of constitutional anomaly and mental disease, which, however, is not very frequent, there is another feature. Attacks of acute mental disorder that are to be observed in degenerates are distinguished by their sudden onset and by the unusual shortness of their duration.

That this last group of anomalies is a natural one is borne out by the facts that two or more of the different forms may be associated ; that none of them have a progressive course ; and that all degenerates present certain common features—namely, a fantastic character, carelessness in behaviour, and egotism.

Thus, mental diseases and mental anomalies are capable of being classified in accordance with the cause that has produced them, without dialectic strain, and with a certain degree of correspondence between etiology and course. It is to be borne in mind, however, that the external and the internal causes do not form an incompatible antithesis. There is an element of internal cause in every poisoning, no matter how accidental; and there is an element of occasional cause in every anomaly, no matter how distinctly hereditary it may be. Behind the body of the external causes there is the shadow of an internal cause, and *vice versa*. The distinctions are scholastic, and the reality is synthetic.

CHAPTER X

PELLAGRA

PELLAGRA is an endemic disease of remittent course, and generally afebrile, which sooner or later proves fatal. It is dependent upon a specific cause—namely, the eating of maize (commonly used in the form of “polenta” and “pan giallo”) that has been damaged by moulds. Its clinical picture is that of a cachexia from intoxication, and when fully established includes not only intestinal, gastric, and cutaneous symptoms, but also motor and psychical phenomena.

Etiology.

Maize or Indian corn is the staple and in some instances the exclusive food of the rural populations in many countries of warm or temperate climate, such as Mexico, Argentina, Uruguay, Egypt, Turkey, Greece, Roumania, Bulgaria, Servia, Croatia, Dalmatia, Northern and Central Italy, Spain (Arragon and Galicia), and some southern departments of France. In places in which, on account of the latitude or altitude, the seasons are comparatively cold and sunless, the maize does not ripen fully, or, if it does ripen, becomes mouldy, owing to being kept in damp premises, in open lofts, or hung in courtyards that are not protected from rain. The poor of the country districts, being unable to afford the luxury of either better meal or of more suitable foods, eat infected polenta, either being ignorant of the danger they thereby incur or accepting the risks.

They do not experience any distaste for this insipid or even distinctly bitter food, or, if they do feel it, they overcome their repugnance, because they have no freedom to choose between a cheap poison and a good but expensive food. Even if the weather has been favourable, and the maize remains dry, a similar result will follow if the harvest is scanty, for the way is thereby opened for the introduction of damaged grain. Constitutional apathy and the interests of retail merchants deter the introduction of radical and hazardous changes into agriculture, and consequently

encourage the importation of maize from countries which have plenty, and which can sell it at a low price. Moreover, under these circumstances the damaged article, which costs less and is never wanting, is able to force its way more successfully than the good. Exporters of maize either actually send bad stuff or, in order to diminish the cost of transport, allow their merchandise to be carried in damp and badly ventilated holds, in which rain and storm damage at least a part of the cargo.

Damaged maize does not remain unsold. *Laissez faire, laissez passer*, say the orthodox economists. Seizures of imports, besides being contrary to the spirit of Free Trade, do not conduce to the quietness of life of Governments that show too much concern for the national hygiene. The Republic of Venice, which possessed a Council of Health, was the State that first dared to intervene on behalf of the pellagrous. In 1776 the use of damaged maize as a food for man and domestic animals was forbidden; bad maize was not allowed to be mixed with good; mills were inspected; importation was watched; doctors who treated cases of pellagra were obliged to ask their patients where they had bought their maize; the secret purchase of damaged maize was subject to a process of judicial inquiry; and the priests were ordered to give instruction regarding these laws upon feast-days.

The Italian Government intervened energetically, but temporarily, in 1895 for the purpose of protecting the humble consumers of polenta, but trade interests succeeded in asserting their power, and obtained the repeal of enactments that inconvenienced them. It was represented that maize affected by mould was not used as a food, but served for industrial purposes. It should, however, be possible by means of legislation—if not prudent, at least honest—to prevent the consumption of damaged or immature maize, which ought to be destroyed or thrown away.

In 1904, through the initiative of Baccelli, legislative measures were adopted which are certainly not lacking in foresight, and the efficacy of which we shall soon be able to determine. The prophylactic measures sanctioned by the law of Baccelli are founded upon views that are scientifically accurate—namely, upon the conviction that pellagra is due to a poison, and that the source of this poison is mouldy maize. Properly dried maize is in no way toxic. In Mexico, a country in which maize does not become mouldy, and which does not import it, pellagra is unknown. It would have been well if the law had forbidden the cultivation of maize in those mountainous districts in which it is impossible for the grain to ripen. The Italian Senate, however, rejected this wise provision in order not to place restriction upon individual liberty and initiative, which, it was said, are always

useful to the collective interests of the community. "Surely," said Badaloni, "we are so accustomed to such abridgments of liberty out of respect for State finance, the preservation of national art treasures, the protection of animals, vineyards, forests, dykes, etc., that we would be able to endure one more in the name of public health for the deliverance of 100,000 sufferers from pellagra."

The Morphological and Toxic Characters of Maize affected by Mould.

The characters of damaged or immature maize are not difficult to recognize. The immature grain is whitish or dirty-white and shrunken; the transparent and delicate covering by which it is surrounded leaves visible the germ and the perispore, with its brown colour. The germ lies in a half-empty cavity, and within this there is also to be observed some powdery débris. The skin is spotted. In the interior of the cavity grain-mites can be seen with the unaided eye. When the grain of Indian corn is ripe but damaged, its surface is cracked and wrinkled, spotted black or green, and devoid of lustre. The germ is often shrunken, the radicle is blackened, and within there are cavities filled with a greenish powder composed of spores and hyphomycetes. Damaged maize has the smell of mould, and a somewhat bitter taste. The black points on the surface of the grain are shown by microscopical examination to represent colonies of large bacilli, which penetrate into its substance, forming columns (Babes, Sion, Manicatide). These bacteria are short and somewhat rounded. There are various species of them, with or without spores. None of them are pathogenic, and they are discoverable in the fæces both of the pellagrous and of the non-pellagrous. Some belong to the *Bacterium coli* group, and various harmless micro-organisms are also present, such as may be found in dirty water (Monti and Tirelli).

The rotting of the maize is due not only to bacteria, but also to various fungi, such as *Ustilago maidis*, *Uredo carbo*, *Sporisorium maidis* (copper-green), *Penicillium glaucum*, *Mucor racemosus*, *Vidium maidis*, *Eretium mesentericum*, *Sporotrichum maidis*, *Aspergillus niger*, *Flavescens*, and *Fumigatus*. *Penicillium glaucum* is the most common. Now, many of these parasites of maize, like the bacteria, occur also in the fæces and in the skin and mucous tracts of persons who, besides never having been pellagrous, have never even eaten Indian corn. The parasites, therefore, that affect maize are—at least, for the most part—neither special to this cereal nor the immediate cause of pellagra. Man is indifferent to their presence, but maize is rendered mouldy by

them. Nevertheless, the human organism, which does not suffer from contact with the bacteria and fungi of maize, is injuriously affected by the ingestion of maize that has become mouldy. Maize is, therefore, either the immediate place of origin of a poison, or the vehicle of a substance that becomes poisonous upon reaching the interior of the human subject, and this poison, or this substance that becomes poisonous, is the specific product of a chemical action that the bacteria and moulds exercise upon maize when causing it to rot. Without the intermediary cereal the parasites, when brought into contact with man, do not cause pellagra.

As a matter of fact, the products of the decomposition of infected maize would appear to be poisonous before they reach the human intestine. According to Neusser, they acquire this property in their passage through a disordered intestine by the formation of a substance similar to aldehyde, which causes death in frogs, with symptoms of paralysis and lethargy. This theory is, however, founded upon insufficient data, and the results of later observations show it to be erroneous. According to Lombroso, pellagra is due to extractive substances which are directly derived from damaged maize, and which may be dissolved out from it by means of alcohol. The active principle of these poisons he terms *pellagrozeine*. Erba, continuing the line of research followed by Lombroso, has found in the alcoholic extract of the infective germs, in addition to *pellagrozeine*, an azotized substance, of a very bitter nature, which has the reactions of an alkaloid, and which resembles strychnine, without, however, the property of crystallizing or of yielding chinoline.

The researches of Pellizzi and Tirelli have shown that imperfectly dried maize, even though still of fairly normal appearance, contains bacteria which, when cultivated, give rise to very toxic substances.

If the cultures are made in polenta, similar toxins develop. It is, however, necessary to remember that the poisons of pellagra are formed in the grain, and not in polenta; and, further, it is still doubtful if we have to do with substances that act chemically, like the *pellagrozeine* of Lombroso, or with ferments.

This question was investigated by Gosio and Ferrati. They isolated the germs in damaged maize obtained in pellagrous localities; they made pure cultures of *Penicillium glaucum* (the most abundant of the various fungi present) in Raulin's fluid, and in polenta made from sound maize. They extracted from the cultures a substance of the aromatic series, probably a phenol.

The tincture made from maize infected by *penicillium* kills a rat

in a few hours, whilst tincture from sound maize is not toxic even in a dose of ten times the amount, and sound meal is equally innocuous in doses of 2 grammes.

Pathogenesis.

The fact of the toxic nature of pellagra is now beyond dispute, but opinions are not yet fully in accord as to the mode of action of the maize. There are at least five different contending theories :

1. Maize, even when sound, is poisonous (Roussel). Its chemical constitution is such that it contains certain natural poisons, and consequently the grain is able to produce an intoxication similar to that of lathyrism, which has been termed *zeism*. Those who hold this theory call themselves *zeists*. The countries in which maize is used, and in which pellagra is nevertheless unknown—as, for example, Mexico, Dalmatia, and Ireland—furnish evidence of the falsity of this theory.

2. Maize is not always poisonous, but some varieties of it that are slow to ripen—as, for example, the *quarantino* and the *cinquantino*—normally contain poisons, and these are the cause of pellagra. This theory is absolutely opposed to the facts ; pellagra abounds even in districts in which the *quarantino* and the *cinquantino* are not grown, and into which they are not imported.

3. Maize is not in itself poisonous, but whether it be sound or bad, it acquires poisonous properties in the human intestine when acted upon by certain chemical secretions (perhaps morbid), or by ferments (perhaps special), which are harmless in their action upon other foods. This theory is purely fanciful. Who has demonstrated the occurrence of these secretions ? and how do such ferments manifest themselves ?

4. The formation of the poison of maize takes place in the human organism, but only from damaged maize. Damaged maize is, therefore, not poisonous (and much less good maize), but is the vehicle of substances that become poisonous in the human organism. It may be asked, When, where, and in what way ?

5. Damaged maize is poisonous, but good maize is innocuous, and pellagra is a poisoning pure and simple (Balardini, Lombroso). In short, pellagra is a disease of man and other vertebrates which in its turn is derived from a disease of Indian corn. The disease of the animals is an intoxication, that of the maize is an infection. The parasites of maize are not infective in animals.

This last view is held to-day by almost all of those who have made a special study of the subject of pellagra. It is founded upon observation and upon experiment. Various animals—dogs, cats, rabbits, guinea-pigs, hens, frogs, etc.—have been experimentally fed with sound maize and damaged maize, and also

with foods prepared from maize. Feeding exclusively with maize was employed, and also mixed feeding. Treatment with substances extracted from the maize was also tried, and it was not forgotten to have recourse to sera in the hope both of being able to confirm the toxic pathogenesis of the disease and to discover an antitoxine. These observations have established the truth of what was inferred by Balardini prior to the rise of experimental pathology, and of what Lombroso had ably demonstrated.

Dogs liberally fed with mouldy maize, although deprived of meat, bread, and milk, do not show any sign of inanition, and even increase in weight, but they exhibit muscular hypertonus, with exaggeration of the tendon reflexes, and even (in two cases out of ten) with tetanus. Seven out of ten suffered from diarrhoea. One showed erythema, others exhibited anæsthesia, spasms, trembling, depression of spirits, and fear (Lombroso). The extracts of pellagrozeine prepared by Erba proved to be extremely toxic. An injection of 50 centigrammes produced in frogs convulsions, exaggeration of reflexes, tetanus, lethargy, and anæsthesia. In common rats 12 centigrammes sufficed to produce torpor, anorexia, paralysis of the hind-legs, and death in from one to twelve hours. A cat to which 1.5 centigrammes of this maize-poison was administered died in ten hours, with rigidity of the posterior limbs, trembling, fever, and lethargy. In dogs the extract in doses of 2 per 1,000 of the individual weight induced vomiting, contracture of the posterior limbs, dilatation of the pupils, exaggeration of the reflexes, difficulty of respiration and weakness of the pulse, paralysis, and death in a few hours.

Unfortunately, after poisonings of so rapid a nature post-mortem examination reveals very little that is instructive. It is, however, certain that damaged maize contains various poisons. Strambio, and afterwards Hebra, pointed out the analogy of pellagra to ergotism. E. Husemann, from observations made with chemical extracts, concludes that there is a cerebral poison having an action similar to that of picrotoxine and of solanine. There are, however, other toxic substances present.

According to Mario Serena, if animals that have not been subjected to alimentation with damaged maize are habituated to increasing doses of the poison, they acquire a certain degree of resistance to very high doses, and their serum has then antitoxic properties. Babes and E. Manicatide have experimentally investigated the action of the blood-serum of persons (a man and a woman) who had recovered from pellagra. They found that rabbits injected with only the extract of damaged maize died in nine, seventeen, and twenty days, with cramps, opisthotonos, desquamation of the skin, and loss of fur, whilst those into which

a mixture of the extract and of the serum was injected died in from thirty-two to sixty days, and in some instances only after some months. Blood-serum derived from men who had never been pellagrous had not the same power. Rats injected with the pure extract died within twelve hours, with intestinal hæmorrhage ; if to the toxine there was added normal serum, the animals died in fifteen or seventeen hours ; if the serum added was that of a person who had recovered from pellagra, life was prolonged for from thirty-six hours to seventeen days. Antidiphtheritic serum acted like normal serum. It may therefore be concluded that there is formed in the blood of pellagrous subjects an antitoxine that is capable of neutralizing the toxic action of damaged maize.

According to Ceni, pellagra is not a pure intoxication, but an infection *sui generis*, produced directly by the spores of *Aspergillus fumigatus*, or by those of *Aspergillus flavescens*. The spores of these aspergilli introduced into the intestine with maize foods penetrate into the circulation, and become deposited in various organs, such as the pleura, lung, pericardium, and meninges, where they set up chronic inflammation. They possess the property of elaborating very virulent diffusible substances which give rise to the phenomena of pellagrous intoxication. That one has such phenomena produced rather than those of *aspergillosis*, or *aspergillar pseudo-tuberculosis*, as may be obtained experimentally by intravenous injection of the spores, is rather strange. Ceni, however, in explanation of this, alleges that the spores of the aspergillus, by being exposed to the action of the gastro-intestinal juice, lose their germinative capacity, but preserve that of elaborating toxins.

Ceni's hypothesis does not accord very well with general ideas regarding the life of spores, and would on its own account require explanations more intricate than those that it is itself able to afford to the pathogenesis of pellagra.

Although the specific origin of the poisonous substance that is the cause of pellagra is not yet very certain, and although it has not yet been ascertained to which among the parasites of maize this endemic disease is to be attributed chiefly or specifically, there can be no doubt that in pellagra the pathological process is essentially an intoxication. As we shall see, this view is borne out by the symptomatology of the disease, which is so different from that of simple inanition, and also by its pathological anatomy, which includes systemic degenerations in the nervous system. That this toxic action has its primary source in damaged maize, and that it is not an unfortunate special property of normal maize, is shown by the results of the experiments of Tebaldi and Ellero, as well as by other facts. These observers in 1882 suc-

ceeded in curing many pellagrous lunatics, and in causing them to increase in weight, by feeding them for a short time with abundant supplies of polenta of the best quality, and with various subsidiary foods to which they were accustomed. This explains how it is that pellagra has not made its appearance in Ireland, a country in which maize is largely used, but where at the same time the precaution is taken to air it by special methods, so that it is preserved from damage. In that country, which was subject to repeated epidemics of famine so long as the poor lived solely upon potatoes, maize, introduced somewhat recently as a substitute, has taken a place as a very nourishing food, and one that is free from dangers.

For the prevention of pellagra it should be sufficient to supervise the harvesting of maize, and to see that care is taken to preserve the grain in a dry condition.

Symptoms.

Pellagra begins without rigors, fever, or any of those prodromal disturbances that characterize infective diseases. The peasant who has during the winter lived in misery and fed upon infected polenta, but who has not felt ill, already harbours pellagra in the latent state when, at the commencement of spring, the time comes for him to resume work in the fields. Even during the first few days he perceives that he cannot endure fatigue: he can lift his arms only with great effort, his legs will not support him, his head is heavy. His feeling of illness is increased by dryness of the throat, difficulty in swallowing, and intense thirst. The victim of pellagra is tired and depressed. In addition, he often has wandering pains in the extremities and in the back, tenderness about the joints, formication, buzzing in the ears, dulness of vision, hemeralopia, diplopia, and vertigo. The virtiginous symptoms of sufferers from pellagra are very characteristic; they are due either to inanition, to dyspepsia, or to a direct influence upon the nervous centres (Strambio), which are specially sensitive to the poison, and among the first to be affected by it.

With the thirst there are associated morbid hunger, a sense of burning in the throat, stomach, and hands, and also headache, tremors, and swelling of the tongue and of the lips, and erythema.

Upon the first contact with the sun's rays any skin that is exposed—namely, that of the face, neck, chest, back of the hands, and the bare feet—becomes shining, hyperæmic, and dark in colour, and then cracks and desquamates. This is the condition known as *pellagrous erythema*, which, when often repeated, leaves the skin inelastic and atrophic (Fig. 57).

From the beginning the redness, which disappears on pressure,

is accompanied by slight swelling; it occurs in patches or diffusely; the congested skin burns in a similar way to the mouth. This sense of burning is so intolerable as to impel the stupefied sufferers to throw themselves into water, in which they are sometimes drowned.

The erythema is not strictly confined to the parts of the skin that are uncovered, but it always affects sharply defined and distinct areas. It is sometimes symmetrical. Often it consists



FIG. 57.—PELLAGRA: ERYTHEMA AND DESQUAMATION OF THE SKIN OF THE HANDS.

merely in congestion of the papillary layer. At other times it goes on to serous or purulent exudation. The epidermis is then raised in bullæ and exfoliates in large pieces, leaving unprotected the corium, which then becomes inflamed. Sometimes there is exudation, and this, from exposure to the air, becomes dried and converted into a crust. This protects the subjacent tissue, which is thus given an opportunity of undergoing repair.

If, however, the desquamation is slow, a crust does not form.

There is then a dry erythema of chronic course : the epidermis is red, dark, pigmented, or distinctly coffee-coloured, and exhibits discolorations which are extensive and well defined, but it shows no lesions affecting its integrity. The lips are swollen and cracked. The dystrophy frequently extends to the nails, which become brittle.

The mucosa of the *stomach* also suffers at an early stage from the slow and insidious influence of the poison, which easily acts upon an organ that is worn out, even mechanically, by the daily elaboration of a heavy and indigestible food. The patients have a burning sensation in the mouth, throat, and stomach, as if they were being touched with a red-hot iron, and they drink incessantly in order to extinguish the fire that is consuming them, although they have no fever.

There is also stomatitis. The gums are swollen and congested ; the tongue becomes cracked. A *parageusia disgustosa* (with taste of salted meat, popularly known as "mal salso") is manifested during fasting and after a meal, but it does not deprive the dilated stomach of its insatiable desire to be filled again. The digestive power of the stomach is weakened in consequence of hypochlorhydria, and perhaps also (Agostini) by hypotonia and weakness of innervation. In the course of the disease eructations, gastralgia, bulimia, and intense thirst are common. In some instances anorexia, nausea, and vomiting are experienced. Pyrosis is never absent (Lombroso).

In this stage of the disease, always afebrile, there is often constipation, pain in the abdomen, and meteorism. Sometimes the constipation continues, but more often, either from the beginning or after a period of constipation, there is profound and obstinate diarrhœa, serous in character, and generally unaccompanied by pain. In other instances the diarrhœa is sanguineous, similar to that which occurs in dysentery, and there is shedding of the mucosa of the large intestine.

Chronic parenchymatous nephritis is somewhat frequently observed ; it is accompanied by fatty degeneration and desquamation of the epithelial cells of the tubules and the formation of casts (Vassale). The urine is scanty and of low specific gravity.

In addition to the muscular weakness, constipation, diarrhœa, etc., there are other disturbances, distinctly of spinal origin, such as general hypertonia, spastic, uncertain and staggering gait, and exaggeration of the patellar reflexes. Strambio described a pellagrous tetanus, in which the patients are thrown violently forwards, fall on the ground, and injure themselves against any objects that happen to be in the way. Tonnini, in 1883-84, was the first to associate these spinal phenomena of

pellagra, by attributing them to primary lesions (cellular pigmentation) of the anterior and posterior horns of the cord. The lesions may advance so far as to produce spastic paresis (Belmondo). Intentional tremor is sometimes observed in the arms (Antonini). Partial contractions, chorea, and convulsions are not uncommon. The execution of certain movements with eyes closed reveals an early ataxia; this symptom may perhaps also manifest itself in consequence of processes of neuritis and polyneuritis, which sometimes complete the picture of pellagrous intoxication.

After a time cerebral disturbances supervene. Sleep becomes short and troubled. There is great depression of spirits, and delusions occur, associated with fatuity and mental confusion.

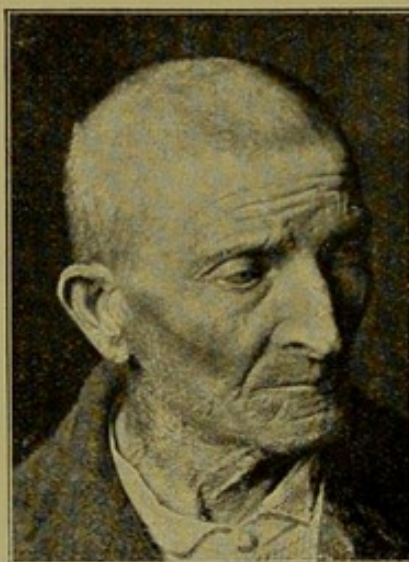


FIG. 58.—PELLAGRA: DEPRESSED CONDITION, EMACIATION, PREMATURE SENILITY (FORTY-FIVE YEARS OF AGE).

The general condition of the patient is extremely bad. Rapid emaciation destroys the appearance of youth, and the patient who has suffered for any length of time looks decrepit at any age (Fig. 58). If he is not helped and fed by public charity, he is compelled to take to bed.

Febrile attacks occur in cases in which there is very severe diarrhœa, and when the intestinal mucosa is affected by ulcerative processes. Cutaneous erythema, if widely diffused, is also capable of determining slight rises of temperature. In the so-called pellagrous typhoid the temperature rises, however, to 102° , 104° , 106° , and even 107.5° F.

This very serious incident in the course of pellagra, which occurs usually only in extremely inveterate cases several years after the onset of the disease, is not to be confounded with true

typhoid fever (Belmondo). At the post-mortem examination there is neither swelling of the spleen nor enlargement of Peyer's patches ; only a special form of fatty degeneration of the kidneys has been described. The course of pellagrous typhoid is always short : there is no cutaneous rash ; the abdominal symptoms are accompanied by opisthotonos, epileptiform attacks, rigidity of the legs, and constant delirium, which indicate the special origin. Sometimes there are added nephritis and uræmia, with ammoniacal odour of the perspiration, but the urine is fairly abundant, and, although it contains casts, is almost devoid of albumin.

Pellagrous typhoid is a fatal complication which runs its course in at most one or two weeks. It is, therefore, much more serious than genuine typhoid.

The tuberculous, those who suffer from malaria, cretins (in Roumania), alcoholics, degenerates, and the destitute, are much more readily affected by pellagra than are others. These diseases, together with degenerative heredity and poverty, form a predisposition which is sometimes evident in the individual constitution. The cachectic habit of these predisposed sufferers is sufficiently marked to allow, in districts in which pellagra is endemic, of a very early diagnosis being made.

Pellagra is almost always accompanied by psychical disturbances, which often have the characters of true mental diseases. It has been calculated that the number of persons suffering from pellagra who are admitted to asylums represent 4 per cent. of those actually affected by the disease. This proportion has been raised to the dignity of a statistical standard capable of being utilized to estimate the number of pellagrous persons (D. Maragliano). The number of sufferers from pellagra who become insane is, however, undoubtedly, very much greater ; some are never taken to the asylum because they are harmless, whilst others are admitted to hospitals owing to the fact that their bodily disorders are much more serious than their mental disturbances.

A *pellagrous melancholia* has been described as the most common psychosis resulting from poisoning by bad maize. A *pellagrous mania* has also been described. The characteristic psychosis of pellagra is, however, *amentia*, which manifests itself acutely in loss of sense of place, loss of memory, confusion, hallucinations, and paræsthesias, from which there arise morbid impulses and delusions. Pellagrous *amentia* often assumes a depressive form which simulates melancholia, and in some cases, either from time to time or throughout the whole course of the psychosis, it is accompanied by exaltation, which gives it some resemblance to mania.

The first attacks of amentia occur after pellagra has existed for some years, and has already given rise to erythema and diarrhoea, and has remitted from time to time. In other words, the pellagrous lunatic is, as a rule, a chronic sufferer from pellagra. But whilst the pellagra, although chronic, continues to run an intermittent course, the mental disturbances associated with it have yet the characters of an acute insanity which corresponds exactly to amentia—*i.e.*, to the most typical of the acute insanities—both as regards the symptoms and course. The amential attack is very brief and amenable to treatment, provided that the patients are well cared for and nourished. If, on the other hand, the sufferer from pellagra leaves the asylum or hospital and returns to his habitual way of living, so that he becomes exposed to new attacks of pellagra and of insanity, the clinical picture presented by the mental disturbance begins to change in character and nature. For the symptoms and reparable lesions of amentia there are then substituted the symptoms and irreparable lesions of dementia.

The insanity of pellagra is thus something different from common melancholia or from ordinary mania. It is also something more than simple amentia. We may regard it as the combination of two distinct clinical pictures—namely, that of amentia in the first attacks, and that of dementia in the later and progressive phase, marked by chronic and incurable cachexia. It is an intermittent and progressive amentia, which, if not cured or if not early fatal, terminates in dementia. Death, indeed, often occurs before the last stage is reached, and in this case the patients die in a state of acute delirium without having passed into dementia.

That pellagrous patients, even when they show depression and exaltation, are not true melancholics or true maniacs may be inferred from many certain signs. A pellagrous person, when depressed, has never the lucidity of the non-delusional melancholic, and his errors of judgment hardly have the characteristic coherence of melancholic delusions. When exalted, he displays more fear than rage, more confusion than gaiety. Beneath either his depression or his exaltation there can be readily discerned the confusion of amentia, even though it may not be chaotic. The patient's internal perceptions are altered by the paræsthesia, his external perceptions by the hallucinations, and the association of images is confused by the direct disorder of the ideational processes, independently of the affective disturbances.

In melancholia and mania errors of judgment are less marked, less constant, and, at all events, represent the secondary results of some disturbance of affectivity. Moreover, the pellagrous

subject is almost always dreamy, forgetful, and stupid. It is only rarely that he can give an account of his past history, that he knows that he is in an asylum, or can recognize with promptitude and accuracy the doctors and attendants. These sufferers from pellagra, humblest representatives of the rural poor, speak only of their misery ; they refuse to take food from fear of suffering painful consequences, and they are suspicious of the modest but unaccustomed comforts that surround them in the hospital or asylum. Often they are tormented by the delusion that they are damned. In other instances they show extreme humility, a remarkable optimism with regard to the foods that are supplied to them, and delusions of grandeur that excite pity on account of the triviality of their nature. The possession of a sack of potatoes, a farm, a new coat, or a choice cigar, constitutes the height of their ambition. The pellagrous are, as a rule, depressed and dull-brained ; they speak little and in a low voice, and their appearance suggests dejection and resignation. The short duration of the attack of acute insanity is also evidence that the condition is one of amentia rather than of mania or melancholia.

This state of degradation, with slight mental disorder and loss of memory, may be observed even in the first few years. By the third or fourth year, when the patient has passed his novitiate, the confusion increases, and he manifests true delusion accompanied by changeability, sitophobia, sobbing, weeping, impulsiveness, and agitation. As a rule, however, the agitation is brief, and is quickly followed by a fresh attack of depression, with immobility, taciturnity, and great increase of mental confusion.

Sometimes the pellagrous psychosis assumes the form of a *pseudo-progressive paralysis*, accompanied by euphoria and by some of the motor symptoms of this classical disease. For the reproduction of its clinical picture ordinary pellagra provides various characteristic symptoms, such as rigidity of the pupils, exaggeration of the knee-jerks, and bradylalia (although more of mental than of dysarthric origin), as well as amentia and dementia with which to complete the resemblance. The patellar reflexes may sometimes be absent, and hence a pellagrous pseudo-tabes has been described in addition to a pellagrous pseudo-paralysis. Tuczek has, however, observed 300 pellagrous persons with these reflexes exaggerated and only eight in whom they were abolished, and in these eight there was no other sign of tabes. Pseudo-tabes is therefore a complication that is at least rare.

The victims of pellagra may live for ten years or so, manifesting every spring a fresh exacerbation of their disease. Their physical and mental decadence is in many cases extremely slow. The attacks naturally become more and more serious every year, and

the last are accompanied by cachexia and dementia. Death, if it does not occur in the course of the first attacks from want of treatment and on account of collapse, takes place later from cachexia in spite of all treatment. It may also occur from suicide, pulmonary tuberculosis (especially in children), broncho-pneumonia, intestinal tuberculosis, or scurvy.

The cachexia of sufferers from pellagra is not in every instance associated with dementia. Even in the last stages of the disease the patient may manifest mentally no more than slight confusion and weakening of memory, and in the first attacks of amentia also the confusion may be somewhat slight, and not accompanied by true delusions.

Pathological Anatomy.

Pellagra damages chiefly the cerebro-spinal axis, the intestines, and the skin; but in many instances it affects also the kidneys, liver, spleen, heart, vessels, and muscles. Of the lesions that are met with post-mortem, some are due to general cachexia, others are the direct result of the intoxication. Among these last it is necessary to distinguish the chronic lesions from the acute.

Cerebro-spinal Axis.—In addition to being affected by other pathological changes, the cerebro-spinal axis is so frequently the seat of asymmetry and heterotopia (Tonnini, Tuczek, Babes) that there seems to be some ground for regarding these abnormalities as the anatomical expression of a special proclivity to pellagra. In cases of long standing there may be general or local œdema of the brain, hyperæmia and thickening of the meninges, chronic internal hydrocephalus, and sometimes softening of the cerebral substance and hæmorrhages. The meninges of the brain and cord are often pigmented (Babes). Accumulations of pigment are also to be observed in the cells of the spinal cord and in the sympathetic ganglia. According to Babes, the abdominal sympathetic, and especially Auerbach's plexus in the wall of the small intestine, show a special sensitiveness to the poisons of pellagra, and Fox has observed dilatation of the vessels, fatty degeneration of the ganglion cells, and sclerosis of the interstitial tissue.

The cerebral substance does not present to the unaided eye any very noteworthy changes, excepting in very advanced cases with dementia. The spinal cord, however, at an early stage exhibits traces of systemic degeneration of combined type. There are lesions of the posterior columns and of the crossed pyramidal tracts (Fig. 59), as has been shown by Tuczek and Belmondo. There is also very often small-cell infiltration of the spinal meninges, acute meningo-myelitis, and proliferation of the ependyma, especially in cases of pellagrous typhoid, which,

however, are somewhat rare. Whilst in tabes the lesions of the posterior columns occur mainly in the lumbar cord, in pellagra the chief spinal lesions are to be observed in the cervical and dorsal regions. With the degeneration there is naturally associated sclerosis.

According to Tucek and Marie, the tracts that chiefly degenerate are the crossed pyramidal, the posterior root-zone, the columns of Goll, and the comma tract of Schultze. Thus an important part would appear to be played in the pathological anatomy of pellagra by the endogenous fibres, which are the last to become myelinated in foetal life. This opinion is not, however, supported by Babes, who in the majority of cases found lesions of almost all the posterior columns, excepting the anterior root-zones and the zone of Lissauer, and was able to demonstrate

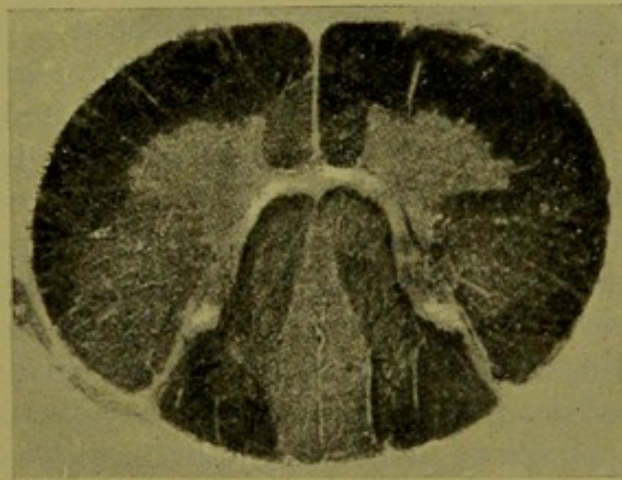


FIG. 59.—CERVICAL CORD OF A PERSON WHO SUFFERED FROM PELLAGRA.

Degeneration of posterior columns, especially in the tracts of Goll; degeneration of the pyramidal tracts, more especially of the left.

important alterations in the columns of Clarke. Here and there the columns of Clarke contain foci of sclerosis and necrosis which, owing to their minuteness and irregular distribution, require to be looked for with much care, although they may be visible to the unaided eye. These lesions of the grey substance are not limited to the columns of Clarke, but affect also the anterior horns. They are the local points of origin of many of the lesions of the white substance, to which they may also extend by contiguity, presenting the same characters. In this event the white substance also shows evidences of an inflammatory process, such as adhesion to the pia mater, disappearance of the nerve fibres, and enlargement and occlusion of vessels. Most of these foci are, however, always in the columns of Clarke. These columns are the seat of election not only of these localized inflammatory processes, but also of lesions that extend throughout the whole of their length,

or a considerable part of it. The nerve cells are swollen and often devoid of a nucleus; they show peripheral chromatolysis and central condensation of pigment in the form of large granules. The anterior horns also suffer from these lesions (Babes), and, indeed, with equal frequency, though in smaller degree.

As regards the cerebral cortex, the alterations that occur in the acute cases are of chief interest. In these the cytological picture formed by the acute and reparable lesions becomes distinctly marked; the nerve cells are swollen, both nucleus and protoplasm being affected. The nucleus shows increased affinity for stains, and the chromatic substance of the protoplasm is disintegrated. In cases that have manifested spastic phenomena attributable to a lesion, even though only early, of the pyramidal tract, the motor cells of the cortex show signs of the reaction that characteristically results from injury to the axis-cylinder (Marinesco, Camia). The nucleus is displaced to the periphery of the cell, the cell-body is rounded, the protoplasmic processes are atrophic, the central part of the cell is pallid, and on the aspect of the nucleus towards the centre of the cell there is often a small accumulation of chromatic substance. As we shall see, these types of acute lesions in the cortical cells are exactly repeated in other acute disorders that have a marked resemblance to pellagra, more especially in those in which the principal symptom is mental confusion. Thus, for example, they occur in *delirium tremens* and in many cases of amentia (Camia).

In cases of pellagrous dementia the brain also exhibits lesions of a chronic nature, similar to those that have been described in the spinal cord, such as foci of sclerosis, to which there correspond degenerations of the pyramidal tract, proliferation of the neuroglia around the vessels, and the presence of lymphocytes.

Further, the peripheral nerves are often altered, manifesting more or less slow forms of *parenchymatous neuritis*, which in some cases is fairly well marked.

Visceral Lesions.—Of the visceral lesions, those of the intestine are the most prominent, and they are also among the most constant.

Both the small and the large intestine are often atrophic and hyperæmic; the mucosa is thin, and it shows very few *valvulæ conniventes*; the muscular coats are sometimes affected by amyloid degeneration. Ulcers are frequent in the large intestine.

The kidneys are generally in a condition of parenchymatous degeneration. This is most frequent in acute cases; in chronic cases there may be cirrhosis. Vassale and Belmondo hold that there is a special type of chronic nephritis in pellagra.

The liver may be enlarged and friable, or diminished in size

and cirrhotic. The spleen is generally small, even in cases of pellagrous typhoid.

The *skin* is altered in a way corresponding to the symptoms observable during life. In the erythematous regions, as has been ascertained by Griffini, there are atrophic and hypertrophic strata. At the beginning of the disease the epidermis is a little thickened, but it is also at places thinned. By the time desquamation occurs it is always thickened, including the stratum corneum. The Malpighian layer is in some cases increased in thickness, in others diminished. The surface is irregular, and the papillæ are enlarged.

Hyperæmia, hæmorrhages, and transudation of serum and of leucocytes may also occur. The inner layers of the epithelium contain yellow pigment.

Demographical Data.

It is calculated that there are in Italy from 70,000 to 100,000 sufferers from pellagra. The estimates prior to 1879 were incomplete, because they concerned only Piedmont (in 1846) and Lombardy and Venice (in 1856). In 1879 the Agricultural Department under the Ministry of the Interior reported the occurrence of 97,855 cases of pellagra, or a proportion of 343 pellagrous persons to every 100,000 inhabitants. In 1881 the Ministry of Agriculture estimated that there were 104,020 sufferers from pellagra in an agricultural population of 10,049,652, or 1.03 per cent., and the number of communes in which the disease was endemic was 2,453. In 1899, on private initiative, an inquiry was made which showed that there were 72,603 pellagrous persons in an agricultural population of 7,023,440—that is, a proportion the same as that already mentioned, 1.03 per cent. The contemporaneous investigation made by the Government gave 78,882 pellagrous persons in an agricultural population of 11,385,359, or 0.68 per cent. This number, recognized by the National Board of Health, was reduced in 1900 to 59,464 pellagrous persons; and similarly the information collected at the Congress of Pellagrology, held at Bologna towards the end of 1900, shows a diminution in the number of cases of pellagra, the number of sufferers being estimated at 66,390.

Statistics relative to pellagra are certainly not very exact. The estimate of the agricultural population and that of pellagrous persons is made in an indirect way. The number of cases of pellagra is apt to be over-estimated in localities in which the disease is endemic and very widespread, practitioners being inclined to recognize it in almost everybody, whilst the disease is often not diagnosed in places in which it occurs infrequently and

in a mild form. It is probable that if the absolute facts were ascertainable, it would be found that something required to be deducted from the high figures of certain districts and something to be added to the low figures of other districts; but it is very doubtful if these two hypothetical corrections would balance each other. At all events, the absolute diminution in the number of cases and in the mortality in 1900 as compared with 1881,

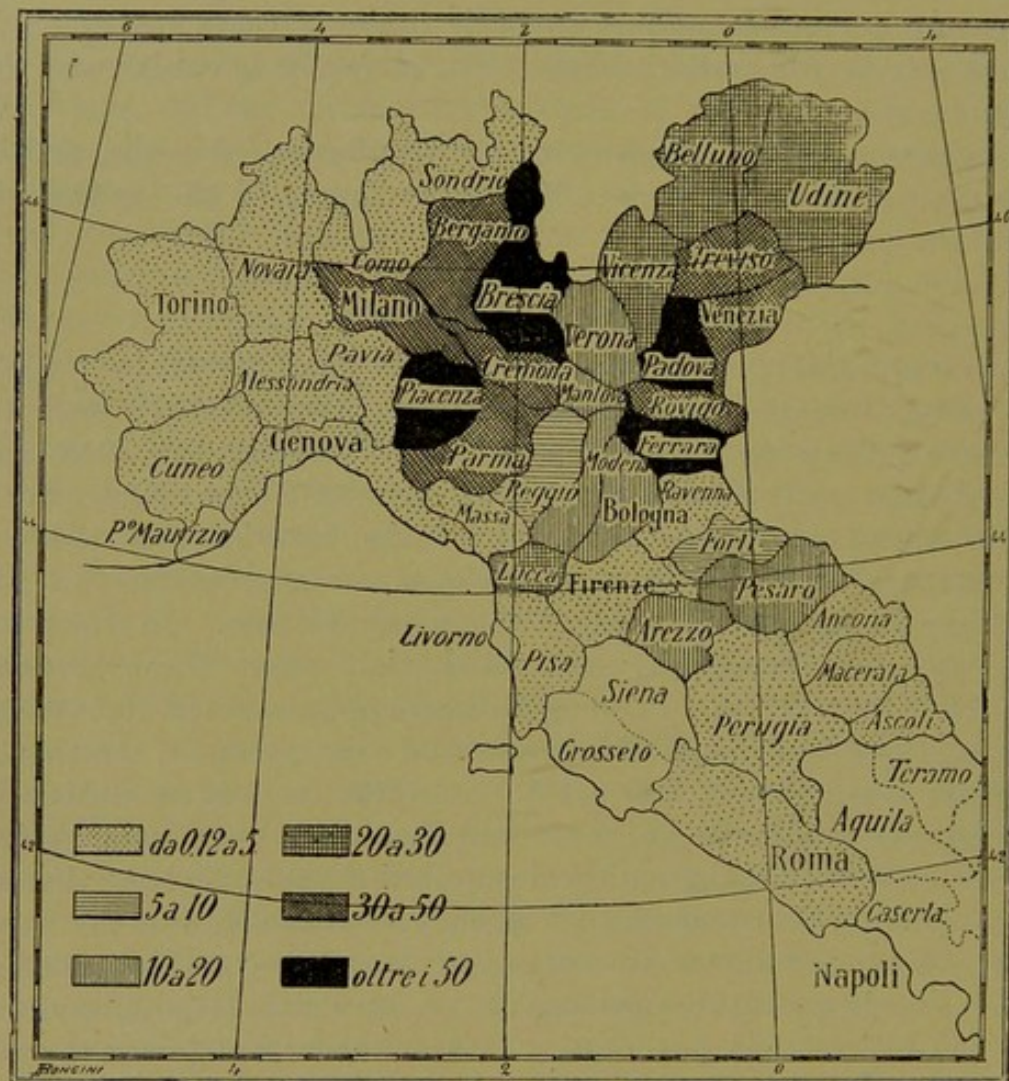


FIG. 60.—DISTRIBUTION OF PELLAGRA IN ITALY IN 1881: NUMBER OF PELLAGROUS PER 1,000 OF THOSE ENGAGED IN AGRICULTURE.

as well as the evident alteration that has been shown to have taken place in the geographical distribution of the disease within a few years among the various provinces of Italy, show that endemic pellagra is by no means refractory to the influence of curative measures. It is therefore foolish to speak of hereditary fatality or chronic starvation, when it is seen that statistics of pellagra vary exactly in accordance with bad maize harvests and with the institution of measures to obviate the harmful conse-

quences thereof. Pellagra is diminishing in those parts of the country in which the custom of growing Indian corn is being abandoned, as, for example, in Piedmont and in Liguria; it is also decreasing in Lombardy, where drastic therapeutic and prophylactic measures are being adopted. It increases and diminishes with the rise and fall of the price of white flour, and it has unfailingly made its appearance as the evil spirit of maize

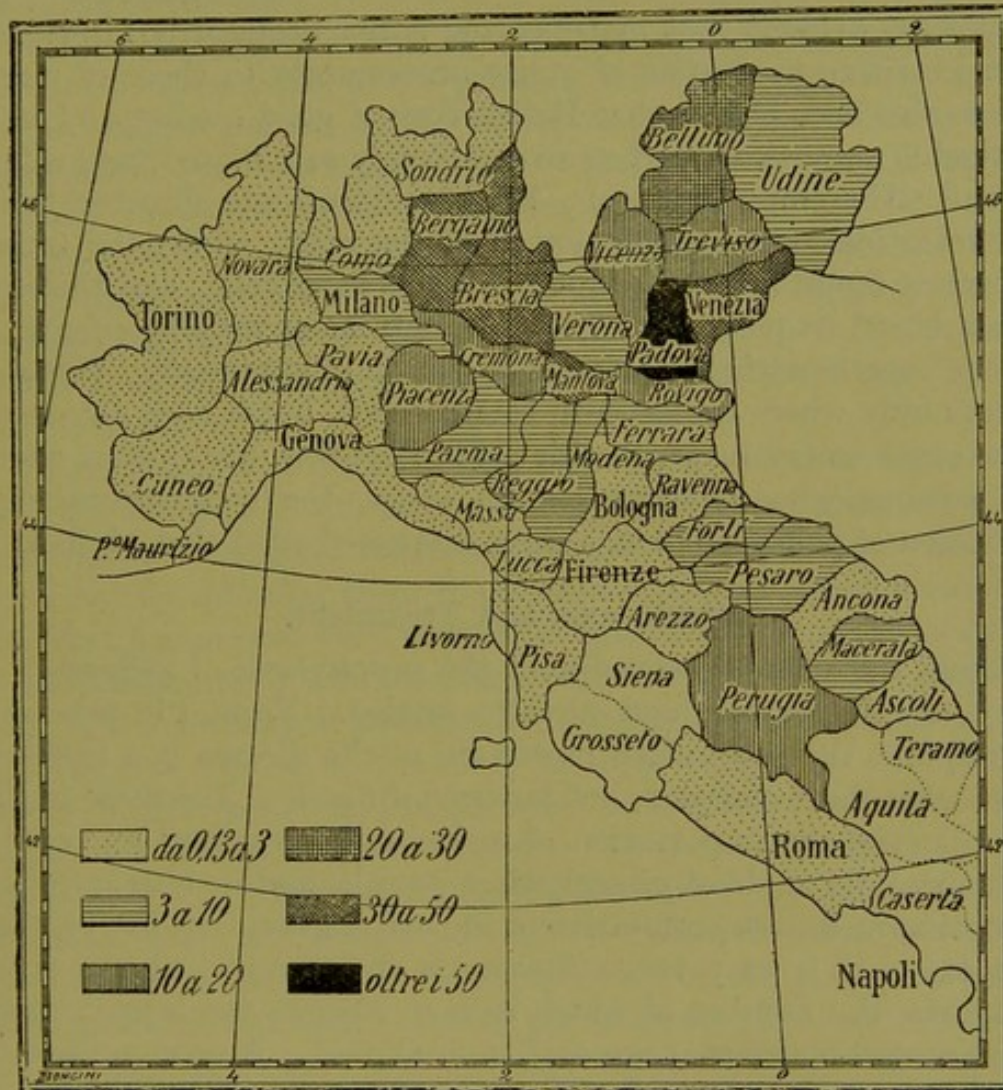


FIG. 61.—DISTRIBUTION OF PELLAGRA IN ITALY IN 1899: NUMBER OF PELLAGROUS PER 1,000 OF THOSE ENGAGED IN AGRICULTURE.

in those central and southern provinces of Italy that have recently introduced it into cultivation.

Thus it was not until 1730 that pellagra was observed in Spain, where Gaspare Casal described it for the first time as *mal de la rosa*. The disease appeared in Italy about 1740. It did not extend to France until about 1815, and to Roumania about 1830. Soon thereafter it crossed the chain of the Apennines, spreading through and increasing in severity in the provinces of Siena,

Grosseto, Perugia, Ancona, Ascoli-Piceno, and Macerata, Campobasso, Teramo and Aquila in Tuscany, Umbria, the Marches, and Abruzzi (Badaloni).

In Roumania there are 5,000,000 peasants who subsist upon maize, and statistics show only 20,000 sufferers from pellagra. It seems that the white and yellow varieties of maize are very subject to the attack of moulds, whilst red maize is liable thereto in only a small measure, and is therefore always harmless. It is at least evident that maize-eating is not necessarily injurious. The nutritive properties of maize are superior to those of rice; it has also been shown that Indian corn of good quality and well cooked is more easily and more completely assimilated than other cereals (König and Rubner). Its albuminoids are absorbed from the intestine in the proportion of 85 per cent., whilst the corresponding figure for white bread is only 74 per cent., and that for black bread 58 per cent. Thus, though maize may be comparatively poor in carbohydrates, it is rich in albuminoids. Pellagra occurs only where Indian corn is cultivated, but it does not occur in every country in which this grain is grown, nor does it affect all persons who consume it. In short, the geographical distribution of pellagra is much more restricted than that of maize.

Prophylaxis and Treatment.

From the scientific standpoint the prophylaxis of pellagra is a very simple matter, and already settled. From the practical standpoint the preventive repression of the disease is a problem somewhat more complex, but far from difficult. The State ought to supervise the importation of maize, its harvesting, conversion into meal, its mode of preservation, its sale, and its consumption, adopting measures prohibitive of the use of grain that has become mouldy. It is easy to confiscate on their arrival at the great seaports, the number of which is very limited, the large cargoes of damaged maize that are sent from abroad. A good method of rendering the consumption of bad maize almost impossible is to establish a system of gratuitous exchange for a corresponding quantity of good meal. This system of exchange was first put into practice in the Marches, and is widely employed in the territory of Brescia. The Ministry of Agriculture has encouraged the practice by means of subsidies.

Free ovens for the drying of Indian corn have been instituted. In Ireland the maize is dried by means of a current of air in Devaux's apparatus, which is highly recommended by Lombroso, and which serves to protect the grain from moulds. In Italy public drying-machines are not very common. In 1902 the province of Bergamo possessed ten, that of Brescia 101, subsidized

by the province and by the communes, and Cremona possessed one. Rovigo had several, but all were private property and not for free use. Some of these drying-machines are stationary, whilst others are movable.

In the selection of a drying-machine, one is to be preferred that does not deprive the maize of its germinative power and that preserves its flavour, as in the case of natural drying by means of the rays of the sun.

A Lombard parish priest, Don Rinaldo Anelli, who devoted his life to the redemption of the peasants from pellagra, and who was led to commit suicide by the disappointments that attended his most noble work, established rural bakehouses in order to render possible the substitution of a cheap rye-bread for polenta; but the peasants, who use neither soup, meat, vegetables, nor fresh milk, prefer polenta to either rye-bread or white meal bread, because it gives them a sensation of warmth and satisfaction, and can be seasoned with very cheap substances that give it strong and varied flavours.

In addition to preventive measures, and whilst trusting that prophylaxis will be efficacious as regards future cases, we must not neglect to employ curative measures on behalf of those who are actually suffering from the disease. Among these measures, one that has proved very useful, because economical and prompt, is the institution of the so-called *locande sanitarie*. The diminution in the amount of pellagra in Lombardy, and in some of the provinces of Venice, is due more to these sanitary stations than to preventive measures, the adoption of which is little more than begun, and is still very incomplete. These sanitary stations are kitchens instituted by public charity in the country municipalities, parishes, inns, and isolated hamlets, wherever there is a focus of the disease and a place to which those of the poor who suffer from pellagra and whose names are duly enrolled can repair on foot from their houses and receive a meal which is consumed on the premises. The meal consists of cooked meat, white bread, vegetables, and wine. Each sufferer from pellagra is allowed one per day. The cost of each meal is from 50 to 60 centesimi. The gratuitous distribution of these meals is made for from thirty to sixty, or at most seventy, successive days, at one or two periods of the year—namely, in spring, or in spring and autumn. In some districts this reconstitutive treatment is carried out only upon alternate days, and in this way it is possible to continue it for double the time. The patients who take advantage of it are sufferers from pellagra of the first degree; they are able to attend the sanitary stations without giving up their work or leaving their families. The interference with economic

interests is thus reduced to a minimum ; a large number of pellagrous persons can be cured at a total cost and trouble that would suffice for only a very small number of patients placed in hospital. In order to facilitate the distribution of food to the patients who live in distant places, and who, being ill, cannot without inconvenience repair every day to the kitchen, the sanitary stations establish branches without kitchens nearer the dwellings of the consumers, to which the rations are conveyed at a fixed hour by means of hand-carts provided with warming apparatus, and consumed on the spot, as at the central stations.

In 1901 Italy possessed 319 *locande sanitarie*, distributed throughout twenty-three provinces as follows : 117 in Lombardy, 118 in Venice, 76 in Emilia, 6 in Marches, 1 in Tuscany, and 1 in Lazio.

The number of persons suffering from pellagra who make use of these stations amounts to several thousand. The Government subsidizes the *locande sanitarie*, which, as a rule, are more numerous and more largely utilized where pellagra is more prevalent and severe. On the other hand, in districts in which pellagra is infrequent, and ought therefore to be easily eradicated, nothing is done to combat it. Its existence and persistence is a weapon of reactionary opposition to Liberal policy, serving as a pretext for the demand for protection of industries that are declared to be the true and only remedy for endemic pellagra. Thus in Tuscany they will not hear either of sanitary stations or of supervision of the sale of damaged maize. It is represented that pellagra could be eradicated by withdrawing the restriction against goats feeding in the forests, which they destroy, and by favouring the manufacture of certain cheeses, which have been raised to the dignity of social panaceas.

The people and the Government have, however, initiated an aggressive and bold campaign against pellagra, the former by creating allied interprovincial associations, by promoting congresses and giving subscriptions, the latter by legislating without party prejudice. A liberal spirit in fiscal policy would be able to aid the pellagrous if, instead of obstructing measures designed to prevent the importation of damaged maize, it removed hindrances to the importation of white grains, abolishing the high duties that simply protect the indolence of the national producers. In this instance the great cheapening of bread would determine a reduction in the consumption of the inferior maize flour.

CHAPTER XI

ALCOHOLISM

Causes.

ALCOHOLISM implies the abuse of alcoholic drinks, but with this external factor there are always associated certain internal factors, in the form of predispositions or special congenital or acquired susceptibilities, which, on the one hand, determine the vicious habit, and, on the other, contribute to the production of the morbid reaction. Apart from these individual conditions, importance is to be attached to the numerous and varied social factors, which give the impulse to the alcoholic habit or maintain and strengthen it.

Alcoholic beverages vary in toxicity according to their chemical composition. Accurate experimental observations show that their toxicity increases with the increase of the specific gravity. Practically, the most important difference is that between wines, which contain ethylic alcohol of comparatively slight toxicity, and liquors, more especially bad brandy, which contain a considerable quantity of amylic alcohol, a substance that is highly toxic. To the harmful action of the alcohol there is added in wines that of various ethers, and in most liquors that of certain essences, by far the most important of which is the essence of absinthe. Although the action of such essences is certainly not negligible, there has been attached to it, perhaps designedly, an importance which is excessive in comparison with that of alcohol, which is really the predominating one. Recently, indeed, some over-zealous defenders of alcohol have sought to make these essences almost the scapegoat of alcoholism, attributing to them the largest share in the toxic action. Whatever may be the influence of these essences in determining or in aggravating some of the symptoms of alcoholism, it is at least certain that all the symptoms of this disease may be observed even in individuals who drink wines and who are abstemious as regards the use of liquors.

The predisposition that renders certain persons specially liable to become victims of alcoholism is of a twofold nature : it may

consist in an *attraction* towards alcohol, in consequence of which the habit of drinking large quantities of alcoholic beverages is very quickly established, or of an *intolerance* of alcohol, in consequence of which small quantities serve to produce psychopathic disturbances, either of an acute or chronic character.

On the ground of statistics much has been said regarding an hereditary element in the attraction towards alcohol, and it has been found by some investigators that in from 40 to 50 per cent. of cases of alcoholism there have been among the ancestors neuropathic or psychopathic individuals with special alcoholic tendencies. Thus it has been stated that a similar heredity is recognizable in alcoholism. If this heredity is to be interpreted literally as a simple organic fact, the statement must certainly be taken *cum grano salis*. There is a great difference between recognizing alcoholism in the ancestors of alcoholics and saying that there is a true organic heredity of alcoholism. The disease being one that is widely diffused, it is natural that in many cases its hereditary character should be only in appearance. Moreover, great importance must be attached, rather than to actual heredity, to similarity of environmental conditions, to example, and to family habits. On the other hand, of much greater importance than direct heredity is the existence of a general neuro-psychopathic constitution. It is certain that a large proportion of cases of alcoholism occur among those who are predisposed to diseases of the nervous system, those whose nervous system is actually disordered (such as the neurasthenics and psychasthenics), and those who exhibit instability and evidences of a bad heredity. In all of these there is always a marked tendency to be attracted, not only to alcohol, but also to nerve stimulants in general.

A characteristic form of morbid craving for alcohol is seen in *dipsomania*, which manifests itself periodically as an uncontrollable impulse. In the intervals between the attacks dipsomaniacs can abstain from intoxicants without effort, and may, indeed, exhibit an actual repugnance to all alcoholic drinks. The accessory phenomena associated with the impulse to drink prove that in the majority of cases the attack of dipsomania is really simply a manifestation, or an *equivalent*, of psychical epilepsy. As the result of drinking to excess during the crisis, subacute and chronic toxic phenomena may be induced.

The craving for alcohol may be, and indeed very often is, acquired. As the result of serious illness, more especially infective diseases, head traumatisms, psychical shocks, overwork, etc., persons previously abstainers, or only moderate drinkers, may develop a strong liking for alcohol. In the states of excitement associated with various forms of mental disease a tendency to

alcoholism may also arise. This often occurs, for example, in the periodic attacks of excitement to which cases of mania, circular insanity, progressive paralysis, and senile dementia are subject.

The most common causes of uncontrollable craving for alcohol are, however, the increasing sense of ill-being that some chronic drinkers experience when deprived of alcohol for any length of time, and the fact that the individual coefficient of satiety tends gradually to rise. I knew a patient who so dreaded being without wine during the night that he placed a barrel of it beneath his bed, and so arranged an indiarubber tube that he could suck up the contents without the trouble of having to leave the horizontal position. This confirmed drunkard became affected by alcoholic pseudo-paralysis, from which he afterwards recovered.

The *tolerance* of alcohol varies very greatly in different individuals. There are some so tolerant that they can go on drinking enormous quantities of wine and spirits for years without showing any bodily disturbance (or at most some of the physical signs of chronic drinking, such as tremors, a tendency to obesity, dilatation of the small cutaneous vessels of the face, etc.), or any psychopathic disorder. On the other hand, there are some so intolerant that a relatively moderate use of wine induces a genuine form of alcoholic psychosis. In some instances the intolerance shows itself in acute symptoms; the person very readily becomes intoxicated, and his drunkenness takes unusual and pathological forms. In other instances the phenomena of chronic alcoholism develop as the result of a moderate but habitual use of alcoholic beverages. The intolerance is often of congenital origin, and connected with obscure conditions of the nervous system, or even with actual disease. Many epileptics are intolerant of alcohol, the abuse of it causing not only an increase in the number of fits, but also unusually violent and anomalous forms of reaction to the stimulus of alcohol.

Intolerance is often acquired; the use of alcohol itself is the cause of a progressive intolerance. Whilst, on the one hand, the habit of taking larger or smaller doses of alcohol is being formed and fixed, on the other, the tolerance decreases day by day; small quantities of wine are sufficient to induce drunkenness or the development of psychopathic phenomena after a while.

The use of alcohol has its subjective reason in the sense of euphoria and mental exhilaration that is thereby easily procured, in its power of lessening the feeling of fatigue and physical discomfort, and in the cheerfulness it inspires by giving to the thoughts a more varied and freer course, and thus helping the person to forget his habitual preoccupations. It is thus easy to

understand how the misery and fatigue that are associated with certain employments inexorably drive to alcoholism. Alcohol becomes a means of supporting the burden of excessive work, which has often to be carried on under conditions that entail actual deficiency of nutrition. To this there is to be added the fact that, for a considerable proportion of the poor, want of time and of spare money, and defective education, make alcohol the one possible source of enjoyment. It is in this subjective factor that schemes for combating the evil of alcoholism meet their principal opposition. The objective damage that alcohol causes, either to the health of the drunkard or to his social position, is distant and theoretical, and he is unable to sacrifice for a doubtful and negative advantage the immediate and positive pleasure he experiences from drinking.

Another general cause that favours the development of alcoholism, especially in northern countries, consists in the subjective insensibility it produces to cold and in the feeling of warmth it gives to the drinker by dilating the cutaneous vessels and raising the temperature of the skin (the seat of the sensory terminations) at the expense of that of the viscera. The amount of alcohol consumed increases in winter and diminishes in summer.

The tendency to the abuse of alcohol is also encouraged by certain prejudices regarding its action, which are entertained not only by the ignorant, but also by many who are well educated. For example, it is stated, on the ground of effects experienced subjectively, that alcohol increases the muscular force, that it favours thermogenesis, and that it quickens perception; and it is even the conviction of some that it can produce a prolonged favourable influence on physical development. On this account it has become a very widespread custom to give wine and other forms of alcohol to very young children, whose natural repugnance to it has first to be overcome, and who are very liable in after-years to display a natural tendency to become drunkards.

It is hardly necessary to say that experimental researches contradict these popular convictions. Alcohol actually decreases the amount of muscular work that can be done in a given time; it dulls the higher mental processes, it gives merely a subjective sense of warmth, and large doses even lower the temperature. It is very doubtful if alcohol is utilized in the organism, even in small measure, as a food, and if it undergoes a process of complete oxidation. On the other hand, it is very certain that it has a harmful effect upon development, and that it can cause a condition of general hypotrophy. This it does independently of the damage it may occasion to more important viscera, such as the brain, heart, stomach, liver, and kidneys.

Extent and Distribution.

From what has been stated above, it is easy to understand how alcoholism is more widespread in industrial countries than in others, and more especially in those having a cold climate. Norway, Sweden, Denmark, Russia, Germany, France, Belgium, Holland, England, and the United States of America take the first place in regard to the quantity of alcoholic beverages consumed, and consequently also in regard to the number of cases of alcoholism. Italy stands among the last, presenting, however, great differences in its various districts. The largest number of cases occur in Liguria, where, in 1891, 15.84 per cent. of the patients admitted to the asylums were alcoholics. Lazio comes next (13.21 per cent.), and then Lombardy (7.02 per cent.), and Venice (5.91 per cent.). Naples and Sicily come last with the low percentages of 2.31 per cent. and 0.97 per cent. Alcoholism is much more common in men than in women, especially among the lower classes. The distribution of alcoholism in accordance with the trade or occupation followed clearly shows the important influence exerted by social factors. It is most prevalent among industrial workers owing to the physical exhaustion that these experience, among innkeepers, cooks, and wine merchants owing to the temptations of their occupations, and in cabmen owing to their exposure to the weather. Another form of alcoholism that is not to be forgotten is one that may almost be termed "pharmaceutical"; it occurs in neuropathic persons and valetudinarians who are addicted to the use of medicated wines and liquors, elixirs, tinctures, etc. Among alcoholics of the higher classes the vehicle of alcohol, under the guise of a therapeutic or hygienic purpose, is often *eau de Cologne*.

The age at which alcoholism is most apt to develop is twenty-five or thereabouts. Nevertheless, alcoholism is not uncommon at an earlier age. As has been indicated, it may occur even in children; such infantile alcoholism sometimes assumes a chronic form, and may even become accompanied by characteristic attacks of *delirium tremens*. Symptoms of alcoholism have occasionally been observed in children at the breast, the alcohol having been transmitted through the mother. In this sense even a foetal alcoholism may occur.

Forms.

The psychopathic effects of alcohol may manifest themselves acutely as *drunkenness*. Drunkenness is an isolated occurrence, rare in persons who are habitually temperate, periodic in those addicted to the excessive use of alcohol. In the latter its symp-

toms are superimposed upon those of chronic alcoholism. There is a form of drunkenness that may be spoken of as physiological ; it consists in the reaction of a normal organism to acute alcoholic intoxication. There are, however, other forms of drunkenness that are distinctly pathological, in which degenerated organisms react in anomalous ways.

Chronic alcoholism may continue for a long time, without inducing a true and evident form of psychosis. Very often all that can be observed are the physical and nervous symptoms of alcoholism, whilst mentally there is merely a variable degree of deterioration or *alcoholic degeneration*, which has certain very characteristic features. In cases in which this condition of alcoholic degeneration is well marked the chronic delusional forms of alcoholism are reached, in which there are systematized delusions of persecution and of jealousy, which in respect of their coherence closely resemble those of paranoia. In every drunkard there is a degree of mental enfeeblement, but this enfeeblement may be so marked as to have the true characters of dementia, and may be accompanied by various transitory delusions which are very similar to those of general paralysis. These delusional states associated with mental enfeeblement are accompanied by physical phenomena, which are also to be observed in progressive paralysis. Thus there is produced a form of *pseudo-progressive paralysis*, which differs from the true form in its etiology and in its special course. In chronic alcoholism the patient may also in some cases manifest delusions of persecution, dependent upon hallucinations of hearing and of sight. This is the *sensorial delirium of alcoholics*. Lastly, there is an acute form, markedly confusional in nature—the so-called *delirium tremens*.

Physiological Drunkenness.

Acute alcoholic intoxication has endless degrees. According to its intensity, its symptoms vary, ranging from slight initial excitement to a state of paralysis and coma.

Even in small doses alcohol exercises a paralytic action upon the higher psychical processes. Inhibition in its more complex and elevated manifestations—judgment, modesty, reserve, shame, and prudence—becomes weakened or suspended. Action follows thought with greater promptness and less deliberation. The tipsy man, instead of carrying out in an orderly manner a programme suited to his true character, becomes the passive and pliable sport of every chance impression that happens to affect his consciousness. To this there is added a certain degree of psychomotor excitement, along with a characteristic state of euphoria and deceptive facility in the performance of rapid

voluntary acts. The behaviour reflects this lack of restraint and this excitement; the timid become courageous and the bold insolent. The drunken man is loquacious. He is inopportune and even offensive in his expressions of sincerity, which very easily pass into expressions of anger, insolence, scurrility, immodesty, and sarcasm. The perceptions become blunted, the association of ideas tends to run off along illogical paths. There is thus a tendency to the predominance of useless associations, phonetic or rhyming. There is a proneness to play upon words, to use slang, and to attempt to speak out of season and inappropriately in the words of imperfectly known foreign tongues. The mood varies in different persons. As a general rule, and in the milder degrees of drunkenness, it is one of jolliness, but the more nearly a condition of pathological drunkenness is reached, it tends to assume a depressed, sentimental, cheerful, irritable, haughty or angry character. As a rule, the intoxicated person, though lethargic in his ideation, phonation, and speech, imagines himself to be extremely witty. Under the influence of this delusion he often volunteers to render undesired samples of song, speech, or eloquence, and he is not discouraged if the audience is too small or unappreciative, or even if it is altogether wanting. Excepting, however, for some brief moments of success, his efforts fail; the tipsy man repeats himself, and this renders his remarks wearisome. The monotonous repetition of commonplace, low, or unsuccessful jokes is the defect that reveals the slighter degrees of drunkenness.

The laboured character that marks the psychical processes is seen also in the motor functions. The speech is slow, slurred, and in various degrees dysarthric, and, in the more advanced phases, even completely anarthric, as in paralytics. From time to time the intonation becomes nasal. Facial expression may be active, distressed, lacking in precision, and often grotesque, although the drunken man strives to give it dignity. This difficulty of speech and of movement, the tiresome repetition of insignificant phrases as if they were smart and humorous, with indefiniteness of ideas, form a marked contrast to his arrogant forwardness, which causes him to be sententious, prosy, and sometimes poetical, sanctimonious, or philosophical, whilst all the time he is without any adequate corresponding feeling.

His gait shows the characteristic ataxic disorder; several steps in an oblique direction quickly succeed each other, appearing to have the purpose not so much of making a forward movement as of preventing a fall. Later, not only is steady walking impossible, but also the act of standing erect. The drunkard falls, and lies where he has fallen until the next morning, overcome by

a comatose sleep, which is sometimes protracted for more than twenty-four hours.

Sometimes the terminal sleep of drunkenness is followed by a train of minor disturbances. There is headache, giddiness, nausea, thirst, want of appetite, a tired feeling in the legs, or the complex of those unpleasant sensations that the Germans have expressed by the one word *Katzenjammer*. Bechterew has observed as a sequel of drunkenness a characteristic cerebellar ataxia; it occurs in habitual drunkards.

Pathological Drunkenness.

In some persons, chiefly degenerates predisposed to mental diseases, epileptics, hysterical subjects, imbeciles, and those who have previously sustained some head injury, drunkenness tends to assume a distinctly pathological character. In some instances there are true convulsive seizures at the height of the intoxication; in others psychopathic states that may be regarded as *equivalents* of psychical epilepsy, such as homicidal and suicidal impulses, fits of anger, stuporose states, and vague conditions of semi-consciousness, in which the drunken man commits shameful or criminal acts, is guilty of carnal violence, exhibitionism, stabbing, or fire-raising, and afterwards has no knowledge of what he has done. The so-called *apoplectic drunkenness* may also occur, a condition which leads to sudden coma and goes on to death.

The persons who are subject to these forms of pathological drunkenness manifest exactly the same symptoms every time that they become intoxicated. The affinity of these states to epileptic seizures is so close that it must be admitted that the two are in reality identical in nature. The former are epileptic phenomena, provoked by alcoholic intoxication.

Symptoms of Chronic Alcoholism.

Chronic alcoholism manifests itself by a train of very characteristic nervous symptoms that are more constant and earlier in making their appearance than the psychical symptoms. They are chiefly the result of lesions of the peripheral nerves, but are also in part of central origin.

Specially noteworthy are the disturbances of *cutaneous sensibility* which occur in patches corresponding to the distribution of the nerves most affected. Objectively one can demonstrate weakening of tactile sensibility, even up to the point of complete anæsthesia. In some instances there is thermo-analgesia. Sometimes, on the other hand, there is very marked hyperæsthesia, and every touch causes pain. Subjectively the sufferer from chronic alcoholism experiences sensations of formication, pricking, and

also pains of a stabbing character. These disturbances of sensibility are dependent upon more or less advanced neuritic changes. Where the changes in the nerves are specially marked, phenomena of *motor paresis* occur, especially in the lower limbs, and more particularly, almost as a seat of election, in the extensors of the foot. The muscular power is generally diminished, especially in the lower limbs, and in bad cases it is associated with muscular atrophy of a more or less circumscribed character. The anæsthesias associated with alcoholic paralysis, alcoholic pseudo-tabes, and peripheral neuro-tabes are dependent upon exceptionally severe neuritic lesions. In these cases the differential diagnosis from tabes can be made, apart from the facts as to the history of the case, by the observation of the objective signs of neuritis, the presence of atrophies, the occurrence of pain on pressure, and by the fact that the condition of the pupils is normal, or almost so.

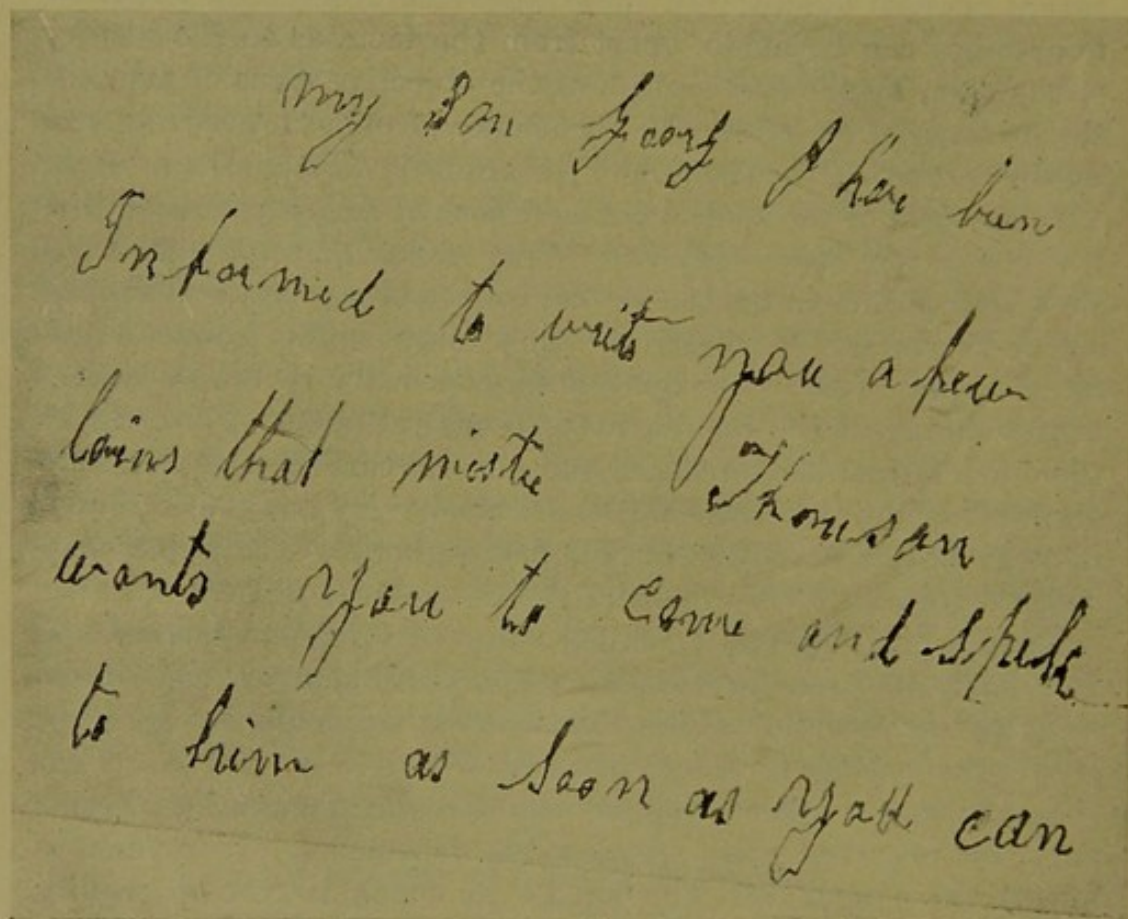
In the field of the special senses *lesions of the optic nerve* and of the *retina* are very frequent. Very many chronic alcoholics show diminution in acuteness of vision and partial or complete colour-blindness. Subjectively they may suffer from various forms of photopsia. The ophthalmoscope often reveals a characteristic pallor of the papilla in its temporal parts. More rarely there are retinal hæmorrhages and general turbidity of the optic disc. The pupillary disturbances are rarely very marked, although in some cases a condition of complete rigidity of the pupils may occur. Sometimes there is paralysis of ocular muscles.

Buzzing, hissing, and crackling noises are frequent in the ears. As regards the taste, perversions are very common, or even almost complete anæsthesia, which, however, is accompanied by subjective perceptions of unpleasant tastes.

In the motor sphere, besides the neuritic phenomena, *tremor* may be observed with remarkable frequency. It especially affects the tongue and the hands, in which it can be readily elicited by causing the patient to separate his fingers. It is a tremor consisting of rapid and minute oscillations, very clearly revealed in the writing, in which short portions of a single letter are sometimes disfigured by several undulations (Fig. 62). The tendency to the occurrence of spasmodic phenomena is very marked in some cases; there may be fascicular clonic movements affecting the limbs and the face, tics, cramps, etc.

Not infrequently inveterate drunkards are subject to *epileptic convulsions*. Some authorities endeavour to distinguish between these fits and those of classical epilepsy, regarding them rather as similar to the epileptiform seizures of general paralysis, diabetes, and uræmia, owing to their being more protracted and having a greater tendency to be repeated in series. It is very probable

that there is no real ground for such a distinction. It is now, indeed, the prevalent opinion that the epileptic attacks that occur in chronic alcoholism ought to be considered, not as constituting a true alcoholic epilepsy, but as manifestations of an epilepsy that has long remained latent, and which has been rendered active by the alcoholism. According to Wartmann, the clinical picture of an alcoholic epilepsy has no justification; the accurate analysis of a large number of cases brings out the fact that in the majority there is a marked predisposition, or the concurrence of many causes, such as traumatism, infections, etc.



My Son George I have been
Informed to write you a few
lines that mister ^{Johnson}
wants you to come and speak
to him as soon as you can

FIG. 62.—WRITING OF A PERSON SUFFERING FROM CHRONIC ALCOHOLISM.

According to Wildermuth, alcohol simply reveals epilepsy, it does not determine it; in some persons a single alcoholic excess is sufficient to bring to light an unsuspected epilepsy.

There are some who allege that the epilepsy that manifests itself in chronic alcoholism is to be attributed not so much to alcohol as to the essences, more especially that of absinthe, contained in certain alcoholic beverages. Magnan has been the champion of this thesis in its absolute form, declaring "Point d'attaques, pas d'absinthe." Now, there can be no doubt—as, indeed, is demonstrated in the clearest way by actual experiments—that the essence of absinthe has a marked convulsive action upon the

nervous system ; but, on the other hand, it is certain that epilepsy occurs also in regions in which absinthe is unknown, and also in those who drink only pure wine.

In the sphere of vaso-motor innervation, chronic alcoholism determines *vaso-motor paralysis* and *ectasis of cutaneous vessels*, especially those of the face (*facies potatorum*). The nose is chiefly involved, and shows a characteristic enlargement. Acne rosacea is frequent in drunkards, and is popularly regarded as a sign of habitual intemperance. It is, however, a sign that is far from being certain, and calumniatory noses may be observed in persons who are temperate.

The chronic abuse of alcoholic drinks involves also various *visceral disturbances*. Among these, the first in order of frequency are gastric disorders. The stomach may be dilated, especially in wine-drinkers, or, more frequently still, in beer-drinkers. There occur the symptoms of chronic gastritis, including want of appetite, nausea, giddiness, and morning vomiting. So long as alcohol is well tolerated by the stomach it tends to produce stoutness and corpulence, but when it produces severe digestive disturbances, and also anorexia and actual repugnance to food, there is an immediate impairment of nutrition, which may go on to a condition of true marasmus. The liver is often damaged by the action of alcohol. As is well known, alcoholism is the most common cause of *atrophic cirrhosis*. The kidneys are also very often injured, either directly by the action of the alcohol on the special epithelial elements, or indirectly by means of arterio-sclerosis, the occurrence of which alcoholism determines or favours in all the organs of the body, more particularly the kidneys and brain. The heart often undergoes hypertrophy as a secondary result of the renal lesions and of the diffuse arterio-sclerosis, and finally undergoes fatty degeneration. Neuritis of the vagus, which is by no means rare in alcoholics, may determine disturbances of innervation in the way of excessive stimulation or of paralysis, producing either bradycardia or tachycardia.

The *mental disturbances* of chronic alcoholism begin in an insidious manner, and progress slowly, so that it is impossible to draw a sharp line between the normal condition and states that are distinctly psychopathic. Very often the alcoholic habit causes only an arrest, an early exhaustion of the individual perfectibility, without determining obvious mental decay. But from this arrest to a true involution—or, as it is better termed, a *psychical degeneration*—the transition is imperceptible. The inveterate drunkard shows signs of deterioration, especially in the moral sphere. His previous acquisitions are fairly well preserved, but he loses the power and the desire for new and

higher achievement. His work becomes irksome to him, and before he can carry it out he has habitually to have recourse to alcoholic stimulation. Inhibitory power becomes weakened, and the character loses force. The drunkard readily gives way to fatalism, or to a scepticism that is merely a convenient mode of justifying to himself and to others his own inertia. He becomes irritable, and easily depressed. The drinker allows himself to be overcome by any slight opposition, because he feels he is without power to combat it. He neglects social duties, becomes misanthropic, makes easy compromises with his conscience, and gradually falls into a state of even extreme dejection. His nonchalance manifests itself externally in his lack of personal cleanliness. The *reproductive* sense suffers marked impairment, or becomes liable to perversion. In the more pronounced cases the intelligence also suffers. The power of attention is impaired, and memory is weakened and rendered incapable of fixing new impressions, so that the whole field of mental activity is rendered more limited.

This mental and physical decadence is necessarily reflected in the social position of the drunkard. Not uncommonly he is reduced to indigence, obliged to change his occupation from time to time, more or less permanently thrown out of work, or led to vagrancy. Such misfortunes cannot but tend to confirm his drinking habits, in which he finds his one solace, his only source of transitory bliss.

In this soil *systematized delusions* readily spring up. A first sign of delusion is, indeed, present in the abnormal way of regarding things that very frequently characterizes drunkards. Especially in cases in which they are intelligent, and possessed of a certain degree of culture, their habitual state of mind leads them to take a cynical view of the world and of life. The man of letters who drinks makes a show of pessimistic wit at the expense of others and of himself, and looks upon his own misfortune, not as the result of a morbid habit, but as a natural consequence of existing social arrangements, of human moral standards, and of the evil that triumphs in the world.

From pessimism to delusions of persecution the transition is easy. The chronic drinker tends to attribute his unhappy state to the ill-will of others, to injustice, trickery, malevolent attacks, and unfair competition, or he directs his recriminations against members of his family, imagining that he has been ruined by having too many children, or by having a vulgar or unfaithful wife, and that these domestic afflictions have driven him to drink in order that he might forget them.

In these conditions of alcoholic degeneration *delusions of jealousy* are specially common. Perhaps, as a well-known author,

Edmondo de Amicis, has remarked, the sexual impotence that affects many of these chronic drinkers is the foundation of these delusions, which sometimes assume threatening and violent forms.

Hallucinatory Delusions.

The delusions so far considered lie within the limits of probability, and are unaccompanied by other manifestly psychopathic phenomena. It is different, however, as regards certain other delusions that may occur from time to time in the course of chronic alcoholism, and which, on account of their senselessness and the hallucinations that are associated with them, have a more distinctly pathological character. These constitute the *hallucinatory delirium of alcoholics*, in which ideas of persecution and auditory hallucinations predominate. These hallucinations begin for the most part as an exaggeration of the ordinary humming and crackling sounds that are so frequent in the subjects of chronic alcoholism. They very readily, however, take on a verbal character and a threatening significance in the mind of the patient. At first he hears indistinct or meaningless words to which, however, he attaches a delusional significance; then he hears threats, accusations, allusions, wicked insinuations, and expressions of disapproval or of condemnation, which are generally extravagant, contradictory, and incoherent, and therefore incredible. Nevertheless, the patient is rendered frightened and anxious by them, and upon these hallucinations he founds delusions of persecution, still more inconsistent than the hallucinations themselves. The state of excitement, restlessness, and sleeplessness with which the attack usually begins becomes more accentuated, and may lead to the commission of acts of violence or to suicide. The auditory hallucinations are often unilateral. Sometimes they reflect the inner thoughts of the patient, and then there occurs the phenomenon of thinking aloud.

Visual hallucinations are more rare, and are generally limited to photopsia. They may, however, assume a formed character, especially under favourable conditions, as in the dark at night. In this case also they are of a threatening or terrifying nature, as of men in threatening attitudes, beasts, instruments of torture, etc. Strong and persistent hallucinations of smell and of taste sometimes lead to obstinate refusal of food.

If the patient is made to abstain from alcohol, recovery takes place in a relatively short time—that is to say, in a few months at most. There is, however, a great tendency to relapse, and, especially if this occurs, the reintegration of the intelligence is apt not to be complete, and a more or less marked state of confirmed dementia remains.

Alcoholic Pseudo-paralysis.

A form of psychopathy not infrequent in the course of chronic alcoholism, and of very great importance, especially as regards diagnosis, is the so-called pseudo-progressive paralysis. This consists in attacks of mental disorder, beginning as a rule suddenly, with all the signs of progressive paralysis, and including not only the usual psychical disturbances, but also the somatic symptoms. The patients often present the characteristic euphoria, carelessness, paradoxical delusions of grandeur, the known pupillary phenomena, tremors, ataxia, dysgraphia, and dysarthria. The paralytic syndrome may be so clear and complete as to lead to error of diagnosis, and this is all the more apt to occur owing to the fact that the patients often conceal their vicious habit, and not only do not mention it to the doctor, but even deny its existence.

Owing to the circumstance that the relations between progressive paralysis and alcoholism are not yet at all well defined, and as their symptomatological resemblance amounts in certain respects to identity, many authors go so far as to deny the existence of a pseudo-progressive paralysis, maintaining that in these cases we have to deal rather with a true progressive paralysis determined by alcoholism. The fact of the occurrence of pseudo-paralysis as a distinct morbid form becomes, however, more and more firmly established, especially on the ground of the termination of the disease, which, contrary to that of progressive paralysis, is in many cases after a short time entirely favourable. A suitable regimen and the simple fact of confinement in an asylum in the majority of cases determine, by the end of a few months, the amelioration of all the symptoms, and even their more or less complete disappearance. Naturally, as is the case with all forms of psychosis dependent upon alcoholism, the danger of relapse is very great. Régis has described a case in which a patient in the course of twelve years presented the complete picture of progressive paralysis no less than sixteen times, and recovered on each occasion.

Several authors have endeavoured to find differential characters between this form of pseudo-paralysis and true paralysis. The best criteria are, as a matter of fact, those derived from the history of the case, which reveals habitual abuse of alcohol for a prolonged period, and from the course taken by the disease, which in pseudo-paralysis is manifestly regressive instead of progressive.

Statistics regarding the frequency of the various symptoms have brought to light the greater frequency of certain of them in one or the other form of disease. For example, Godet has found

that hallucinations, muscular atrophy, and the reaction of degeneration are more frequent in alcoholism than in progressive paralysis. Beca maintains as characteristic of pseudo-paralysis the sudden beginning, hallucinations, tremors, and disturbances of co-ordination, cutaneous anæsthesia, diarrhœa, rapid wasting, and the greater frequency and less gravity of the apoplectiform seizures.

More important and significant are the facts insisted upon by Fürstner. He holds that the commencement at an advanced age, the rarity of pupillary rigidity, the presence of marked neuritic symptoms, painful points on pressure, localized areas of cutaneous anæsthesia, and other objective disturbances of sensation, and the absence of vesical and rectal disturbances, are in favour of pseudo-paralysis. It is evident, however, that in any individual case a positive diagnosis could never be based upon such criteria, as they concern symptoms that are also not infrequent in cases of progressive paralysis.

As a matter of fact, one can only come to a provisional diagnosis. When there is a clear history of alcoholism ; when one can actually observe neuritic disturbances and tremors of alcoholic type ; and, above all, when the paralytic syndrome is incomplete in respect of the absence of pupillary symptoms, or of dysarthria, or of loss of facial expression, the diagnosis of pseudo-progressive paralysis is very probably correct. It can, however, only be determined definitely in course of time by the regressive course taken by the disease and its favourable termination.

The ascertained absence of syphilis (as, for example, in persons who have never run the risk of contracting it) may be regarded as another element in favour of alcoholic pseudo-paralysis.

Delirium Tremens.

Delirium tremens is the most characteristic psychopathic episode of chronic alcoholism. It has erroneously been regarded as a subacute phenomenon, dependent upon supersaturation with alcohol, as the result of imbibing an unusually large quantity. It very often occurs independently of alcoholic excess, even sometimes arising during a period of abstinence, but it constantly has its foundation in alcoholism.

The symptomatology of delirium tremens corresponds in its general lines to the clinical picture of the acute confusional psychoses—that is to say, of amentia. Meynert actually defines it as an amentia occurring in the course of chronic alcoholism. After a prodromal period in which the patient is uneasy, sleepless, bad-tempered, and depressed, and in which there are also manifested elementary sensory disturbances affecting hearing and

sight (such as crackling and hissing noises in the ears, sparks and flashes before the eyes), the hallucinatory confusional stage begins, marked especially by vivid and characteristic visual hallucinations. The patient sees around him a multitude of figures in constant motion, such as goblins and beasts of various kinds, which clamber up the walls and upon his bed, cover his person, and run about the room in large numbers, whilst he endeavours in vain to send them away or to catch them. The impression that the patient receives from them is disagreeable or actually painful, but sometimes it is pleasant, and provocative of amusement. The patient is very restless, becomes absorbed in his harvest, in his hunting, in his miraculous fishing, or in the sweeping of his bed, which has become the receptacle of the heavenly manna, the theatre of barbaric invasions, or the hatchery of insects. In this hallucinatory state everything gives rise to illusions. Persons beside the patient are transfigured, assuming a threatening or terrifying form, and not infrequently he attempts to use violence against them. Although visual hallucinations always preponderate, auditory hallucinations are not wanting. He hears whistling sounds, yells, senseless or threatening remarks, persons calling him by name, etc. These hallucinations also help to increase his feeling of distress. At this stage the consciousness is a little dulled, the patient is in a dreamy state, and he exhibits a marked degree of disorientation. Sometimes he even loses the idea of his own personality. He is sleepless, restless, anxious, frightened, and exhibits the well-marked and characteristic tremors from which the disease derives its name. He has, however, moments of complete lucidity when the hallucinatory images disappear.

In a still more advanced stage the hallucinatory phenomena and the motor agitation may be increased in their intensity, and accompanied by violent and repeated epileptic convulsions. In this condition elevation of temperature is common, a very high degree of fever sometimes being reached (the febrile delirium tremens of Delasiauve); it may occur only shortly before death, when this takes place as a consequence of repeated convulsions and collapse. The fever is sometimes due to concomitant infections, more especially pneumonia, or to renal complications. In many cases the urine contains albumin, sometimes in considerable quantity.

In the majority of cases the phase just described is not reached, but recovery takes place after a critical sleep, which may last for even thirty or forty hours. Sometimes, after the critical sleep and after some days of tranquillity and lucidity, a second attack of delirium tremens may occur. Relapses in delirium tremens

are at least extremely common ; in some alcoholics twenty or even more attacks have been observed.

After the attack has passed off, a state of general prostration continues for some days, and the visual apparatus is still so excitable that hallucinations can be induced by simple compression of the eyeballs (Liepmann).

Of great importance from the practical standpoint are the many cases in which delirium tremens, instead of assuming its more complete and serious form, is limited to a state of hallucinatory confusion, much more closely resembling that which is seen in ordinary cases of amentia. These mild cases of delirium tremens are, however, at once distinguishable from those of simple amentia by the less marked degree of the confusion and of the disorientation, and by the relative abundance of hallucinations. In some instances the visual hallucinations occur only occasionally, and in the intervals, which may last for several hours, or even for days, the patient is calm and his mind is clear. In other cases auditory hallucinations may be entirely absent, and the visual hallucinations may not assume the characteristic form of a multitude of moving creatures. When this attenuated type of the disease is accompanied by neuritic phenomena, the clinical picture of the so-called *polyneuritic psychosis* of Korsakoff is produced. A similar picture may, however, also be presented in other forms of confusional psychosis.

Pathogenesis.

With regard to the pathogenesis of the nervous and mental disturbances that are observable in alcoholism, it may be said that the single acute intoxication that occurs—namely, drunkenness—is to be regarded as a direct and immediate effect of the alcohol upon the nervous system. In cases of pathological drunkenness there is the co-operation of internal factors, such as nervous degeneration and latent epilepsy.

As for the symptoms of chronic alcoholism, they cannot be attributed to the direct action of alcohol except in part. All of them may be protracted for some time during a period of complete abstinence, and not only in their negative aspect—that is to say, as phenomena of defect—but also as irritative phenomena. It must therefore be the case that alcohol produces unknown general alterations of metabolism, which in their turn produce an effect upon the nervous system. On the other hand, alcohol, just as it affects the nervous system, damages also many other organic structures, including the stomach, liver, and kidneys, the functional operations of which cannot but be reflected upon the nervous system. It is also certain that nervous disturbances are

always more marked in those habitual drunkards whose general nutrition has suffered greatly, as is the case when the gastric, renal, and hepatic functions have been implicated.

This indirect pathogenesis is especially evident in delirium tremens. It is known that an attack may occur during a period of complete abstinence. In some instances, indeed, it is exactly sudden abstinence that would appear to be the sole direct cause of the attack. Drunkards who are incarcerated and suddenly brought under prison regimen readily develop delirium tremens. These facts have, indeed, led some authors to maintain the opinion, certainly extreme and one-sided, that delirium tremens is the result of abstinence in habitual drunkards.

The accurate examination of a very large number of cases has led all authors to recognize the exceptional importance of debilitating conditions as determining causes of the onset of delirium tremens. These consist in many cases of infections, more especially pneumonias, of traumatism, fright, mental strain, adversity, etc. Thus, alcohol simply prepares the soil, weakening the organism, and predisposing it to the influence of various morbid agencies. It is very probable that an alteration of metabolism is induced by the alcohol, and that there is a consequent internal intoxication (Kraepelin).

In regard to this point, the hæmatological observations of Elzholz are of great importance. In cases of delirium tremens he has found a distinct leucocytosis which disappears during convalescence; at this period, indeed, the number of leucocytes falls below the normal. The polymorphonuclear neutrophile leucocytes preponderate over the mononuclear, and the proportion of the two becomes reversed a few days after the critical sleep. The eosinophile cells disappear at the height of the attack, or are greatly diminished in number; they reappear and increase in number during the critical sleep and immediately afterwards, both in cases with fever and in those that are entirely afebrile. These facts prove that some toxic substance other than alcohol comes into play, for alcohol of itself does not determine leucocytosis. Perhaps the toxic substance concerned is one analogous to that produced by the pneumococcus, for in pneumonia the blood changes are very similar. Elzholz recalls the hypothesis of Marmé regarding abstinence from morphia, according to which the distress that results from deprivation is due to oxymorphine, a substance directly antagonistic to morphia (p. 335). Similarly, it is possible that in alcoholism there is produced a toxic substance which is neutralized by alcohol, but which exercises its natural influence during abstention from alcohol. Chronic alcoholism would, upon this view, have a certain measure of justification in

the fatality of this vicious circle between the primary action of alcohol as a toxine and its secondary action as an antitoxine. At the same time, the hypothesis according to which delirium tremens is a result of abstinence would be confirmed. Nevertheless, though it is true that delirium tremens may occur in spite of abstinence, the conclusion that it is caused by abstinence is not admissible. In any case, this hypothesis is not the necessary corollary of the toxic hypothesis based upon the results of hæmatological investigations.

The theory of Hertz is one that is also deserving of consideration. On the ground of the observation of the extraordinary frequency of albuminuria in association with the disease, this writer has maintained that delirium tremens is a result of renal insufficiency—indeed, a symptom of alcoholic nephritis. In cases of delirium tremens associated with pneumonia the impulse is given to the attack, not by the toxins associated with the pneumonia, but by those dependent upon the accompanying nephritis. Now, though it is certain that renal lesions are very frequent in delirium tremens, as they are not constant, and as they are not often observable post-mortem in such a degree as to serve to account for renal insufficiency, it is more probable that the renal lesions are a concomitant effect, an associated morbid change, and not the cause of the attack of delirium tremens.

In conclusion, therefore, it may be said that, as the only well-founded hypothesis is the general one that attributes delirium tremens to a secondary intoxication determined by alcoholism, we are not yet in a position to state what the precise nature of the intoxication is.

Pathological Anatomy.

Included in the pathological anatomy of alcoholism there are alterations that are referable to chronic intoxication, and also others that are connected with the acute and subacute phenomena that present themselves during the last few days of life in cases in which death occurs in an attack of delirium tremens. Death may, of course, also be determined by various intercurrent diseases, the characteristic lesions of which will naturally then be present.

Upon macroscopical examination, the morbid changes of a chronic nature are those that are most conspicuous. When the cranium is opened there may be observed hyperostosis, thinning of the bone, pachymeningitis externa and interna, etc. *Pachymeningitis hæmorrhagica interna* is one of the most common morbid

alterations in inveterate alcoholics. In the brain there may be atheromatous changes in the vessels, meningeal blood-effusion, and in cases of delirium tremens punctiform hæmorrhages. The stomach shows the changes characteristic of chronic gastritis. The heart is often enlarged, dilated, flaccid, and degenerated. The liver shows more or less marked fatty degeneration, and often a considerable degree of atrophic cirrhosis; the spleen is frequently enlarged and hyperæmic; the kidneys show signs of arterio-sclerotic atrophy.

Of more importance are the *cerebral lesions* that can be recognized with the aid of the microscope. Recent investigations, carried out with the aid of greatly improved technique, especially with the methods of Nissl, Marchi, and Weigert, by Trömner, Bonhöffer, E. Meyer, Camia, and others, have brought to light

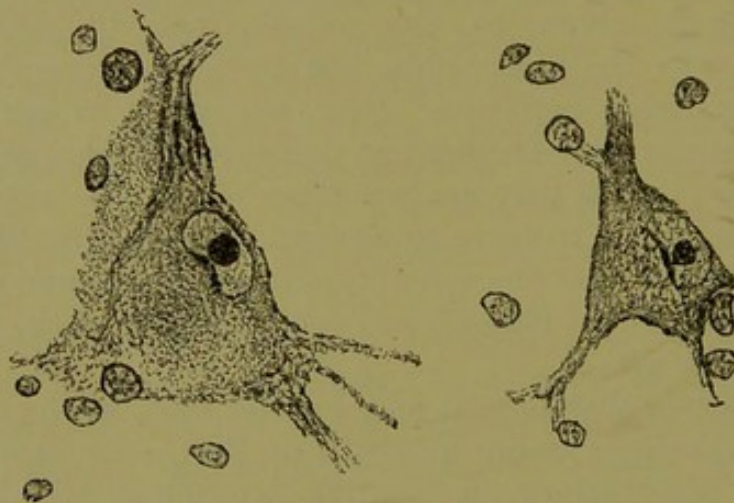


FIG. 63.—LARGE AND MEDIUM PYRAMIDAL CELLS OF THE MOTOR ZONE, SHOWING THE CHANGES CHARACTERISTIC OF REACTION TO A LESION OF THE AXIS-CYLINDER.

From a case of chronic alcoholism. (After M. Camia.)

some new and interesting facts. In the cerebral cortex there may be observed here and there, singly, cells which are more or less atrophic in the midst of normal elements. On the other hand, the acute changes that may be observed in delirium tremens are very widely diffused. In these instances there is a typical acute reaction on the part of the nerve cell, with disintegration and diminution of the chromatic substance, affecting widely all varieties of cortical nervous elements. The large pyramidal cells, and sometimes exclusively the cells of Betz, show in abundance the changes characteristic of reaction to an injury to the axis-cylinder process (Fig. 63). This type of alteration is also met with in other forms of confusional toxic psychosis, as, for example, in pellagra and amentia, but in delirium tremens it is very much more frequent. The same type of change is found also in the

cells of the anterior horns of the spinal cord and in those of the spinal ganglia, in which it is an evidence of polyneuritic lesions. From this it is to be inferred that the same intoxication that injures the peripheral fibres and determines polyneuritis affects also the long fibres of the nervous centres, especially those of the pyramidal system, determining similar lesions in the corresponding centres. The lesions affecting the pyramidal tracts are at least always less severe and less evident than those in the nerves, and sometimes they are not demonstrable by any known method of research. It may be that in these cases only the non-medullated spinal extremities of the pyramidal fibres are injured, and that to such alterations, not demonstrable by present

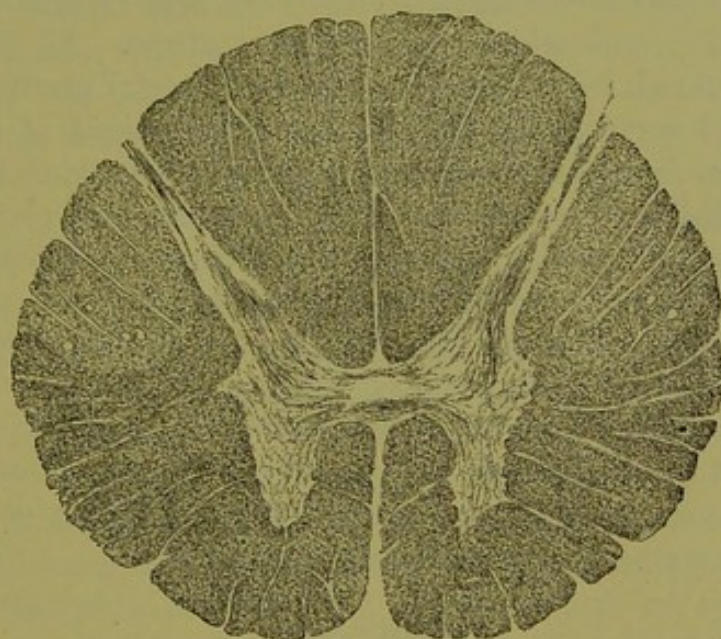


FIG. 64.—DORSAL CORD WITH PARTIAL DEGENERATION OF THE PYRAMIDAL TRACTS IN A CASE OF ALCOHOLISM: WEIGERT'S METHOD.

(From M. Camia.)

methods, the characteristic reactions of the cells are due. In many cases Marchi's method reveals the presence of a small number of degenerated fibres in the corona radiata. It is probable that these fibres correspond to cortical cells that have suffered a change beyond the phase of reaction, a true destructive process. Degenerated fibres are also observable in the white substance of the cerebellum.

Weigert's method for the *neuroglia* in some cases reveals no morbid change in this tissue element; in other cases it shows proliferation of fibres. This increase of neuroglia is to be regarded as evidence of a chronic morbid process in the centres. It is connected more with the chronic phenomena of alcoholism than with the acute phenomena of delirium tremens.

In the *spinal cord* changes affecting the long nerve-fibre tracts

may be entirely wanting, even in cases in which the cerebral cortex shows distinct evidence that the cells of Betz have reacted to a morbid stimulus. A primary lesion of the pyramidal tracts is, however, not infrequent; it may be complicated by diffuse secondary degeneration of fibres, similar to that which may be observed with the aid of the method of Marchi in the corona radiata (Fig. 64). The phenomena of reaction to a lesion of the axis-cylinder, besides being observable in the cells of the anterior horns, may be seen very often in the cells of the column of Clarke. In the posterior columns, and especially in the tract of Goll, systemic degenerations are common; they are, as a rule, present in long-standing cases of alcoholic polyneuritis.

The *peripheral nerves* are frequently the seat of neuritis, which is chiefly or even exclusively parenchymatous. All the nerves may be involved, but the disease shows a special predilection for the peroneal nerve. All the characteristic lesions of the nerve fibre may be observed, from slight periaxial neuritis to the severe forms of Wallerian degeneration dependent upon physiological interruption. There may also be simple primary atrophy of the medullated sheath, the axis-cylinders being preserved. The neuritic process is always more distinct in the small peripheral branches than in the large central trunks.

In the *muscles* there may be observed degenerative lesions secondary to the lesions of the motor fibres. Senator and Siemerling consider that there is also a special form of myositis, primarily determined by the action of the alcohol.

Treatment.

The treatment of alcoholism has as its necessary foundation and chief aim the complete suppression of the habit of drinking alcoholic beverages. In marked contrast to what occurs in the case of other voluntary chronic intoxications—as, for example, in morphinism—the complete suppression of the alcohol does not necessarily give rise to morbid phenomena. In alcoholism there is no characteristic clinical picture produced by abstinence. It appears, however, that in chronic drinkers who are badly nourished sudden abstinence may determine an attack of delirium tremens on the second or third day; but such attacks, which are not liable to be repeated, are of a milder and shorter nature than usual (Bonhöffer).

Likewise, in delirium tremens, in which some clinicians make an exception to the rule, and continue the administration of alcohol in small doses with a view to avoiding collapse, the suppression of alcohol is tolerated in the vast majority of cases without the occurrence of any untoward symptoms. In the

more severe forms of delirium tremens the tendency to collapse is not a greater or more frequent danger than it is in other intoxications, such as those of pellagrous typhoid and severe amentia. It is dependent, not upon the suppression of alcohol, but upon the actual intoxication that has provoked the attack, and upon the nervous exhaustion associated with this attack, and consequent upon agitation or repeated epileptic convulsions, and, moreover, the tendency to collapse can be combated more effectually by means of caffein or of camphor.

Numerous substances have been recommended for the purpose of allaying the intense agitation and the insomnia that occur in cases of delirium tremens. Among the common hypnotics, sulphonal, trional, and paraldehyde are to be preferred. Chloral is less suitable, but is, nevertheless, sometimes given in large doses, with the object of cutting short the attack. For the same purpose there have been suggested methylal by subcutaneous injection in doses of 0.10 gramme every two hours until sleep is produced (Krafft-Ebing), and chloride of ammonia in large doses (Cottam). These energetic and almost violent methods of treatment are certainly efficacious in many cases, but it is doubtful if they are to be preferred to milder methods, more especially in view of the fact that simple expectant treatment and careful supervision, combined with strengthening diet, chiefly of milk, yields, as a rule, the best results. Nevertheless, in cases in which there is great agitation, elevation of temperature, and convulsions, it is well to have recourse to the use of either opium or morphia, administered by the mouth or by injection.

In the period following the attack small doses of strychnine are useful, as they also are in cases of chronic alcoholism.

In order to prevent recurrences, it is well for the patient to remain under treatment until the gastric disturbances have entirely subsided and his nutrition has considerably improved. It is necessary to enjoin upon the patient complete abstinence. To allow even the moderate use of alcoholic beverages is fatal, for it is only too easy to pass from use to abuse, even unconsciously. The aim of the doctor should be to make the drinker become an abstainer. This task is a difficult one in Italy, for the alcoholic cases generally remain in the asylum for only a few days, and as they have to mingle with the other patients, it is difficult to impose habits of total abstinence upon them. Such habits can be cultivated by these patients only in suitable institutions, such as exist in large numbers in some countries. As a means of preventing recurrence and of strengthening resolutions to abstain, Forel, Bonne, and Stegmann have used hypnotism with some success.

Social Prophylaxis.

Alcoholism as a cause of deterioration of the individual and of the race (the offspring of drunkards are not uncommonly affected by idiocy and by congenital epilepsy), and therefore of crime and of poverty, is so great a social evil that it has called forth legislative enactments as well as a continuous and increasingly vigorous campaign of anti-alcoholic propaganda.

Legislative measures are of little use. Penal restraints have but slight effect upon persons who are morally deteriorated, lacking in moral inhibition, and brutalized by vice. Moreover, such laws are almost always applied in a very lax way. For example, in Italy Article 488 of the Penal Code prescribes punishment for drunkenness only when the offence is committed in some public place ; but the law, limited as it thus is, is never applied. Other legislative measures aim at restraining the consumption of alcohol by putting high taxes upon its production, by permitting its sale only under a licence, and by restricting the quantity sold. In some States it is forbidden to drink alcoholic beverages in the place in which they are sold. These provisions have yielded very good fiscal results, but they have not prevented the increase of alcoholism. It cannot, however, be excluded that without them the increase would, perhaps, have been even greater.

Of greater efficacy has been the action of temperance societies, which, by means of literature and public meetings, and also by securing material advantages to abstainers (in America some of the insurance companies allow a remission of 10 per cent. to abstainers), have succeeded in restricting the consumption of alcohol, and—of even more importance—in forming strong nuclei of abstainers who silently spread the healthy contagion of good example. The action of temperance societies appears to have been particularly successful in Norway and Sweden, where these societies monopolize the market for alcoholic drinks, but, as a counter-attraction to these, supply hygienic drinks at a moderate price. In these countries the purchasers of alcoholic beverages are forbidden to consume them on the premises, whilst the purchasers of the temperance beverages are allowed the use of large and commodious buildings, rooms in which they may converse with their friends, and reading-rooms, and they are also allowed credit. As a result of this active anti-alcoholic propaganda the annual consumption of alcohol in Sweden has fallen from 6.2 litres per head (1876) to 3.5 litres (1896), and in Norway from 3.4 litres to 1.5 litres.

At the same time it can hardly be hoped that by means of

these measures, extremely praiseworthy and deserving of the highest encouragement as they are, we can succeed in healing the sore of alcoholism. Alcoholism has deep social roots in the low tone of life among the working classes, and in the ever-increasing demand that is made upon human energies by the modern industrial struggle. Only progressive reform in the organization of industrial production and of society in general, combined in an effort for the progressive elevation of the working classes, can lead towards the attainment of the desired end.

When the demands of labour become less imperious, and the workman has time to educate and instruct himself, to attend to public interests, and to cultivate high ideals, the tendency to alcoholism will diminish spontaneously, and will manifest itself only in a few neuropathics afflicted by a constitutional predisposition.

MORPHINISM.

Forty years ago there were no morphinomaniacs, but only opium-eaters. These include European and American opium-eaters, or drinkers of laudanum, and Chinese opium-eaters, or opium-smokers. Morphinomania is a modern disease which made its appearance when the subcutaneous injection of morphia was introduced into therapeutics. Doctors at first administered morphia without hesitation, not knowing or suspecting that there was danger of the patient coming to form a habit. The first cases of morphinism were described, not as examples of poisoning, but as furnishing remarkable evidence of tolerance of large doses of morphia, such as a gramme or more per day. Nowadays the syringe of Pravaz is to be found everywhere. Persons who have formed the morphia habit use it themselves with perfect knowledge of asepsis, and thus morphinism has become common. Even in the classical land of opium-eaters—in China—morphinism is now spreading, being more rapid and also more economical, as the Turkish pipe, or *narghili*, can be smoked only in the house, and with the subject lying down. In Hong-Kong there are special booths at which a person can call and receive an injection of morphia for a penny. There is, however, no great difference between the clinical facts of morphinism and those of opium-eating.

Pathogenesis.

One centigramme ($\frac{1}{6}$ grain) of hydrochlorate or sulphate of morphia injected under the skin is sufficient to produce in a person not habituated to the drug a profound and characteristic feeling of well-being. The word *euphoria* was appropriately

coined by Laehr in 1871, or, more correctly, by Levinstein in 1875, to indicate this marvellous sense of *bien-être* experienced by a person who has received such an injection of a centigramme of morphia. This feeling of well-being is derived from an active, but slight, general and harmonious excitement of cœnesthesia and of all the conscious functions, to which there is added complete and immediate suspension of any suffering that may have been present. For example, the tortures of peritonitis cease, being replaced by pleasing illusions; the pain of polyarthrititis is soothed, so that the affected limb can be moved without much suffering; neuralgia—at least, in some of its forms and in certain persons—is arrested as if by a charm. The feeling of well-being given by morphia penetrates every fibre of the organism, filling it with pleasurable sensations, and transporting the mind into a land of dreams—not clouding it, however, as in the foolish euphoria of paralytics, the unseemly mirth of drunkards, or the restless and noisy excitement of maniacs.

This form of transient happiness, unaccompanied by clouding of the mind, requires for its production a tolerant constitution. Even in this case, however, it is experienced fully only by occasional takers of morphia and by those who take it for the first time. Intolerance is very common, manifesting itself by nausea, vomiting, giddiness, lipothymia, and drowsiness. These, however, are quickly followed by sleep, from which the patient awakes completely recovered. Inveterate morphinists are, on the other hand, comparable to sailors, who, either from congenital resistiveness or from habit, do not suffer from sea-sickness. In exchange for this immediate and admonitory intolerance, however, they experience, when the period of euphoria lasting for an hour, or even less, has passed, the most profound feeling of ill-being, a desperate abandon, a distress unknown to beginners, which, unfortunately, can be ended only by recourse to another injection. Moreover, each new injection must be larger or more quickly repeated than the preceding one in order to give the desired effect. Thus a vicious circle is established, which gives morphinism the character of a fatally progressive habit. The feeling of ill-being to which the victim of morphinism is subject when not under the influence of the drug can be relieved only by morphia, and thus it becomes *morphia thirst*, *morphia hunger*, *enforced abstinence from morphia*, *amorphinism*, and *morphio-mania*. These terrible names, significant of impellent necessity, dominant obsession, and uncontrollable impulse, plainly tell of the painful conflict of the patients, who find in morphia at the same time the cause and the remedy of their disease, but in fuller measure its cause than its remedy.

The victims of the morphia habit are, indeed, dominated not so much by a desire to enjoy morphinic intoxication as by a need of relief from the distress of amorphinism. They experience a progressive weakening of the direct and pleasing action of the drug, so that they are obliged to increase the dose, from which, in course of time, though they still obtain relief, they derive no positive enjoyment. On the other hand, the distress of amorphinism, instead of diminishing, always continues to increase. It would appear that morphia, when taken in more than small doses, or when successive doses accumulate, gives rise to a secondary intoxication through its transformation into *oxymorphine* (Marmé). Of this secondary poison morphia is at once the source and the antidote. Whilst, however, the organism is able to become habituated fairly well to the primary effects of morphine, it is incapable of becoming in a similar way tolerant of oxymorphine. The potency of morphine as an antidote progressively decreases, but its power to produce the real and active poison remains the same. By pushing the remedy one can therefore only aggravate the disorder. This, indeed, independently of the chemical interpretation of it given by Marmé, is the central fact regarding morphinism and its symptomatology.

Symptoms.

Apart from the periodic crises of amorphinism and the inebriation of gratified morphinism, morphinic intoxication gives rise, after a long period, to a series of slow organic changes which end in a form of cachexia. Thus, to the various clinical pictures and incidents of morphinism there is added a final state which tends to be constant in character, and which ends by overshadowing the others. The complex symptomatology of this intoxication is therefore capable of being subdivided as follows :

1. *Morphinic Intolerance*.—The symptoms are of short duration, of little importance, and manifested especially by persons unaccustomed to morphia. Half an hour after the injection there is nausea, giddiness, vomiting, and drowsiness ; in exceptional cases there are dyschromatopsia, hallucinations, and delirium (*morbid intolerance*). After a few hours, or even a shorter time, a long reparative sleep occurs, from which the patient awakes in his normal state, without any after-effects, and without the least indication of renewed morphinic thirst. Patients suffering from some severe illness are not so intolerant as those in health, and are even capable of receiving benefit such as is denied to the mere seeker after new sensations. Children are much more intolerant than adults, independently of the body-weight.

2. *Morphinic Euphoria*.—This is ephemeral, and in those habituated to morphia only slightly marked. It develops quickly—within one or two minutes after each injection—and is the most characteristic, though not the most important, reaction to morphia on the part of all those who do not manifest intolerance to the drug. The doors are closed to sensations of a painful or annoying character, especially to those that constitute the morphinic thirst, and the subject forgets every trouble. The limbs feel lighter, a pleasant sense of warmth rises to the head, the body is suffused by a feeling of ease, all sense of effort or of fatigue vanishes. The creation and elaboration of ideas occurs more brightly and quickly, and without any trouble. Distant relations of things are grasped, mental and physical work is carried out with greater spirit, and the person can write, speak, and debate without rest (Morselli). This *bien-être* is more intense in those to whom morphia intoxication is a new experience. In those who are habituated to the drug it approaches (at least subjectively) to the colourless mediocrity of ordinary conditions.

3. *Amorphinism (Oxymorphinism?)*.—This is painful, prolonged, and intractable to any other measure than that of giving morphia. The life of the habitual morphinist is a perpetual alternation of two opposite states—a condition of euphoria which ever becomes weaker, and an amorphinic depression which becomes more and more pronounced. The desire for morphia becomes so imperious that it assumes the character of an *uncontrollable obsession*, which sometimes leads, like all obsessions, to disproportionate and even violent reactions. In certain very severe cases there are outbursts of excitement, or *delirium tremens*, analogous to that associated with alcoholism (Levinstein). Among less severe cases one meets with morphinomaniacs on behalf of whom it is necessary, and for the moment sufficient, to have resort to simple puncture or injection of pure water, which act as voluntary illusions, or even as deceptions of which the patient is ignorant, so powerfully obsessive is the imagined effect of the injection with all its details. Further, during the state of amorphinism the patients are tormented not merely by a psychical thirst or craving for morphia, but also by a number of material troubles and objective discomforts, such as nausea, vertigo, gastralgia, irritability, impulsiveness, and sometimes also by convulsions, delusions, blindness, hallucinations, drowsiness, cold sweats, irregularity of pulse, tendency to collapse, albuminuria, and glycosuria. The culminating symptom of amorphinism is, however, perversion of the will, which becomes reduced to a condition of *monobulia*, or of *morphinomania*. The

monobulia of the morphinist in the state of amorphinism is associated with blunting of the moral sense, loss of dignity, and impairment of intelligence, and prepares the way for the regrets, remorse, and fears that will embitter the period of satisfaction. The morphinomaniac, confined in an asylum, or compelled to lead a life of solitude or of misery, will descend to any meanness in his effort to procure morphia. Cases have been recorded of men having recourse to fraud, theft, and violence, and of women prostituting themselves, in order to obtain the drug. It is common for morphinists to be untruthful in their statements as to the doses they take and the frequency of the injections.

4. *Morphinic Cachexia*.—This is permanent and progressive, but slow in developing. Owing to their tendency to become fixed, its symptoms gradually overshadow those of the preceding types, being superimposed upon one or other of the various forms of crises, obscuring their characters and destroying their acute antagonism. The morphinist, loaded with poison that has long been accumulating, becomes terribly emaciated. His skin is a mosaic of the marks of old punctures and abscesses. Sometimes erysipelas occurs. The patient looks extremely decrepit. Sensibility becomes blunter, and the intellectual field more limited; the patient resigns himself to his fate. Sometimes also amnesias, hallucinations, and delusions occur, profoundly altering the intelligence. Whilst, on the one hand, the patients no longer experience the acute misery of the initial intolerance, or the indescribable sense of ill-being associated with amorphinism, because they do not hesitate to counteract it promptly by large injections of morphia (and they now employ all their remaining intelligence in compassing their object of obtaining it), on the other hand, they no longer enjoy the voluptuousness of the euphoria, the awakening of which would require still larger doses. In the terminal period of the cachexia the state of mind is always one of depression; muscular cramps and convulsions are frequent; myosis is constantly present; the patellar reflexes become clonic; the pulse is small and irregular; the temperature low. Sometimes the patients suffer from diarrhoea, oculo-nasal catarrh, dental disorders, oedema, and hæmorrhage from the nose, mouth, or uterus.

Often the sexual excitability, which is diminished in chronic morphinism, is unexpectedly roused during the terminal stage, giving rise, as in senile dementia, to voluptuous dreams, priapism, and sexual perversions.

Death occurs generally from marasmus, sometimes from paralysis of the respiratory centres; in other cases from acute poisoning, either involuntary, in part voluntary, or actually

deliberate as the result of the injection of an unusually large dose of morphia. Often it occurs in consequence of morbid complications, which tend the more readily to occur on account of the debility of the patient. Among these complications purulent infection is to be mentioned.

Causes.

There are morphinists who may be said to have become addicted to their vice in consequence of an ambition to maintain a place in the *smart set* of society. They have succumbed to it owing to an irresistible attraction towards stimulants in general, and especially towards those that are costly, fashionable, and romantic. They are led away by a longing for a life of sensation and intense excitement, by an unbridled desire to outshine others, and by an ambition to display a keener sensibility, a more refined intellectuality, and a more restless activity than those exhibited spontaneously by steady, intelligent, and healthy-minded people. The motive of these morphinists belonging to the smart set is therefore snobbishness or vanity. In the great majority of cases, however, morphinism has a different origin. Persons who suffer from painful chronic diseases, such as tabes or subacute and periodic neuralgias, may become morphinists from necessity, and afterwards continue to use morphia for their own gratification. Some persons become morphinists as a result of neurasthenia, having been led to the abuse of morphia through the failure of all remedies. Some become morphinists through imitation. These are generally weak persons who happen to be associated with morphinists—as, for example, the wives and the patients of medical men who have contracted the habit. Doctors themselves, who are exposed, especially in the country, to extreme fatigue, and who are able to procure morphia easily, always head the list in statistics of morphinism. In the view of the public morphinism is not so discreditable as alcoholism, and it finds its victims in a higher class in society. On the one hand, the motive for morphinism is not so low as that for alcoholism, and sometimes, indeed, the contraction of the habit is pardonable. On the other hand, the consequences of morphinism are more dramatic and more interesting, because the morphinist has the consciousness and the horror of his own misfortune.

Treatment.

The treatment of morphinism is twofold; in the first place, recourse is had to innocuous substitutes for morphia, especially to cardiac tonics (Jennings), and, in the second place, to systematic breaking of the habit.

There are three recognized methods of breaking the habit :

1. *The Abrupt Method.*—This method is cruel, for it aggravates the sufferings of morphinism to an extreme degree. It is also dangerous, for the sudden deprivation of morphia may lead to collapse. It ought not to be adopted except under very exceptional circumstances, as in the case of physically strong subjects in whom the morphia habit is but slightly developed, and who are accustomed to only comparatively insignificant doses.

2. *The Slow Method.*—This, just because of its slowness, is uncertain and subject to unforeseen dangers. It is only advisable in the case of weak and cachectic patients and of those who, if deprived of morphia, would be left at the mercy of painful physical maladies, such as tabes dorsalis, cerebral tumours, progressive new growths of the stomach, etc. Indeed, if these maladies are very painful, if death is inevitable, and especially if it cannot be long delayed, the case is one in which no attempt need be made to lessen the dose. The method is applicable to morphinists of old standing who are much run down. The dose of morphia should be reduced daily by from 2 to 3 centigrammes or a little more. The real difficulties of this method only commence when the very small dose of 10 centigrammes per day is attained. Sometimes zero is reached, but one is obliged to give the drug again.

3. *The Rapid Method.*—This consists in gradually reducing the dose of morphia from day to day, starting from the largest dose to which the patient has habituated himself. This graduated method leads certainly and safely to the complete suppression of the use of morphia in from five to six days, or in ten days if the habitual dose was $1\frac{1}{2}$ or 2 grammes. It was originated by Erlenmeyer, who has employed it extensively in his sanatorium. The suppression of morphia does not, however, imply that a cure has been effected ; in order that the deprivation of it may be tolerable and lasting, a period of confirmation is required.

The treatment of morphinism requires on the part of the doctor firmness, authority, and self-denial, and constant supervision by properly instructed attendants who are incapable of being bribed, and who are well paid. For these reasons the treatment is hardly possible excepting in well-organized, special sanatoria, such as that of Erlenmeyer. Morphinomaniacs are surprisingly prone to rebellion, calumny, fraud, and falsehood in order to obtain the forbidden morphine, to conceal the fact that they have procured it, or to find means of escape from a treatment that is irksome to them. Some patients, understanding the method of rapidly breaking the habit, state as the amount of their habitual dose one that is much larger than is actually the case, in order that they may be the longer in reaching the stage of complete deprivation,

and in this way they gain one day of indulgence with medical consent. The procedure of Erlenmeyer is as follows :

Method of Rapid Deprivation.

Habitual Dose.	10 to 30 Cg.	30 to 40 Cg.	40 to 50 Cg.	50 Cg. to 1 Gr.	1 to 2 Gr.
1st day ..	8	15	25	30 Cg.	50 Cg.
2nd „ ..	6	12	15	20	30
3rd „ ..	5	10	12	15	20
4th „ ..	3	6	7	12	15
5th „ ..	2	4	4	8	10
6th „ ..	1	3	3	6	6
7th „ ..		2	2	4	3
8th „ ..		1	1	2	2
9th „ ..				1	1

4. *Substitutionary Method.*—This method, recommended by Obersteiner, is merely a complement of gradual demorphinization. It must not be confounded with the empirical and imprudent substitution for morphia of another poison, such as chloral, alcohol, or cocaine. In order to render the state of amorphinism endurable, Obersteiner, who employs the method of rapid weaning, does, indeed, give *cocaine*, but always by the mouth, and only at times of extreme agitation. The dose of morphia is gradually diminished, and to begin with never exceeds half a gramme ; it should be decreased each day. This treatment is combined with that by means of warm baths, which are much more efficacious and less dangerous. Patients in a state of amorphinic distress are kept for five, ten, or fifteen minutes in water at a temperature of 36° C., and are then given a cold affusion, or are enveloped in a bath-sheet for one or two hours.

More complete and effective, and not so intolerable for the patient, is the method which consists in the employment of various known tonics with the object of counteracting the subjective and objective inconveniences of amorphinism. Thus digitalis and spartein obviate collapse, and in order to judge when it is advisable to give them the condition of the pulse should be carefully watched. Sometimes recourse is had to trinitrine (a few drops of a solution being placed on the tip of the tongue), or the patient is made to inhale pyridin. Mattison gives sodium bromide, codeine, and trional. Bernabei recommends duboisin.

The most efficacious and rational method of relieving the sufferings resulting from abstention is, however, that of treating the patients with alkaline waters. As has been proved by Conrad Alt, morphine injected hypodermically is excreted by way of the stomach. Hitzig, after washing out the stomach, found that there was an excessive acidity of the gastric juice, to which the nausea, vomiting, and many of the most disagreeable phe-

nomena of amorphinism are to be attributed. The establishment of these facts has led to the employment of the method of *chemical demorphinization* suggested by Hitzig, and largely used by Erlenmeyer. The most suitable mineral water is that of Vichy.

Also to be borne in mind is the possibility of having resort to *psycho-therapeutic measures*, mainly of the nature of hypnotic suggestion, and constituting a sort of moral demorphinization. I have applied this method of treatment with success, obtaining a radical cure in a few days, but only by gradual steps, care having been taken to avoid any attempt to combat the morphinomania too directly. For the achievement of success it is necessary to have complete hypnosis with subsequent amnesia, and it does not matter whether the hypnosis is spontaneous or commanded. When the hypnosis is complete, and only then, the suggestions are entirely efficacious, even though bold in nature, and carried beyond the field of the voluntary functions. The hypnotist can successfully command hunger, sleep at a definite time, courage, good temper, a desire to work, strengthening of general sensibility, etc., and can thus prepare the way for the spontaneous abandonment of morphia, from comparative lack of desire for it, or from actual repugnance to it, without exposing the patient to the sufferings of amorphinism, or to the risk of sudden and imperative contra-suggestion, which, not proving efficacious, would prejudice the treatment. Indeed, if the hypnotist violently opposes the will, instincts, or habits of the patient, he quickly loses his respect and sympathy. Unless these conditions are fulfilled, suggestion loses its efficacy, and in course of time it becomes impossible to induce hypnotic sleep.

COCAINISM.

In 1880 Berkley suggested cocaine as a substitute for morphia, and hence as a remedy for morphinism. Cocainism then took origin, and immediately became widely diffused, but always as an accompaniment of and sequel to morphinism, of which it is the shadow and attendant.

The effects of cocainism are more profound and rapid than those of morphinism, but otherwise very similar. Apart from its greater gravity, cocainism presents nothing that is characteristic beyond some accessory features of a sinister nature. The period of euphoria is brief and only slightly felt; dysæsthesias and hallucinations are frequent; there is extreme restlessness, accompanied by irritability, and ultimately the occurrence of delusions. The victim of the cocaine habit imagines he is being followed, creates scenes in the street, indignantly asks why his individual liberty is

not respected, and readily flies into a passion. Rodet has given an account of the case of a medical morphinist who, having acquired the cocaine habit, became whimsical, pedantic, quarrelsome, and disagreeable. "He gave explanations regarding his requests for salary in endless letters ; in examining his patients he kept multiplying and confusing his questions, repeating them many times ; he forgot his prescriptions the day after they were given ; he did not remember appointments made with patients, and used abusive language to them when they appeared at his house. He disputed their statements, and would not believe in their complaints. He ended in having to be dealt with as mentally unsound, and in being confined in an asylum."

The victim of the cocaine habit, like the simple morphinist, but still more commonly, suffers an ethical involution. He becomes disagreeable, deceitful, and calumniatory. His delusions readily assume the form of those of active persecution.

As far as one can distinguish between the effects of two poisons which act at the same time, or almost so, it appears that the phenomena dependent upon abstinence are less painful in cocainism, and that they may, indeed, be entirely absent. In other words, *acocainism* is less distressing than amorphinism, but the advantage is mainly seeming, for the obsession that compels the renewal of the injection is no less imperious. In cocainomania there is, indeed, a character of impulsiveness that renders it brutal, dangerous, and irresistible, and all the more so since the craving cannot be satisfied even momentarily by injections of morphia only.

The weaning of a morphinist who is in addition a victim of the cocaine habit is therefore an arduous task, and one that cannot be accomplished by means of the simple methods that have been found to suffice in cases of uncomplicated morphinism.

CHAPTER XII

AMENTIA

THE names *amentia* (Meynert), *sensorial delirium*, *confusional insanity*, *Wahnsinn*, and *Verwirrtheit* are applied to an acute psychosis, not in every case febrile, of varied origin, and characterized by a kind of mental ataxia, which causes disorder of the processes of perception and ideation, and which in some instances suspends them completely, leading to unconsciousness. The disease attacks young persons of normal mental development, and ends its short course generally in complete recovery, but also not uncommonly in death.

The causes of amentia are to be traced to organic disturbances, which are sometimes severe and evident, sometimes slight and obscure, and which are certainly very various in their nature and in their seat; in many instances the condition is simply the psychopathological remnant of well-known infections. On account of this multiplicity of origin, some are inclined to regard amentia, not as a distinct disease, but merely as a syndrome. Nevertheless, the various somatic disturbances that are capable of constituting the immediate or remote factors in the causation of the amential syndrome determine its development only when they unite in common action, which is exerted chiefly upon the perceptive and associative functions of the brain, and which is marked by the uniformity of its psychical effects in each case. Although this action occurs in the course of infections and intoxications of the most diverse nature and intensity, it would appear to be a similar and constant pathological process. In the absence of evidence to the contrary, it may be regarded as the immediate and sole cause of amentia. Amentia, therefore, remains as something that is distinct, even from the point of view of pathogenesis, and the uniformity, not of its causes, but of the mode of action of these causes, is in harmony with the undeniable unity of its clinical manifestations.

The limits of amentia were at one time very much narrower than they are at present. Its violent forms were looked upon as

cases of acute mania. Its less-marked and semi-lucid forms, in which almost coherent delusions may become systematized, were, and still are, interpreted, though not by all, as a curable variety of acute paranoia, or as delusional episodes in the chequered life of degenerates. Further, the fatal cases of amentia used to be, and still are, placed in a separate category, and regarded as a special disease under the name *acute delirium*. The old alienists called these forms "febrile mania" and "typho-mania," and this they did without taking into account the cases of so-called *delirium of collapse*, which Kraepelin has separated from acute delirium, but which are capable of being regarded as a rapidly developing variety of amentia of grave prognosis. These clinical pictures can readily be grouped together, because, no matter how they begin and how they terminate, they are characterized by a group of essential symptoms that are not to be seen in other psychoses, and which may be summed up as consisting in a dream-like state of semiconsciousness followed by amnesia, without periodicity, and ending in recovery or in death within a brief period.

Symptoms.

Amentia manifests itself both by psychical symptoms and by somatic symptoms. Among the psychical symptoms, which are the most characteristic, *disorientation* is by far the most prominent. This disorientation is oppressive, and often complete, concerning both place and time, persons and things. The patients do not know where they are; they are unable to distinguish summer from winter, or day from night; they fear that their nearest friends are dead; they think that the doctor is God, the Devil, or the Commander of the Fleet; they are unable to recognize common objects; they urinate in a glass; try to comb their hair with a piece of soap; mistake the window for a cupboard; and even at times lose the idea of their own individuality.

A feeling of uncertainty and impotence is the ordinary result of this bewilderment, which is therefore marked off from the placid disorientation of senile dementia. Whilst the senile dement is subject to interruptions and partial errors of perception or of memory, which in some instances he is able to conceal, but which at least neither cause him distress nor discourage him to any great extent, the sufferer from amentia is often dismayed and terrified, seeks for help, calls out or threatens, and derives no light from his personal experience, which, indeed, has ceased to be of assistance to him.

His perceptions are in large measure altered, or even inhibited,

by internal stimuli. The few normal and associative mental images that remain are mixed up with *hallucinations*, which render them incapable of being utilized. The world is seen by the ament as in a confused and distressing dream ; in the corridors of the asylum resound the musical steps of the attendants ; in the garden the rustle of the leaves is mistaken for the sound of voices ; from the painted walls of the room living flowers appear to burst forth, and on the dimly lighted ceiling there throng inverted armies of pygmies, giants, monsters, gendarmes, etc. His visions change like the pictures thrown by a magic lantern : the tribunal, the gallows, the lady of the wood, goblins, the gems of the cave, the harem, horrible insects, Beduins, Jesuits, anti-Jesuits, etc., pass before the unbridled imagination of the horror-struck patient. In one case a patient suffering from amentia refrained from giving alms from fear of distributing poison ; he dreaded to hoe the ground because he thought he might rend the breast of the Madonna. When he threw a bait into the river in fishing for *broccoli*, he imagined he saw his children being drawn up from the bottom of the water and their bloody viscera floating on the surface.

The hallucinations of aments are of various kinds, and incessant. They affect all the senses, but especially vision and hearing. The patients open wide their eyes, shut them forcibly and quickly, listen intently, become agitated, hear invisible persons, gaze into the distance, sing, declaim, rail, pray in a sepulchral voice, whisper amorous words, etc. To the symphony of the hallucinations there is added the dance of the mental images. German psychiatry has applied to this strictly amential symptom the apt expression *Ideenflucht*. From the cornucopia of the imagination there are poured out in confusion alliterations, rhymes, obsolete and inappropriate expressions, fragments of polite observations, stupid comments, and absurdities of every kind. Verbal associations by sound, by mnemonic automatism, by contiguity of space and of time, meeting with no inhibition, overcome every effort at logical continuity of thought, and impel the patients to mere empty talk (vaniloquy).

"What is it ? Who is there ? H'm !" (The patient sits upon the bed and stares at a dark corner of the room.) "The gods in prison ! There are gods down there ! They have their feet in space. What is it they say ?" (as if he heard with difficulty a voice in the distance). "A hippopotamus' skin for the Czarina ? Go and be a nun ! Go and be a monk ! What soldiers ? You have seen in me a mystical conscience that was not too nice. My wife" (the patient is not married) "is treated like a slave, or rather like a Triton. The silent powers have seized this document. You have filled up the space ; she has squandered her . . . her . . . money. They have squandered your money" (as if speaking to a person close at hand). "But you have some appearance—

you have some appearance . . . it is unworthy! They have gone some distance. I tell you in silence that it is necessary not to undo distances; it is necessary to hold on to them by rings or large spheres. Run to the celestial spheres. That man there had poison. I wish" (turning to the attendant) "to speak to you about important matters: I wish to marry my sister—that is to say, I wish to make her complete. If I make a letter with a badly formed turn, I am not pleased, but it has expression—yes, it has much expression. The force of the stars must be prohibited. Jehovah! Respect the stars! Respect others! That makes a train again. The Italians and then this point. That resembles the base like a hole in a hole. Don't be silly! If I hear some bad tastes?" (as if listening at the telephone). "Yes, a little. It is some poison. The doctor also has seen it with me, so go away. In rhythm all the small actions are seen, with little tension, without development. I, the fulness, wish it full. There is a train drawn by insects. I have three giant lovers. They are Neptunes in size. They are meridians of the earth, blondes with electrical eyes and sides of rock-crystal, many-sided, revolving systems. . . ."

The senselessness of the talk of aments is increased at times by *disintegration of words*. Not only is there disorder of the relations between the various cortical centres, but also of those between the various syllabic images located in the third frontal convolution. Often the patients whisper as if they were in church, or as if taking part in an amorous conversation, or surrounded by hidden enemies.

Their whispering is accompanied by expressive movements and by excited gesticulations. Aments spring out of bed in their shirts, as if the bedclothes were on fire; they rush to the window to save themselves; they kneel down, imploring pity; they remain absorbed and motionless with mystic gaze. They refuse to eat, having been seized by a sudden aversion to the food, which, perhaps, they believe to be poisoned. They speak in foreign languages, or in corrupt Latin; they move their lips rapidly without making a sound, imagining that they are speaking; they sing, or pretend to sing, at the top of their voice; they declaim; they rush at the stranger who enters their room, or they mistake him for a protector, and embrace him affectionately; they hesitatingly call him by name, or invite him to supper.

The agitation of aments is purposeless, or at most defensive. When it is not inspired by terror it is the product of internal stimuli. Therefore it is not to be confounded with the agitation of maniacs, which is offensive although ephemeral, and induced by anger or by a sense of superiority. From this point of view aments and maniacs, although they often behave in almost the same manner, are psychologically very different, and it does not require any very great degree of penetration to recognize this fact. In aments the motives for action always arise from within, and are imaginary; in maniacs, even though the patient is exasperated,

they arise from the exterior, and assume at least the appearance of rationality. The ament is quite incapable of passive attention, and is absorbed in vain efforts of active attention. He sees and hears nothing, and the events that occur in his presence do not modify his state of mind, or make any impression upon his memory. The maniac, on the other hand, is an extremely delicate seismograph that registers even the movement of a fly. His passive attention is so sensitive and prompt that it suggests to him pointed observations and quick reactions that are not absurd, and from time to time it is not impossible for him to make a short but successful effort of active attention.

There is, therefore, rather than a simple difference, a true antagonism between the condition of agitated aments and that of maniacs which enables us to separate the one from the other. The ament is entirely concentrated, or rather lost, in himself; the maniac lavishes himself, and not by chance, upon things external. The one is contradictory and enigmatical; the other is even too logical and transparent. This distinction is not superfluous, for it justifies the modern allocation of agitated patients in the nosological categories, on the one hand in the *large amentia group*, which includes the greater number, and on the other hand in the *small mania group*, which comprises only a very few. Moreover, in these two separate assignments a prognostic conception is involved. We have already seen that amentia rarely recurs, and that it is generally recovered from, although it is a danger to life; we shall see that mania is equally recoverable, but it frequently recurs, although at long intervals, and it is in no way dangerous to life.

Only some aments are agitated. A considerable proportion of them show, along with immobility, the most complete emotional indifference; these are the cases of *amentia attonita*. The indifference of these patients is secondary, for it is dependent upon suspension of the processes of perception and representation. In these patients the actual images are so deformed, and the mental images are so contradictory, that they are cut off reciprocally, and suggest nothing. Feeling remains starved for want of food—that is to say, from lack of images and ideas; the will is paralyzed from want of motives. The patient therefore falls into a state of *stupor*, but into an inactive stupor, without emotions and without memory, and especially without katatonic manifestations, for katatonia is a mistaken and stolid, but energetic and tenacious, initiative, which testifies to the existence of a certain amount of consciousness. Nevertheless, *amentia attonita* is difficult to distinguish from the attacks of stupor with which dementia præcox begins, or which are interpolated in its course. In many instances

the distinction is made, not from any distinctive characters of the symptoms, but from the evidence of a somatic cause, which is in favour of an amential process. In other instances, the diagnosis is only arrived at when the morbid process has terminated, and when the return of energy, the stability of the recovery, and the consciousness that the patient possesses of a profound difference between his actual state and his state during his illness, make it certain that he suffered from an accidental amentia.

In these cases of passive stupor the patients are rarely analgesic, but pricking of the skin arouses only automatic reflexes. In some instances the immobility can be overcome by a command, by mild insistence, or by slight mechanical pressure that acts as a supplementary stimulus, and makes up for the insufficiency of the impulse from the will. In this way the patients, partly on their own initiative and partly through obedience, will walk, but without object, and will eat, but without concerning themselves as to what they take.

Between cases of agitation and those of stupor there are others presenting an intermediate degree of amential inactivity with simple dulling of consciousness.

"What are you called?" "By name?" (The patient is a peasant, thirty-four years of age, the father of a family.) "Yes, by name." "Masetti Angiolo." "Where do you come from?" "From Stia—indeed, from the town. I was a scavenger." "Why did they bring you to the asylum?" "Yes, sir, because I was ill. . . . Then I got a blow on the head" (this is not true) . . . "and a doctor told me that my head was hurt." "Are you content to stay here?" "What do you want? Not so much. . . . I see very many people I don't know." "Then what ought we to do with you?" "I rely upon you; do as you wish; I will be glad to go out." "Whom have you at home to help you?" "At home I have my wife, a son called Peter, one called Beppe, and a little girl who is ill." "What is the matter with your little girl?" "She has been ill for some time; she wished to go to work; I don't remember whether or not. I feel confused." "What place is this?" "I don't know." "What place do you think it is?" "I cannot reply to these questions, because I do not understand them." "Does it seem to you a church, a school, a hospital, or barracks?" "I can tell. . . . It seems to me . . . that there are some pretty views . . . but I am not able to think; I do not know how to decide." "What do you think of these people?" (the patients). "I? . . . standing here and there . . . to me they seem . . . they never keep still; they gaze at me; they look at me as if they meant to harm me; they seem to dislike me, up and down; they have confused me." "Do you sleep well at night?" "Little." "Why?" "I hear voices. I hear them laughing at me and spitting. They seem to be speaking about me." "Do you know Florence?" "Yes, I have been there. I know it is a beautiful city, and I am glad to stay there, but not here. My brain wanders; all these people never stop. . . . If I might work, I would stay here—a lodigng indeed. I cannot make it out, I have been away from home for so many years!" (he has only been away for a few days). "I must inquire at the town hall."

Amentia of slight degree may give rise to more or less systematized delusions which resemble those of paranoia, but never attain the lucidity and fixity of belief that characterize true paranoiacal delusions; they are distinguished, indeed, by their futility of invention, and by their uncertain, doubtful, and contradictory nature. These nebulous delusions are, on the other hand, characterized by very strong emotional colouring, in accordance with their theme, and they inspire feelings of depression, exaltation, and lust that are not common even in cases of dementia præcox. In his paranoid delusion, the person suffering from dementia præcox is always ambiguous, and often mystifies his hearers, and behaves himself in a way that is not at all in accord with the ideas of which he makes parade. The ament, on the other hand, is sincere. Moreover, passion, sudden fear, enthusiasm, and ecstasy do not burst out in consequence of excessive impetuosity, even in long-standing cases of paranoia. In short, the delusions of aments, notwithstanding their uncertainty, have an appearance of sincerity, ingenuousness, and semiconscious enthusiasm that is sufficient to distinguish them from paranoiacal delusions, as well as from the paranoiac delusions of dementia præcox. German alienists, with the exception of Kraepelin and a few others, give the name *acute paranoia* to delusions of this kind, and even to cases of asystematic amentia. I think that such a grouping together of delusions so widely different, even if purely verbal, is unjustified and unfortunate; there is no analogy between a sudden, brief, and passing delusion that completely deprives the patient of lucidity, and a pondered, habitual, and constitutional delusion such as that of paranoia.

A man, twenty years of age, a soldier, of good disposition, and intelligent, who had been a mechanic, fell into a state of amentia, imagined that he had invented a cannon, said he had been tormented and raised to high rank through the action of expanding water, and that he expected to become a general and upset everything within his reach; but in a few weeks, after some irregularity of temperature, he recovered and returned home. In some cases amentia tends to be associated with ideas of persecution; the patient thinks that he is accused of passive sodomy, or that the cabmen, newsvendors, and rogues whisper to each other, or laugh when they see him pass, saying that he has bright shoes, that his bed is very soft, or that his pockets are full of sweets; and when he is alone, he imagines that the telephone-wires are conveying abusive and calumnious statements regarding him, that from the ceiling of his room there is raining down amber or white wine, and that on the walls of the town there is written, "Death to . . ." (his name being added). In other instances

amental delusion tends to eroticism. In church and on the street there are pages and knights who make way for the patient ; they present her with holy water ; they offer her their heart by invisible signs and languid and mysterious attitudes. A lady of thirty years of age, of good appearance, respectable, and very well educated, began to believe she had been robbed, to imagine that plots and snares were being planned against her, and that everything was changed ; she was brought to the asylum emaciated, rapidly fell into a state of profound confusion, pulled out a tooth, struck her companions, and behaved herself like a dement, reaching even to a state in which urine and fæces were passed involuntarily. This patient within a few months increased in weight, reacquired her distinctly attractive appearance, became lucid, and left the asylum recovered ; indeed, a short time afterwards she made a good marriage, and for many years has remained well.

In *amentia insomnia* is a constant symptom. It is an insomnia due to organic irritation that has no psychical correlative, and is therefore to be relegated to the category of somatic symptoms. The melancholic is sleepless because he suffers, the maniac because he is elated ; but the ament is the victim of an insomnia (sometimes tempestuous, sometimes placid and unemotional) that is the expression of the unstable equilibrium to which the various functional centres of the cortex are reduced by his disease. The centres are so voluble in their activity that they are even incapable of maintaining a state of repose ; isolation from the external world does not exempt the sensorial centres from the action of pathological stimuli of internal origin, which arouse an interminable series of hallucinations ; and through the action of these same stimuli there also flicker, like *ignes-fatui*, thoughts that are disconnected and vague, but which nevertheless prevent consciousness from being lost completely. Likewise, individuals suffering from *amentia attonita*, who neither move nor reason, are often unable to sleep. In the conflict of contradictory images their brain finds no resultant that serves to guide and impel to action, but it is none the less worn out and exhausted. The insomnia of aments is not, therefore, the expression of the prolonged repose of psychical inertia—that is to say, of the absence of need for sleep—but the effect of chemical irritations of a changed and abnormal character, which prevent consciousness being completely lulled. Indeed, patients suffering from *amentia attonita* are not, in regard to their sleep, different from those affected by *amentia agitata*.

Aments often show noteworthy abnormalities of temperature. Frequently they are feverish. The fever is almost always dis-

continuous and atypical; generally it is slight, and if it should rise to 38° , 38.5° , or 39° , it does not attain this level more than once or twice during the whole course of the disease. There are, however, a few cases of amentia, whether severe or slight, that are wholly exempt from such rises of temperature. It is probable that the brevity of these febrile attacks often prevents their being observed. Hence the opinion is prevalent even now among alienists that amentia is an absolutely afebrile disease. This erroneous idea has gained credence in asylums that are greatly overcrowded and insufficiently provided with doctors, as they are throughout Europe (and still more so in America). In other instances, especially in the more severe cases, to which the name "acute delirium" is applied, pyrexia is high and continued, although remittent. It may also assume the form characteristic of typhoid fever. In these cases dulling of consciousness is more profound. The patient is drowsy, mutters, shows fine automatic movements, has a bewildered and sleepy expression of face, and seems to have lost the power of sensation. The digestive functions are profoundly disturbed; there is sitophobia, constipation, abnormal intestinal fermentation, dry and dirty tongue, a smell of acetone in the breath, and profuse perspiration. The urine may contain traces of albumin; often it shows a distinct quantity of acetone. The motor agitation may gradually diminish, finally being limited to twitching of the fingers. Not infrequently fascicular contractions are to be observed in the muscles of the limbs and face.

In all forms of amentia, but especially in the more severe and in those that take a febrile course, there is a manifest tendency to symptoms of collapse, which constitutes the principal danger to life in these cases. Not infrequently the patient, after some days of violent agitation and noise, suddenly falls into a state of enfeeblement, attended by lowering of temperature to 35° , or even less, and extreme dulling of consciousness, small and very frequent pulse, shallow and increased respiration, and abundant perspiration. Death may thus occur, sometimes unexpectedly, perhaps within four or five days of the onset of his illness.

Disturbances of nutrition, which are revealed especially by emaciation (sometimes very marked), are the rule, especially in those cases, whether severe or slight, that do not run a too rapid course. The state of denutrition is in part an effect of the same causes as those that produce the mental disturbance, and in part dependent upon waste of muscular energy, exhaustion, fever, and defective alimentary repair, consequent upon digestive and assimilative disturbances. Increase of body-weight proceeds step by step with the restoration of all the functions, including the

psychical, and is of favourable significance. Often this process of reconstruction is almost marvellous in its rapidity.

In the course of amentia, no matter how severe it may be, there are often to be observed brief periods of remission, during which the patient is lucid and is able to express, sometimes very clearly, the unhappy state of his thoughts. These remissions, noted by Kraepelin in delirium tremens, are common to all confusional and acute psychoses. They are quite transitory, and do not last longer than half a day, more often only for some hours or some minutes. Sometimes they are a symptom *in limine mortis*. It is evident that patients of this kind suffer from a dynamic disorder of the relations between ideas which perpetually disturbs consciousness and prevents its continuity. If, however, this disorder ceases for an instant, the intellectual personality, which is not altered by any perversion or systematization, reappears in its integrity, accompanied by the patient's habitual feelings and tendencies.

Amentia may present long remissions and relapses. Even patients in a very serious condition, with elevated temperatures, may improve greatly, become lucid and vigorous for some days or weeks, and then unexpectedly relapse. A. Fuchs maintains that these remissions are of unfavourable significance, and from my own experience I am inclined to be of the same opinion.

The relapses may occur at intervals of years with a certain periodicity. This fact is susceptible of various explanations, all equally probable and compatible with each other. It may be that different or identical causes affect the same individual at different periods of his life; it may be that a cause, persistent, but subject to alterations—for example, a chronic malady of the digestive tract—gives rise to repeated attacks of amentia; lastly, it may be that in certain persons the nervous system is especially sensitive to certain morbid agents which easily reach it, but which have an insignificant effect upon those that have no such special idiosyncrasy.

Pathological Anatomy.

In amentia the macroscopical changes are few and slight, or in no way characteristic. The nervous centres are sometimes hyperæmic, often extremely hyperæmic; at other times, especially if death was preceded by coma or by collapse, hyperæmia may be entirely absent. In the pia and in the brain punctiform hæmorrhages may be seen, though rarely. Of the other viscera, the heart shows pallor of the myocardium, or fatty degeneration; the spleen is often enlarged, sometimes to a considerable extent: on section, the organ has a deep red colour, and the parenchyma

is pulpy, as in infective processes ; in the liver and kidneys fatty degeneration is constant, or almost so, but sometimes it is only slight. Other gross lesions of very many kinds are met with in individual cases, and have an etiological significance when they affect the puerperal uterus, the intestine, the liver, or the kidneys. Other lesions depend upon complications, or upon superadded diseases, such as pneumonia, acute enteritis, parotitis, etc.

The microscopical changes in the central nervous system vary,

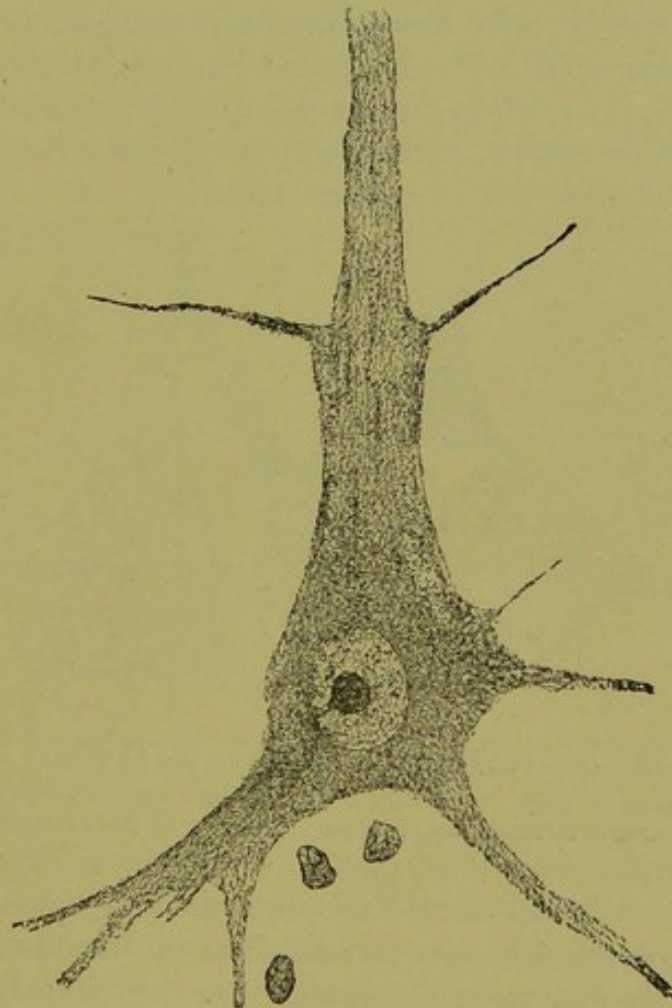


FIG. 65.—GIANT PYRAMIDAL CELL IN A CASE OF AMENTIA FOLLOWING INFLUENZA.
(Camia.)

owing to the different degrees of intensity of the lesions, but they are not without a certain individuality. In most cases there is to be observed an acute and widely diffused alteration of the nerve cells, consisting in disintegration of the chromatic particles of the protoplasm (Fig. 65). In the most typical cases this alteration is accompanied by deeper staining of the nucleus. In extreme cases the nucleus stands out prominently within the pale cell-bodies, and the nucleolus is accordingly indistinct or entirely obscured. The deep colour of the nucleus is to be

observed especially in the cortex and in the smaller and medium-sized pyramids more than in the larger (Fig. 66). In some instances this feature is manifest in all the cells of the cerebro-spinal axis.

In some cases there is found another very characteristic type of cellular alteration, quite analogous to that which is produced experimentally in the cell of origin by injury to the axis-cylinder, either of the peripheral or of the central neurons. The cell-body looks round and swollen; the protoplasmic prolongations are diminished in size, or have disappeared; the chromatic substance is finely disintegrated and diminished in amount in the central part of the cell; the nucleus has become quite eccentric in position, and is often deformed in such a way as to have the shape of a

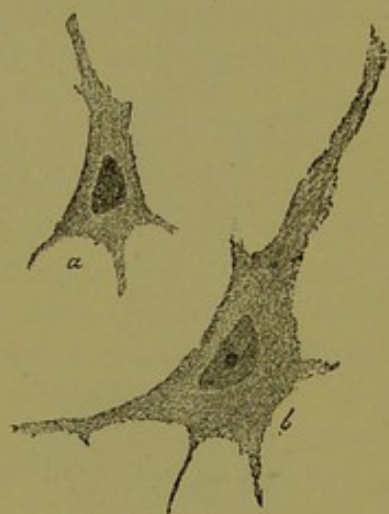


FIG. 66.—CEREBRAL CORTEX, CASE OF AMENTIA.

a. Small pyramidal cell; *b.* medium pyramidal cell. Diffuse chromatolysis, staining of the achromatic substance, intense coloration of the nucleus. (Camia.)

bean, the hilum being turned to the centre of the cell. In this concavity there is a condensation of small chromatic particles, which seem to penetrate the wall of the nucleus by means of short radiations (see Fig. 67). This is very frequent in delirium tremens, and is met with also, although less widely diffused, in ordinary cases of amentia in which alcoholism can be excluded, or is at least of secondary importance. This alteration is especially common in the giant cells of the motor cortex, from which the pyramidal tract takes origin. It may affect only a small proportion of these cells, whilst the others, as well as the small and medium pyramids, present the type of change previously mentioned, in which there is diffuse chromatolysis.

The lesion has, sometimes quite distinctly, the character of a *réaction à distance*. The fibres connected with the altered cells are injured primarily, and in some instances very severely; hence

the cells, when they undergo secondary alteration, simply react to the degeneration of the fibres. In this case Marchi's method reveals degeneration of the fibres of the pyramidal tract.

Not infrequently it happens, however, that the cells of the motor zone are altered, whilst the pyramidal fibres seem uninjured. It is probable that there are, nevertheless, incipient lesions of these fibres, and that the cells have reacted before the lesions of the fibres are so advanced as to be recognizable with the method of Marchi. At all events, the type of lesion from *réaction à distance* coexists with that of diffuse chromatolysis (in which the nucleus stains deeply), affecting in various degrees all the other cells of the cortex.

When the secondary lesion is more widely diffused, it may affect the column of Clarke, and even the cells of the anterior horns and spinal ganglia.

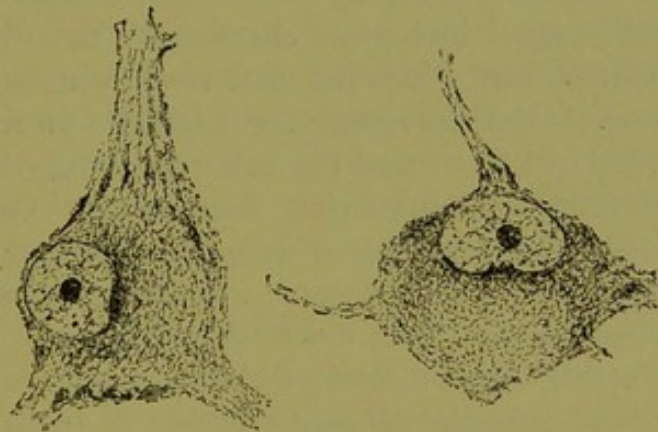


FIG. 67.—GIANT PYRAMIDAL CELLS (ASCENDING FRONTAL CONVOLUTION) IN A CASE OF AMENTIA. CELLULAR REACTION TO LESION OF THE AXIS-CYLINDER, PROBABLY FROM TOXIC CAUSES. (Camai.)

The neuroglia does not show any important alteration. The selective method of Weigert does not reveal increase of fibres. It may sometimes be observed that the ordinary nuclei of the neuroglia around the nerve cells are increased in size, and have begun to penetrate the cytoplasm of the nerve cells. The vessels, as a rule, appear normal. At most there may be swelling of the endothelium of the small vessels, or proliferation of the endothelial cells. The presence of various bacteria, which has been observed by some authors, is exceptional, and depends upon agonal invasion, or upon general infections.

Etiology and Pathogenesis.

As already indicated, the etiology of amentia is not always the same. There is a group of specially grave cases, with febrile course and fatal termination, which are designated *acute delirium*,

and which present the picture of a condition of infection, or of severe general intoxication. Many authors have endeavoured to find pathogenic organisms by bacteriological examination of the blood, cerebro-spinal fluid, and internal organs obtained post-mortem. Positive observations are not lacking, although investigations made with the greatest persistence in various phases of the disease and upon organs after death may give an entirely negative result. Thus Briand, in three cases of acute delirium, found the blood to contain rod-shaped organisms (1881). Rezzonico, in 1884, found accumulations of micrococci within the cerebral vessels. Bianchi and Piccinino, in 1893, isolated from the blood a bacillus of special biological characters, to the action of which they attributed certain forms of acute delirium. Buchholtz, shortly afterwards, having failed to find micro-organisms in the blood, observed them in sections of various organs. Rasori, about the same time, isolated from the cadaver a bacillus with special biological characters, but different from those that Bianchi and Piccinino had made out in the case of their organisms. Ceni, in researches carried out from 1898 to 1900, found only in a few cases the common pyogenic organisms, which had entered the circulation secondarily. Cappelletti, in 1899, determined the presence of micrococci and the *Bacterium coli* in the blood and in the viscera, but only in the pre-agonal period and after death. Kazowsky, in 1899, found cocci in the blood, in the cerebro-spinal fluid, and in the spleen, but he was dealing with an exceptional case, in which there were areas of ulceration in the colon, in which also the same micrococci were found, including the *Staphylococcus pyogenes aureus*. Lastly, Sander, in 1901, examined the spleen and lungs, and observed staphylococci and diplococci, and in one case the bacillus of influenza, and in another the diplococcus of Weichselbaum. On the other hand, C. Martinotti (1894), Cabitto (1896), Ceni (1898), and Armanni (1899), obtained negative results.

As a rule, therefore, the micro-organisms are the normal inhabitants of the intestine, or of the surface of the body, which have invaded the tissues in the agonal period. At the same time, we cannot exclude the possibility that in some cases, or in certain forms of amentia, an infection is the determining cause of the disease, or at least a contributing cause of great importance.

Much clearer and more fully established is the relation that a large group of cases of amentia has indirectly with coexistent, or more commonly antecedent, infective diseases. Following upon typhoid fever, scarlet fever, articular rheumatism, erysipelas, malaria, influenza, pneumonia, measles, small-pox, and puerperal fever, and during the period of convalescence, mental disturbances

may manifest themselves when the disease is no longer active, and when both the presence of the specific micro-organisms and the direct action of their toxic products can be excluded.

Other cases are manifestly connected with chronic affections of the alimentary tract, such as gastric or intestinal catarrh, obstinate constipation, and intestinal obstruction.

In still other cases the disease shows a fairly direct and evident relation to special states of exhaustion, with which a process of auto-intoxication is undoubtedly connected. Thus it may occur as a consequence of prolonged over-exertion, enforced loss of sleep, hæmorrhages, lactation and cachexia associated with neoplasms and with surgical affections.

There is another group of cases in which the cause can be traced to a state of psychological shock, painful emotions, and prolonged domestic or business worry. These psychological causes are almost always associated with other causes of exhaustion, which determine, prior to the development of amentia, insomnia, physical enfeeblement, and defective nutrition and assimilation, which become the true immediate cause of the disease.

It must be admitted that there are some cases in which the cause cannot be discovered, and one has to fall back upon vague speculations regarding it. Yet in such cases the clinical picture is no less characteristic.

From all that has been said we can conclude that the pathogenetic unification of amentia necessitates the point of view of intoxication. It is probable that existing or antecedent infective diseases, states of exhaustion or of auto-intoxication, fatigue, or psychological traumatism, produce analogous, though more or less pronounced, effects upon metabolism, determining a disturbance, transitory and reparable in its nature, but sometimes so intense as to produce other functional disturbances, which in their turn are capable of causing death. This opinion is confirmed by the fact that confusional states quite analogous to those of amentia may occur from well-known causes of a specific nature. Fundamentally, the clinical picture of *delirium tremens* does not differ in any essential character from the common picture of amentia; the more typical hallucinations that recur in the former with such frequency may be observed with less frequency in cases in which there has been no abuse of alcohol. Pellagra, in its acute forms, presents a typical picture of amentia, and the most severe cases, with febrile course and fatal result (the so-called pellagrous typhoid), reproduce the symptomatology of acute delirium. Uræmia may furnish exactly the clinical picture of amentia, from its mildest form to the most severe form of acute delirium. If their nature was not revealed by the history and concomitant

phenomena (which, however, are not diagnostic), such as Jacksonian epilepsy, these cases would be confused with amentia.

Amential episodes of toxic origin (in all probability, at least) may occur in the course of senile dementia and progressive paralysis. Especially in this last disease the confusional episodes may present any degree of gravity, and may even assume a febrile course, with grave symptoms and fatal termination, reproducing the clinical picture of acute delirium so closely as to render any distinction from it impossible, apart from the knowledge of the history of the case.

Treatment.

In amentia the treatment ought chiefly to aim at restoration and maintenance of the bodily powers. Of first importance is the patient's diet. Nourishing and easily digested food must be given, including milk, eggs, and mince. If the stomach will tolerate it, hyper-alimentation is sometimes advisable. In cases in which food is refused there should be no delay in using the stomach-tube. It is useful to precede such administration by washing out of the stomach. Alcohol may be of great service.

In order to maintain the bodily strength, it is often necessary to prevent the patient exhausting it by his agitation. On this account it is the rule to keep the patient in bed (*Bettbehandlung*). Prolonged warm baths restore calm and promote sleep. Such means of treatment are preferable to hypnotics, the use of which is limited by the necessity of preventing possible collapse. In cases of extreme agitation we ought not to allow ourselves to be prevented by humanitarian prejudices from having resort to some form of mechanical restraint, more especially considering that the patients, being wholly or partially unconscious, cannot have their feelings injured thereby. Padded rooms prevent the patient from injuring himself by knocking against the wall, but they allow of waste of strength in movements of every kind; moreover, if the patient is dirty, they require costly and not always easy cleansing.

Attention to the cleanliness of these unconscious patients is naturally a difficult task, but one which ought to be carried out with the greatest perseverance. Washing of the mouth and teeth should be repeated several times a day, especially in the case of feverish patients and those who have sitophobia.

As regards drugs, tonics are helpful, such as quinine in small doses, sparteine, and strychnine. In cases of collapse, resort should be had to caffein, camphor, ether, warm packs, hypodermoclysis, or simple rectal injection of salt solution.

During convalescence the patient should guard against over-

fatigue. If he is confined in an asylum, care should be taken that he is not sent out too soon, as this is sometimes a cause of relapse.

URÆMIC PSYCHOPATHIES.

Every case of severe uræmia, especially in its terminal stages, is accompanied by well-marked psychical disorders. Even apart from the unconsciousness that accompanies the convulsive and comatose state, there is in every case of severe uræmia a certain degree of psychical dulness, apathy, somnolence, and loss of memory that would certainly attract attention on their own account, if they were not recognized to be an accessory symptom of a much wider disease.

There are, however, cases much more important from the point of view of psychiatry, in which the uræmia and the renal lesion are not diagnosed; they present an incomplete, unusual, and ambiguous clinical picture—one in which the psychical and nervous symptoms are the first and only ones to arouse alarm, and which are often of such gravity as to necessitate the calling in of an alienist. If in this event the patient goes to an asylum, as very often happens, it is not improbable that the true cause of the mental disorder will remain unrecognized, because the organization of asylums is not yet so developed—at least, in Italy—as to allow of daily diligent observation of every case. The patients in asylums are under the care of only a few doctors, who can supervise them in groups, but not treat them individually, or undertake to make a hundred examinations of urine. Such nicety of attention, which would be proper, does not enter into the view of public administrations, and, as yet, it is seen only exceptionally in some hospitals and in a few privileged asylums.

Uræmia may give rise to various psychopathic syndromes in accordance with the nature of the renal lesions that determine it. In the more severe and acute forms there are acute phenomena, which run their course with the amential syndrome; in the less severe and slower forms—for the most part prolonged—there are syndromes of chronic course and demential character. There may also be symptoms of focal lesions with signs pointing to various seats, but at the autopsy it may be impossible to discover any specially marked changes in the regions that were suspected during life.

Uræmic amentia is always a very grave condition, and it assumes almost exclusively the form of acute delirium. In these cases there are severe parenchymatous lesions of the kidney, for the most part consecutive to previous infections. Many cases of

so-called puerperal psychosis are to be ascribed to this group. These, as well as other uræmic patients, manifest agitation, profound disorientation, hallucinations, complete insomnia, and sitophobia, and they readily fall into a condition of collapse. The occurrence of convulsive seizures, generally of Jacksonian type, is not infrequent. Termination in death is very common.

Uræmic dementia is the exaggeration and perpetuation of phenomena that are ordinarily to be observed in many cases of uræmia. The chief symptoms are slowness of the psychical processes, general dulling, difficulty or impossibility of fixing the attention, and general amnesia. A true stuporose state may be reached. To this psychical state there are often added nervous phenomena of various kinds, including headache, tremor, attacks of vertigo, dysarthria, paresis with exaggeration of the tendon reflexes, and apoplectiform and epileptiform attacks, all of which naturally lead one to think of a diagnosis of progressive paralysis.

Varieties of focal lesion simulated by uræmia are very numerous. The forms of monoplegia and hemiplegia that become established without the occurrence of a stroke are most common; they are generally transitory, but sometimes they remain constant in their form and degree. There may be motor aphasia with or without hemiplegia, word blindness, psychical blindness, and hemianopsia. When these focal symptoms are associated with demential phenomena, syndromes analogous to those of cerebral tumours are produced.

In all these cases, in making a differential diagnosis, it is necessary to take into account not only the mode in which such symptoms arise, but also the presence of other phenomena that are frequent in uræmia or characteristic of this disease, such as severe gastric disturbances with loss of appetite and vomiting, dimness of vision, œdema, etc. Chemical and morphological examination of the urine and ophthalmoscopic examination will complete the investigation. It is not, however, to be thought that these investigations are sufficient to eliminate all doubt. There are patients in whom albuminuric retinitis may be confused with optic neuritis due to cerebral tumour; and, on the other hand, the positive observation of casts and albumin in the urine does not exclude associated morbid conditions, and more particularly that of progressive paralysis with chronic nephritis.

The uræmic phenomena for the most part pass away with proper treatment, especially under milk diet. Indeed, in specially difficult cases this occurrence may help to clear up the diagnosis.

On post-mortem examination, the renal lesions assume chief

importance. In the nervous centres gross changes are not easily recognized, even in cases in which protracted symptoms of focal lesions have been present during life. In some cases there is cerebral œdema. There may also be punctiform hæmorrhages. Microscopically there are acute or subacute toxic alterations of a more or less severe kind, consisting in more or less marked diminution and disintegration of the chromatic substance in all the nerve cells. This lesion is especially distinct in cases in which death has been preceded by a comatose state of long duration.

CHAPTER XIII

THE THYROID PSYCHOSES

THE thyroid psychoses are due to lesions of the thyroid gland and annexa, which differ in degree and kind, but their sole source lies in such lesions, and accordingly they present resemblances and contrasts which connect them closely with one another. Even in cases in which the cause of the disease is unknown, the point on which the whole clinical and symptomatic picture rests is always an anatomical and functional change in the thyroid gland. The psychical symptoms are only a secondary result, an indirect echo of the disturbance which has taken place in the thyroid function.

If through any cause there occurs in an adult a slow atrophy of the thyroid gland, the result is the clinical condition of *spontaneous myxædema* or *cachexia pachydermica* of adults. The lesion of the thyroid may be due to a surgical operation. The removal of a large goitre and operative interference, such as used at one time to be practised, in cases of exophthalmic goitre produce the symptoms of *cachexia strumipriva* in men, and also in animals which have been subjected to the same operation. The symptoms are the same as those of spontaneous myxædema. *Cretinism* arises from slow and progressive alterations in the thyroid gland, which begin in childhood, and are probably—or, at least, in a fair number of cases—due to changes in antecedent generations. The cause of this local and gradual degeneration of the thyroid gland is not well understood, but it is doubtless related to that special quality of the soil which causes cretinism to be an endemic malady. Although all the doubtful points in the etiology of the disease are not yet explained, nothing could be more certain than the pathogenesis of cretinism; for in the chain of morbid phenomena the most important link is in all cases the alteration in the thyroid gland. The thyroid may, however, have been injured or destroyed in youth by causes of a purely individual nature, in which case *infantile myxædema* or *sporadic cretinism* is the result. In all these cases lesions occur which produce thyroid insufficiency,

and cause the phenomena of *athyroidism* ; but there are cases in which the functional action of the thyroid is increased, giving rise to that form of morbid *hyper-thyroidism* which constitutes *exophthalmic goitre*.

Experimental research has demonstrated the fact that the thyroid, with its annexa, is an indispensable factor in the pathological processes of these different diseases. Recently, however, the physiology of the thyroid, which seemed to be a closed chapter, has been subdivided into a series of special questions, which naturally have given rise to new clinical problems.

At a time when investigation into the function of the thyroid was at its beginning, Schiff set himself definitely to investigate the mode of action of the gland. Two possibilities presented themselves—either (1) the thyroid destroys toxic substances which are normally elaborated in the organism, and which would injure it if they were not destroyed ; or (2) it secretes substances which are of value to the general nutrition and to the functions of the nervous centres. No decisive solution has yet been found for this dilemma. Thanks, however, to the researches of Baumann, a chemical substance has been isolated which undoubtedly is of the greatest importance in the function of the thyroid—iodothylin ; but, nevertheless, we are still face to face with the same problem. Ewald regards iodothylin as a true antitoxin, intended to neutralize toxins formed in the processes of metabolism, while Gley holds that it is a stimulant to metabolism. Thus, to the antitoxic function there is always opposed the trophic function.

The solution of the problem bids fair, however, to be found in an unexpected direction. Both functions may exist, only they do not belong to a single organ, but to two organs which are entirely distinct.

In 1880 Sandström discovered close to the thyroid gland two small epithelial organs, which he called the parathyroid glands. The question at once arose as to the function of these organs, and experiments were begun to ascertain the comparative effects produced by (1) removal of them alone, (2) removal of the thyroid alone, and (3) simultaneous removal of the thyroid and the parathyroids. Gley found that if the parathyroids were left when the thyroid was removed, the fatal tetany following deprivation of the thyroid did not ensue. From this he was led to infer that the parathyroid organs exercised a vicarious function, or that they were an embryonic tissue ready to be developed and to assume functional activity in the case of an injury to the thyroid. Soon after this Moussu ascertained that removal of the thyroid alone, leaving the two parathyroids in their place, produced in young animals chronic changes analogous to

those of cretinism. On the other hand, removal of the parathyroids along with the thyroid resulted in death. Moussu thought, therefore, that the thyroid and parathyroids had specific and different functions. Hofmeister also noted that removal of the thyroid and leaving of the parathyroids *in situ* gave rise to a chronic cachexia, while simultaneous removal of the thyroid and parathyroids caused an acute fatal tetanus. Proof was thus afforded of functional dualism, but the special function of the parathyroids was not determined, because the ablation of these organs alone did not give rise to permanent symptoms.

In 1895, however, Kohn discovered that there were not only two parathyroids, as had been thought, but four—two external, already known, and two internal. Removal of the external parathyroids alone could not, therefore, produce the complete symptomatology or full effects of suppression of the parathyroid function. Guided by these anatomical discoveries of Kohn, Vassale and Generali were able in 1896 to effect complete removal of the parathyroids, and to show that it caused acute fatal tetany, notwithstanding the persistence of the thyroid in its place. Effects which formerly had been ascribed to removal of the thyroid alone were thus apportioned to the two organs. Later experiments by other workers have fully confirmed the discoveries of Vassale and Generali, and have established beyond doubt that removal of the thyroid is not fatal, but causes chronic cachexia with myxœdema, while removal of the parathyroids results in tetany. According to Vassale, the thyroid and the parathyroids have thus each a distinct function, that of the thyroid being trophic, and that of the parathyroids antitoxic.

These data, when applied to the clinical aspects of the question, are undoubtedly capable of wide application. Thus, Brissaud, in relation to the various forms of myxœdematous infantilism, brings forward the hypothesis that in general the dystrophic symptoms are to be attributed to deficient thyroid activity, whilst the nervous and psychical phenomena are due to lesions of the parathyroids. This hypothesis certainly cannot be absolutely accepted, for there are cases in which the trophic disturbance is so serious, and the arrest of development so considerable, that these factors alone, independently of any toxic phenomenon, are sufficient to produce an arrest of psychical development. Disturbances of any sort may react upon other functions which are not directly involved, but this does not prevent the functional and pathological dualism of the thyroid and parathyroids being maintained in various morbid conditions.

Clinical analysis in this direction can scarcely be said to have begun. At present we have little more than suppositions as to

the pathogenesis of different symptoms. Further clinical research, especially if it pays due attention to the results of anatomical and pathological investigations, will be able to give a decisive answer.

MYXŒDEMA OF ADULTS.

Spontaneous myxœdema of adults was described for the first time by Gull in 1873 under the title "cretinoid state in adult women." In 1878 Ord, as the result of anatomical examination of the skin, gave the disease the name of *myxœdema*, a term which is in more general use than that of *cachexia pachydermica*, which was applied to it by Charcot. For a time it was believed that myxœdema was restricted to England, where the first cases were observed, but as knowledge of the disease spread, numerous cases came to be observed in every country.

Myxœdema was first regarded as a dystrophy of nervous origin. The influence of the sympathetic on the tone of the vessels was invoked to explain the cutaneous ischæmia and the myxœdematous dystrophy. It was only subsequently, through observations by the surgeons on the results of extirpation of the thyroid, that the true nature of the disease was made clear. In 1882 Reverdin observed a clinical condition of myxœdema as the result of complete removal of a goitre, and connected it with the spontaneous myxœdema observed and described by the English. Independently of Reverdin, Kocher had noticed that removal of a goitre caused a state of progressive cachexia with severe anæmia, swelling of the skin, and mental torpor, and had given to the condition the name of *cachexia strumipriva*, comparing it to cretinism. Thereafter, attention having been called to the changes in the thyroid, it was quickly recognized that this organ is affected in all cases of spontaneous myxœdema.

Spontaneous myxœdema is very much more frequent in women than in men. More than 75 per cent. of the cases that have been described refer to women of mature age, or those who have passed the climacteric. Cases are not wanting, however, of comparatively young men being affected by the disease. The cause of the disease is in many cases unknown—at any rate, except in the case of distinctly local lesions, we possess only indications of the causes. In some instances there are tubercular or syphilitic processes which produce local injuries in the thyroid. In a considerable number of cases myxœdema is preceded by a clinical condition with which it is in direct antagonism—viz., exophthalmic goitre. The goitre undergoes atrophy and disappears, and the clinical picture of exophthalmic goitre is succeeded by that

of myxœdema. In these cases it is clear that there is a primary local lesion of the thyroid. In other cases the myxœdema is due to general causes which act on the whole organism, such as general infective processes, or profuse and repeated hæmorrhages.

There is no doubt, however, that in all cases the thyroid is implicated. It is invariably atrophied. The small number of autopsies that have hitherto been made have revealed marked atrophy of the glandular elements, with more or less distinct interstitial fibrosis. The total mass of the organ may be reduced to one-third, or even less, of its normal size. There can be no doubt that the pathogenesis of myxœdema is reduced to hypothyroidism. As to the participation of the parathyroids, nothing certain is known. Experimental results give good ground for the belief that in some cases in which the nervous phenomena are specially prominent or the condition of tetany develops the parathyroids must be involved in the morbid changes.

The clinical picture of spontaneous myxœdema includes three groups of symptoms—somatic, nervous, and mental.

The most important of the bodily symptoms is myxœdema, which consists in a firm, inelastic, painless swelling of the cutaneous and subcutaneous tissue. It is specially marked in the face; the cheeks, the eyelids, and the forehead are swollen; the wrinkles of the skin become unusually deep. The myxœdema is also prominent in the nape of the neck, on the arms, abdomen, thighs, and hands, which appear to be enlarged and especially broadened. The mucous membranes also become tumid, the cavity of the nostrils is diminished, and the tongue and the gums increase in size, causing difficulty in speech. The voice becomes harsh, probably on account of similar changes in the laryngeal mucosa.

Important dystrophic changes occur in all the cutaneous appendages. The hair becomes dry, and falls out in large quantities, as also does the hair of the body, the loss of which is very evident on the pubes and in the axillæ. The nails cease growing, readily split, and are easily broken. The teeth also undergo changes, becoming loose in their sockets and falling out.

Very remarkable changes occur in the blood and in general metabolism. The skin and the mucous membranes are pale and anæmic. Menstruation becomes rare and scanty, and may disappear. Kraepelin has observed that the red cells are few and increased in size. Metabolic processes are slow; the excretion of urea is diminished. The body temperature may be lowered by 1° C. or more. There is anorexia and also sexual frigidity.

In the nervous system there is a characteristic slowness of all the processes. Nerve conduction itself is slowed, as is shown by the remarkable lengthening of the time of reaction. All move-

ments are sluggish, and there is a state of general torpor which passes at times into continued drowsiness. The vaso-motor reactions are defective ; there is almost a complete absence of sweating. Pains frequently occur in the extremities, in the sacrum, and vertebral column ; and there are also sensations of formication and tickling in the limbs, or of sudden electric shocks. The mechanical excitability of the muscles is increased. In some cases marked tremor, tetany, and epileptiform convulsions occur.

On the mental side there is characteristic retardation of all the psychical processes ; perception and association are slow and difficult. The patients are unable to follow a long thread of argument, to maintain a conversation, or to realize promptly all that is taking place around them. They seem to display lack of interest (*Theilnahmlosigkeit*). When to this there is added an extreme liability to exhaustion, and the functional enfeeblement of memory which inevitably results from the slowness of association and the liability of the brain to fatigue, it is easy to understand why the patients appear to be demented even when their intelligence is fairly intact and accurate. The condition, then, is one of dynamic functional disturbance, and it is doubtful if even in extreme cases of the disease a true state of dementia is ever reached which is beyond recovery. Myxœdematous patients generally exhibit an apathetic disposition, but states of excitement or melancholic depression may occur permanently or transitorily with anxiety, restlessness, insomnia, and ideas of persecution. Pilcz has suggested the title of " myxœdematous insanity " for these cases complicated by affective disturbances and delusional ideas, reserving for the more common cases that of " myxœdematous mental state." Such a distinction is justifiable only from the symptomatological point of view, and becomes superfluous as soon as specific therapeutic measures have shown that these forms of insanity depend on lesions of the thyroid, just in the same way as the condition of simple slowing of mental action and apathy. In long-standing cases, even in those that have persisted for twelve years, the signs of myxœdema and the insanity disappear *pari passu* as the result of specific treatment.

Myxœdema, as a rule, runs a chronic and progressive course, but cases sometimes occur in which the malady becomes almost stationary. The patients frequently succumb from intercurrent diseases or from an aggravation of their general condition, which may lead to marasmus or to attacks of collapse. This, however, it must be understood, occurs only when the disease is allowed to develop without interference. At the present day, with the sure and prompt action of thyroid extract, the disease constantly terminates in recovery.

Operative myxœdema, or *cachexia strumipriva*, differs very little from spontaneous myxœdema. It is only in its most severe forms that the phenomena of tetany may make their appearance early, and be so severe as to determine death. In a similar manner the seriousness of the *cachexia strumipriva* depends on the manner in which the removal of the goitre has been carried out. If there has been complete extirpation of the thyroid and parathyroids, the phenomena of fatal tetany supervene after a short period. If any of the parathyroids have been left and remain active, transitory tetany may occur, followed by phenomena of myxœdema. If even a portion of the thyroid has been left, the signs of myxœdema may be transitory, or may not appear at all.

The treatment of myxœdema consisted in vain attempts to strengthen the organism and to improve its general conditions, until Horsley, guided by the experiments of Schiff, proposed the peritoneal implantation of a thyroid gland. Bircher performed this operation several times with success, obtaining brilliant but not permanent results, so that it required to be repeated. The transplantation can also be made into the subcutaneous cellular tissue. Some time later Murray, inspired by the experiments of Vassale on dogs deprived of their thyroid and injected intravenously with thyroid juice, introduced the curative method of subcutaneous injections of thyroid juice or extract; but this was not so successful as the method of feeding with fresh thyroid practised successfully by Howitz and Mackenzie. The thyroid substance requires to be administered raw, since cooking alters its active principle. On this account it is distasteful to many patients. This method has another inconvenience—namely, that it cannot be easily carried out, for it is frequently impossible to obtain a daily supply of fresh thyroid. For this reason, in spite of their inferior efficacy, it is customary to employ tabloids formed of dried thyroid substance. Those of Burroughs, Wellcome and Co. and Merck of Darmstadt are excellent. Compared with fresh thyroid, however, dry preparations have the disadvantage: that they may contain putrefactive products. Vassale conceived the idea of making a thyroid sausage, which is as effective as the fresh preparations are, keeps as well as the tabloids, and is pleasant to eat as a food. The ideal thyroid treatment would be the administration of the pure chemical active principles of the thyroid gland. Baumann's iodothyryn would have attained this ideal if experience had shown that it was the only active principle of the thyroid, and that it produces effects identical with those produced by the fresh gland. Experiments with this object are still insufficient in number.

In the employment of thyroid treatment it is necessary to

proceed with the greatest care, for the phenomena of thyroidism may readily be produced—*i.e.*, intoxication from excess of thyroid secretion. Restlessness, increased rapidity of pulse and respiration, rapid emaciation, anorexia, and insomnia are symptoms the appearance of which indicate that administration of the substance must cease for a time, to be resumed later in smaller doses. If persisted in, the use of the drug may lead to sudden death from cardiac paralysis. Good results are dependent more on the duration of the treatment than on its intensity, and moderate doses of the various preparations may give surprisingly good results without causing any disturbance. When all the morbid phenomena have disappeared, the dose may be still further reduced; but the use of the drug must be continued to prevent recurrence of the symptoms, which will certainly take place in view of the fact that the disease depends upon irreparable destruction of a specific tissue.

ENDEMIC CRETINISM.

Cretinism is a disease characterized by delay or arrest of bodily and mental development, with characteristic skeletal deformities and a myxœdematous cachexia. The changes in the thyroid are caused by an agent which at present is unknown, but which is certainly connected with fixed telluric conditions, by reason of which the disease occurs with a strictly endemic distribution.

Symptoms.

The somatic evidences of cretinism occupy the most prominent place in the clinical picture of the disease, and are so characteristic that the diagnosis may be made from them at a glance.

The general arrest of development is most evident in the osseous system; all cretins are more or less dwarfed. The head is relatively large, and is rounded; there is brachycephaly, and frequently a moderate degree of hydrocephaly. Closure of the fontanelles is often delayed, while, on the other hand, there is early closure of the spheno-occipital symphysis, which Virchow has shown to be a factor in the causation of brachycephaly, and which more directly causes the depression of the root of the nose which is constant in cretins.

The bones of the body, as a rule, are short and thick, and there may be well-marked general hyperostosis. The spinal column is often deformed, exhibiting scoliosis, kyphosis, and kyphoscoliosis.

Changes in the internal ear, which perhaps depend upon anomalies in the bony development, are the frequent cause of deafness in cretins.

The skin shows myxœdema, but, as a rule, only in parts. It is pale or earthy, thick, and wrinkled, but is not so firm as in the acquired myxœdema of adults or in post-operative myxœdema. In some cases it is even loose and folded. On the flat, swollen, and rounded face there are numerous and deep wrinkles; the forehead, eyelids, angles of the eyes, and cheeks are furrowed by them. The root of the nose is depressed; its point is flat, and the nostrils are widened transversely, and look forwards. The mouth is large, and the lips are thick, especially the lower.

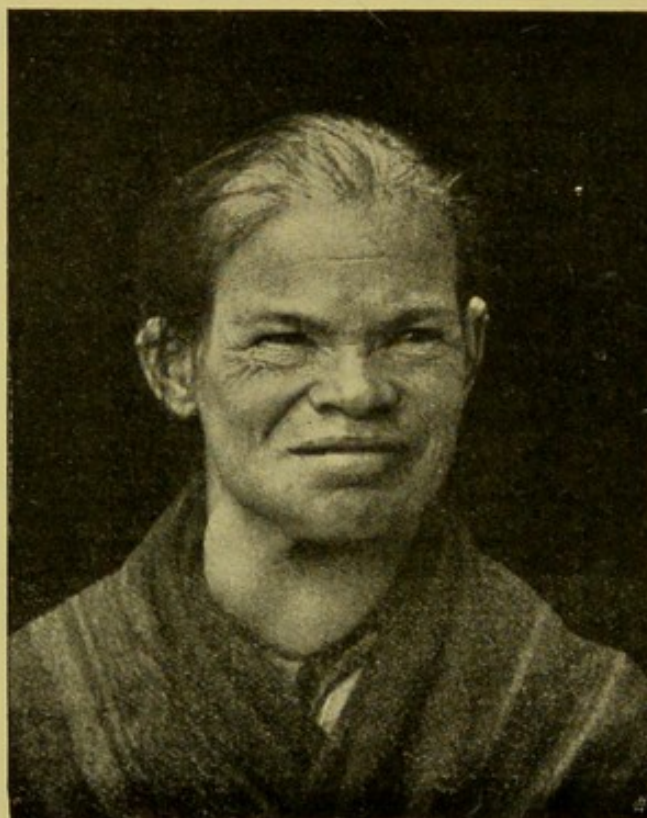


FIG. 68.—ENDEMIC CRETINISM.

The hair is scanty and coarse; the beard, as a rule, is absent, or is very scanty (Figs. 68 and 69).

The teeth present very marked delay or arrest of development. Those of the first dentition may persist up to the twentieth year, in which case the permanent teeth do not appear, but remain within the alveoli, from which they subsequently slowly emerge. In some cases they do not appear at all. When they do, they are irregular, and liable to early decay.

The thyroid shows changes in all cases: in about one-third it is transformed into a voluminous goitre; in other cases it is atrophied. The presence and the size of the goitre do not bear any definite relation to the degree of the cretinism. There may be severe cases of cretinism without goitre, and goitrous patients

with only slightly marked signs of cretinism, or even with normal appearance and intelligence.

The development of the genital organs is generally defective and delayed. Many cretins possess reproductive powers, but their offspring are liable to an excessive mortality. In the most severe forms of cretinism there may be sexual infantilism, with the external genitals in a rudimentary state. In women there may be scanty menstruation or complete amenorrhœa. In some cases, however, the genital organs may be hypertrophied, and the sexual instincts increased.

All the nutritive functions are slowly performed in cretins—

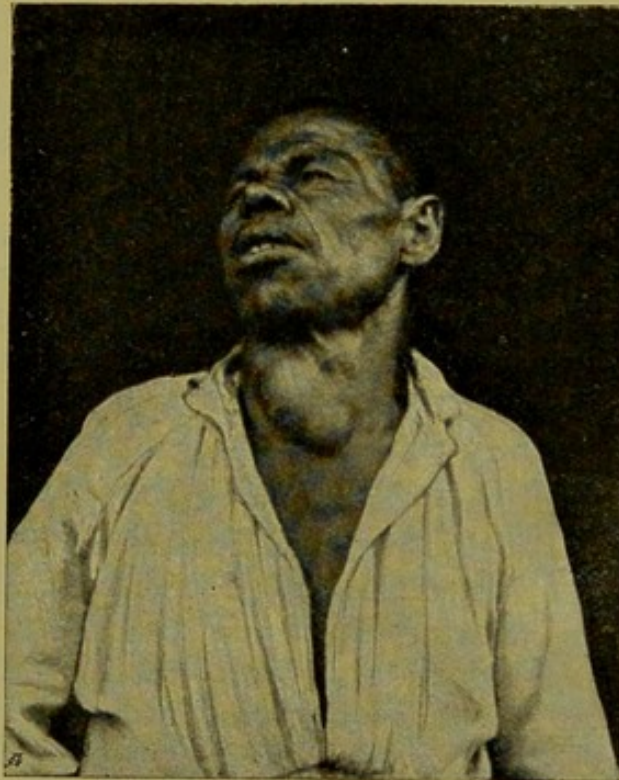


FIG. 69.—ENDEMIC CRETINISM.

circulation, respiration, digestion, and general metabolism. Perspiration is often absent, or is scanty.

The psychical picture of cretinism is a mass of defects, as may readily be understood, but it also presents certain characteristic features which differentiate it from that of other conditions of arrest. As in all forms of athyroidism, the predominant note is that of torpor and slowness of the psychical activities. Cretins, like the subjects of acquired myxœdema, are apathetic, lazy, and drowsy. In cretinism, however, there is also an arrest of psychical development, and more or less marked infantilism of mind. Nevertheless, except in cases of extreme degradation, cretins are fairly intelligent. Their apathy is only an exaggeration of their

emotional tranquillity, and their lack of passion corresponds to the regularity of their conduct and mental activities. Among their number there are very many who, though defective, are yet able to pursue steadily and profitably such occupations as those of roadmen and farm-labourers and porters. The faults with which they may be charged are due not so much to a true perversion of the emotions, or to impulsive tendencies, as to the innocent expression of their natural instincts without the corrective influences of the intelligence and moral sense.

Cretinism may occur with many different degrees of severity. Practically it is customary to distinguish three classes—the cretins, the semi-cretins, and the cretinoids, following the simple and useful nomenclature of the brothers Wenzel. True cretins are usually idiots. They are unable to speak, and exhibit the bodily signs of cretinism developed to the highest degree. The semi-cretins are *simple-minded*. Their language is incomplete and imperfect, and they present well-marked signs of cretinism. The cretinoids possess a moderate degree of intelligence. They are slow and torpid, their voice is harsh, their complexion pale or earthy, and their height subnormal. There are districts where almost all the normally minded inhabitants have a more or less well-marked cretinoid appearance.

Pathological Anatomy.

The pathological anatomy of cretinism has received little attention, and is specially defective as regards microscopical investigation of the nervous centres. The brain, as a rule, is fairly heavy, and may present a moderate degree of internal hydrocephalus. The convolutions, though for the most part normally arranged, are sometimes aberrant in their disposition. Profound changes may also be observed, such as porencephaly and microgyria, but it is probable that these changes are due to complications rather than to the essential morbid process of cretinism.

The thyroid in all cases presents well-marked changes. There are more or less extensive degenerations of the epithelium lining the cavities, with hyperplasia of the connective tissue, especially in cases in which there is goitre. Anatomical investigation always reveals functional deficiency of the thyroid. In some cases the thymus gland persists (Virchow).

Etiology.

Cretinism is met with in many Alpine valleys, in Valais, in Haute-Savoie, in the Vale of Aosta, in Valtellina, and in the Pyrenees, Vosges, Jura, and Carpathians, and in some valleys of

the Himalayas and Cordilleras. For some time it was thought that it might be dependent upon altitude, but the falseness of this conjecture may easily be shown. The districts in which cretinism occurs are found at very different altitudes, and while some of the valleys are placed at the level of 2,000 or 3,000 metres, cretinism is also to be found in the neighbourhood of Strassburg at only 140 metres above sea-level. There are numberless localities of considerable altitude which are entirely free from cretinism.

The view has also been held that cretinism is related to valleys which are damp and comparatively sunless, but the case of the Vale of Aosta, which has a wide exposure to the south, is sufficient to disprove this theory. It is undoubtedly an absolute law that cretinism is associated with locality. Persons who are altogether free from cretinism, if they move to districts where it occurs, may have children who are cretins, and later on, if they go elsewhere, they may have other children who are healthy. The inhabitants of places infected with cretinism, sometimes even the subjects of cretinism, if they emigrate into other districts, may have children who are healthy, or at least fairly so.

It is almost superfluous to say that poverty, alcoholism, defective hygienic conditions, and other harmful influences, which are sometimes declared to be the cause of cretinism, cannot possess any specific importance. If they have any importance at all, it is purely accessory.

Many theories have been advanced regarding the water of districts in which cretinism is endemic, and the disease has been laid to the charge of alternately a deficiency and an excess of all the substances which water can contain. Suspicion has been attached to water which has its source in the glaciers and snows of the higher mountains, because it is almost entirely deficient in salts, but also to water deprived of iodine, poorly aerated, loaded with carbonate or sulphate of calcium or with salts of magnesia, or containing clay in suspension. In contradiction of each of these conjectures, however, it is easy to find examples of waters exactly similar in composition which do not produce any harmful effects. There is, nevertheless, good foundation for the belief that the exciting cause of cretinism and of goitre is to be found in drinking-water. There are districts which have been entirely freed from cretinism by a change in their water-supply. Popular belief credits water with being the origin of goitre and of cretinism. In 1705 Hoffmann drew attention to certain springs at Flach, in the Canton of Zurich, which the people had named *Kropfbrunnen*. Lustig carried out an experiment which strongly supports this popular view. He was able to cause

enlargement of the thyroid in a horse which he had brought to Turin from Dalmatia, and also in several dogs, to which only water carried from Aosta was given to drink. It is well known that there is a close affinity between goitre and cretinism, and that in districts where cretinism is endemic the horses and dogs often suffer from goitre.

Since all the conjectures regarding the action of mineral substances have been shown to be erroneous, there remains only the hypothesis of an organic or organized active principle contained in the water. The miasmatic theory, which for long was held in a most vague manner, acquires from this view a new scientific value. Several observers had noted the frequency of cretinism in marshy or damp districts, and it was believed that the exhalations from uncultivated ground, from marshes, stagnant pools, and slow-running streams, might give rise to cretinism. Morel was a warm supporter of this miasmatic theory.

This hypothesis having been reduced to more precise terms, it was subsequently noticed that the water in affected districts was often rich in organic substances, and that it commonly filtered through layers of earth rich in vegetable mould. It was then observed that improved drainage of marshy districts, deforestation, and cultivation of moist and shady places, had brought about the disappearance of cretinism. It is now believed by many that the cause of cretinism may be a micro-organism, and Kraepelin supports this hypothesis by drawing a parallel between malaria and cretinism, which parallel, however, in view of recent investigations upon malaria and the method of its transmission, loses much of its probability. The matter is still in the hypothetical stage, and the only thing that is certain is that cretinism is dependent upon an external cause which is connected with certain special localities. Of the local elements, water is the most suspected, and the hypothesis of an organic or organized agent contained in the water is the most probable.

Pathogenesis.

Whatever the cause of cretinism may be, it is certain that its action is principally upon the thyroid gland, producing in it a lesion from which are derived the phenomena of chronic athyroidism and hypothyroidism, which exercise a harmful influence on the development of the entire organism and on all its functions.

In cretinism changes in the thyroid are never absent. In about one-third of the cases there is goitre; in cases in which there is no goitre there is atrophy of the thyroid. The goitre, however, shows only changes of a degenerative nature, with hyper-

plasia of the non-specific tissue and degeneration of the essential elements of the gland.

The relations existing between goitre and cretinism have given rise to much discussion. It is known that goitre occurs in certain districts which are entirely free from cretinism, and this observation, along with the other—that many cretins do not suffer from goitre—has led many to deny that there is a pathogenetic connection between goitre and cretinism.

It is to be remembered, however, that though goitre and cretinism do not have the same geographical distribution, there is nevertheless a partial coincidence, goitre extending over the larger area. Further, history shows that in certain places which originally were free from goitre and cretinism, goitre was the first to appear, being followed, several generations later, by cretinism. This has led some to think that there is an identical cause for the two affections. If the morbid agent is mild only a few individuals suffer, and in a slight degree; the diseased thyroid preserves its functional activity, and does not give rise to the general dystrophy which characterizes cretinism.

It is held by some authorities that simple alteration of the thyroid in an individual is not sufficient to produce the complete clinical picture of cretinism, but that it is necessary to have concurrently a more protracted action in the stock through several generations. According to this view, the essential morbid process of cretinism becomes gradually more acute in succeeding generations of individuals, until it reaches its extreme degree in a final generation, the members of which are for the most part unable to propagate owing to the severity of the disease. Cretinoids, semi-cretins, and cretins would thus represent the different stages of the disease in succeeding generations.

It is sufficiently obvious, *a priori*, that general dystrophy and disturbance of bodily metabolism must produce some effect upon the offspring, but it has been shown experimentally that cretinism may be completely developed even in the children of immigrants in a single generation, and, on the contrary, that healthy persons may be born of cretins, if they are resident in a neighbourhood which is not cretinogenous.

The question whether cretinism, as many believe, is a congenital affection is one regarding which there is similar doubt. The progeny of a cretin mother may during the time of intra-uterine life be affected by the athyroidism of the mother, and also during lactation. The positive phenomena of cretinism appear, however, only when the child has been exposed to the specific action of the water—*i.e.*, when lactation is finished. In the absence of this external action, which supplements the maternal influence, and

which takes effect gradually, true cretinism does not occur, and the breast-fed children of cretins present mainly the evidences of an arrested or feeble development. It is generally acknowledged that the characteristic features of cretinism are absent, as a rule, at birth, and that they become marked with age, and specially begin to make themselves felt after weaning.

There are cases of severe cretinism with idiocy in which anatomical examination reveals the presence of well-marked cerebral changes—as, for example, porencephaly, and absence of the corpus callosum, which are certainly of intra-uterine origin. This, however, occurs only in a very small minority of cases; as a rule, the arrest of cerebral development is symmetrical and affects in a slight and uniform manner all the elements of the brain, and does not result in gross changes. It is therefore more probable that in cases of cretinism with cerebropathies and serious deficiencies there are complications and morbid associations. It certainly cannot be admitted that cretinism affords any immunity against the common cerebropathies of infancy, and the view may even be held that the cachectic state of the parents and the abnormal conditions in which the life of the foetus develops must, on the contrary, render it predisposed to the ordinary causes of foetal cerebropathy.

Prophylaxis and Treatment.

As may readily be imagined, when the pathogenesis of the disease is considered, such measures as have been tried or adopted with the general purpose of strengthening the organism have given only negative results. It appears, however, that the alkaline iodides, if administered steadily, specially during the period of development, have some beneficial effect.

The marvellous results obtained by the thyroid treatment in myxœdema and sporadic cretinism suggested the application of the same treatment in endemic cretinism. Various attempts have been made, but they have been too independent and not sufficiently extensive, and the results are contradictory. Ewald, Scholz, and others hold that thyroid treatment is of no value in cretins, while other authorities have obtained brilliant results. Wagner succeeded in producing an active recommencement of skeletal development in eight cretins by feeding them with dry thyroid. It is remarkable that one of the patients was already twenty-five years old, at which age all growth in height has normally ceased, but this patient grew 8.5 centimetres in one year. On the psychological side also improvement took place; there was greater alertness and loquacity, and interest in surroundings. These positive results naturally possess much greater importance

than the negative, which may owe their explanation to special circumstances, perhaps to the adult age of the patient. It is specially in childhood that the offspring of cretins should be systematically subjected to the thyroid treatment—that is to say, before the disease has already ruined their entire organization.

Naturally, this and any other means of treatment would be put into effect with difficulty if the initiative was to be left to those immediately concerned, who are poor and mentally defective. State intervention in such a case is of obvious utility. It may concern itself with the prophylaxis of the individual by removing the children of cretins and goitrous patients from a cretinogenous area, and transferring them during the period of development to healthy localities ; it may also apply itself to the active treatment of the disease by providing for the distribution of thyroid substance.

The establishment of the fact that there is a relation existing between water and cretinism imposes another duty upon the public—namely, that of preventing the development of the disease by suitable measures, such as the supply of good drinking-water, and the draining of marshy districts. On the whole, it would appear that in all the localities infested by cretinism there is a tendency to a progressive improvement.

SPORADIC CRETINISM.

Sporadic cretinism, *cretinoid idiocy*, *myxædematous idiocy*, *idiocy with cachexia pachydermica*, or *cretinoid pachydermia*, is a disease which embodies all the characteristic features of cretinism, and even exaggerates them, but which occurs in isolated individuals, the children of healthy parents, and in districts which are altogether free from cretinism. It is not even a family disease ; the subject of sporadic cretinism always represents a solitary case of the disease in his family, and commonly has brothers and sisters who are perfectly normal.

The disease is invariably caused by an early lesion of the thyroid. In some cases the cause of this lesion is unknown, and its date may be placed in the period of intra-uterine life, but in other cases post-natal life may be affected by a morbid agent—for example, a general infection, which by an unknown selective faculty and mechanism causes such injury to the special epithelial tissue of the thyroid as to destroy it. Thus, children who up to a certain point have appeared normal may present in a short space of time clear evidence of an arrest of development, with the characteristic signs of cretinism. The formation of a goitre,

instead of a complete atrophy of the gland, is rare, and certainly exceptional.

The bodily features of the subjects of sporadic cretinism are identical with those which are met with in the endemic form. Since, however, in the former, instead of a slowly progressive insufficiency of the thyroid, there is a rapid, early, and almost always complete athyroidism, the arrest of somatic and psychical

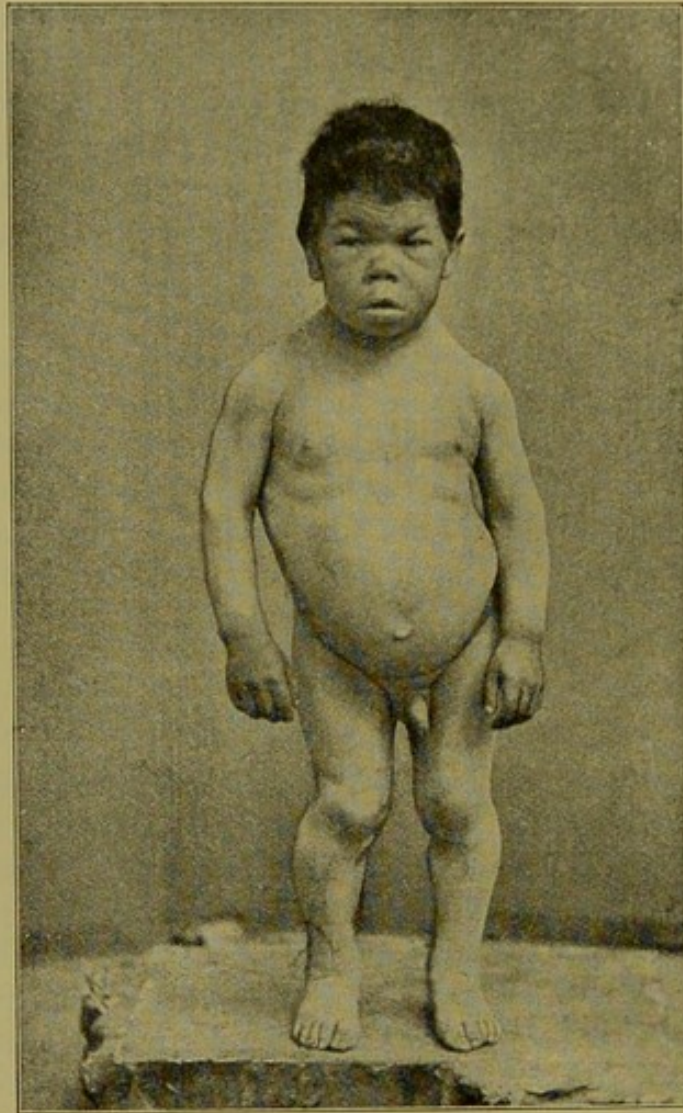


FIG. 70.—SPORADIC CRETINISM.

Myxœdematous idiot, twenty-two years old. Height, 93 centimetres ; weight, 21·8 kilogrammes.

development is very remarkable. The dwarfism and infantilism of idiots from sporadic myxœdema assume almost incredible proportions, with which there is nothing to compare in endemic cretinism. A youth of twenty-two years may have the appearance and stature of a child of five (Fig. 70), and a girl of fifteen may look like an infant at the breast (Fig. 71).

The bones, in addition to the arrest of development in their

length, present other deformities very similar to those which occur in rickets. The fontanelles are late in closing; the bones of the limbs are short, and thickened at the epiphyses, and often curved (especially the tibiae); the ribs show abnormal curvatures, causing deformity of the entire thorax, and the vertebral column presents lumbar lordosis and scoliosis.

Radiographic examination in such cases shows that these bony



FIG. 71.—SPORADIC CRETINISM.

Myxoedematous idiot, fifteen years old. Height, 75 centimetres; weight, 14 kilogrammes.

changes may all be included under arrest of development and ossification.

In a child of seven years the hands may exhibit a degree of ossification such as one would expect to find in a child of two or three years. All the complementary centres of ossification in the phalanges and metacarpals are absent; in the carpus the centres are scarcely perceptible, and in the ulna and radius the epiphysis

is absent (Fig. 72). Similar conditions are found in all the other bones. The processes of growth show an almost incredible degree of retardation. As we shall see, all these defects in ossification are amenable to thyroid treatment, a fact which proves conclusively that they are due to athyroidism, and not to rickets. True rickets does not occur in sporadic cretinism, and it is probable, also, that it does not occur in endemic cretinism. Some authorities, nevertheless, refer to rachitic changes in the bones of cretins, and



FIG. 72.—SPORADIC CRETINISM: RADIOGRAPH OF RIGHT HAND OF PATIENT, C. G., AGED SEVEN YEARS.

Fig. 72 shows condition before treatment, Fig 73 after a year of treatment. Both figures are in exact proportion, the scale being half the actual size (Lugaro). In Fig. 72 only the centres of ossification for the os magnum and unciform are visible. All the secondary centres for the metacarpals and phalanges are absent, as are also the epiphyses of the ulna and radius. After a year of treatment (Fig. 73) all the above mentioned secondary centres are visible, and also the centres of ossification for the scaphoid and semilunar and the radial epiphysis.

consider rickets to be a common complication of cretinism, whilst, on the other hand, it is affirmed that the shortening of the bones is due to early ossification of the epiphyses. These assertions do not, however, rest upon any objective basis. In all probability the assumed rickets of endemic cretinism is no more a true rickets than the rickets of sporadic cretinism. The shortness of the bones is undoubtedly due to the slowness of their growth, and not to early ossification of the epiphyses. If such ossification did

occur, any further growth in length of the bones would be impossible, and it has been shown experimentally that under thyroid treatment the bones of cretins are still capable of increase in length, even at an age at which normally such increase has ceased.

In all cases of sporadic cretinism the body preserves a more or less infantile appearance. The panniculus adiposus is abundant, and above the clavicles it forms two cushion-like pads—*supra-clavicular lipomata*. The arms, thighs, and legs are rounded, and do not show the outline of the muscles, but exhibit transverse cutaneous folds, like those which occur in infants at the breast.



FIG. 73.—SPORADIC CRETINISM: RADIOGRAPH OF RIGHT HAND OF PATIENT, C. G., AFTER A YEAR OF TREATMENT.

The abdomen is tumid. There is often umbilical hernia, less commonly inguinal hernia.

The most marked signs of myxœdema are to be found in the face and hands. The features are distinctly those of a cretin; the bridge of the nose is depressed, the forehead is wrinkled, the eyes are buried in the tumid and thick eyelids, the lips are thick. The tongue is sometimes so large that not only does it protrude from the mouth, but it may, by pressing up behind the soft palate, render respiration difficult and stertorous. The hair is scanty and coarse on the head, and is absent on the body. The teeth, as a rule, are those of the first dentition, and are much decayed. The

external genitals are in an infantile state ; in some cases the testicles are still undescended as late as the eighteenth year, or even later, and in every case they are atrophic ; the penis is small. Menstruation is absent in females.

Corresponding to the anatomical arrest there is functional arrest. The patients are frequently unable to stand upright or to walk, and may lose control of their sphincters. They give expression to no feelings, do not weep and do not laugh, are extremely torpid, and take little exercise. Their metabolism is slow, and their temperature is more than a degree below normal. Respiration is slow ; there is scanty secretion of urine, and none of sweat.

In the more severe cases the psychical functions are present only as mere rudiments. The girl represented in Fig. 71, although fifteen years of age, did not speak, could not understand anything, and paid no attention to her most elementary needs. In less severe cases the mental condition is always infantile, speech is imperfect, temperament apathetic, and the character amiable and serious.

Sporadic cretinism may occur in mild forms. In these cases the condition is probably due, on the one hand, to the slight degree of the lesion, which may not amount to complete destruction of the thyroid gland, and, on the other, to the relatively advanced age at which the initial lesion has appeared. The later the commencement of the morbid process, the slighter is the degree of arrest in the bodily and mental development. In mild cases the patient's height may be as much as 1.3 metres.

Cases of menstruation in female subjects of the disease are very rare, but have been noted. It is, however, in the mental field that the greatest differences are observed. There are patients who present the characteristic signs of myxœdema and of infantilism, though in a mild degree, who nevertheless are in the enjoyment of a fairly well developed intelligence. Brissaud contrasts such cases, to which he applies the term *myxœdematous infantilism*, with all others of a more serious and common nature associated with some degree of mental deficiency.

Pathogenesis.

The relation between sporadic and endemic cretinism has been the subject of much discussion. Some authorities hold that the pathogenetic process is the same for the two forms, only the etiology being different, whilst others insist that there is a difference in both respects.

According to Ewald, the special features which distinguish endemic cretinism from sporadic cretinism are the following :

Premature synostosis, absence of myxœdema, non-progressive course, long duration of life, and non-success of thyroid treatment. The early synostosis, the absence of myxœdema, and the failure of thyroid treatment in endemic cretinism, are worthy of special attention. The long duration of life, the non-progressive character of the disease, and also the lesser degree of myxœdema, are readily explained by the fact that in endemic cretins the lesion of the thyroid is slow and progressive, and probably always incomplete. The greater degree of dwarfism, infantilism, and generally of arrested development in sporadic cretinism is to be attributed to opposite conditions, but we have in all cases to deal with simply a quantitative difference which does not justify any doubt as to the thyroid pathogenesis of either disease.

Between the myxœdematous infantilism of Brissaud and the more severe degree of sporadic cretinism there is a considerable variety of intermediate forms. Brissaud holds that there is a fundamental difference. According to his theory, myxœdema and infantilism are due to a thyroid lesion, while psychical arrest and idiocy are dependent on a lesion of the parathyroid. Now, even if we do not consider the cases already referred to in which the parathyroids are found to be uninjured and present on post-mortem examination, we must recognize that extreme degrees of dwarfing, infantilism, and bradytrophism are never unaccompanied by psychical disturbances. The relations existing between the psychical, motor, and visceral functions are so close that one of them independently of the others cannot escape being affected by a grave arrest of development which involves the entire organism.

In a case of somatic atrophy, such as that represented in Fig. 71, with the functional development of an infant at the breast, even a very modest degree of intelligence is impossible, whether the parathyroids are injured or not. On the other hand, it must be remembered that cases of infantilism with a relatively intact intelligence are extremely rare. There is always a slight degree of psychical infantilism, and the apathy, sluggishness, and excessive seriousness of character bear witness, if not directly to athyroidism, at least to the bradytrophism which is the result of athyroidism.

There is experimental evidence on this point. By removal of the thyroid alone in young pigs, Moussu was able to produce the complete clinical picture of cretinism with arrest of bodily and mental development.

It is therefore probable that in endemic cretinism, as also in sporadic, we have to deal simply with a lesion of the thyroid,

and that the difference between the two diseases is due only to a difference in the morbid agent and in the manner of its action, which is slow in the one case and rapid in the other.

Pathological Anatomy.

Chiefly on account of the rare occurrence of the disease, the number of autopsies on cases of sporadic cretinism is still very small. In a few cases Bourneville has been able, from detailed study of the skeleton, to describe with greater accuracy the characteristic features of the arrest of development. Investigation of the nervous centres has been made only in a very small number of cases. The brain is relatively large, and suffers much less than the other organs from the arrest of development. The cretin of Batignolles, described by Ball, had a brain weighing 1,178 grammes. In a case described by Bourneville, in which the height was a little less than 1 metre, the encephalon weighed 1,245 grammes. Muratow also, in a case of his, found a voluminous encephalon. No macroscopic facts of importance are met with in the brain. The cortical nerve cells are smaller than usual, and are little differentiated; the nerve fibres are few in number, and the neuroglia is slightly increased. Muratow has noted arrest of development in the subcortical systems of association.

As regards the thyroid, in some cases no trace of it has been found, and, as a rule, neither positive nor negative information is given regarding the parathyroids. In this connection two cases, described, one by Chiari and the other by Maresch, are of great importance. Both of them showed entire absence of thyroid tissue, but the parathyroids were present.

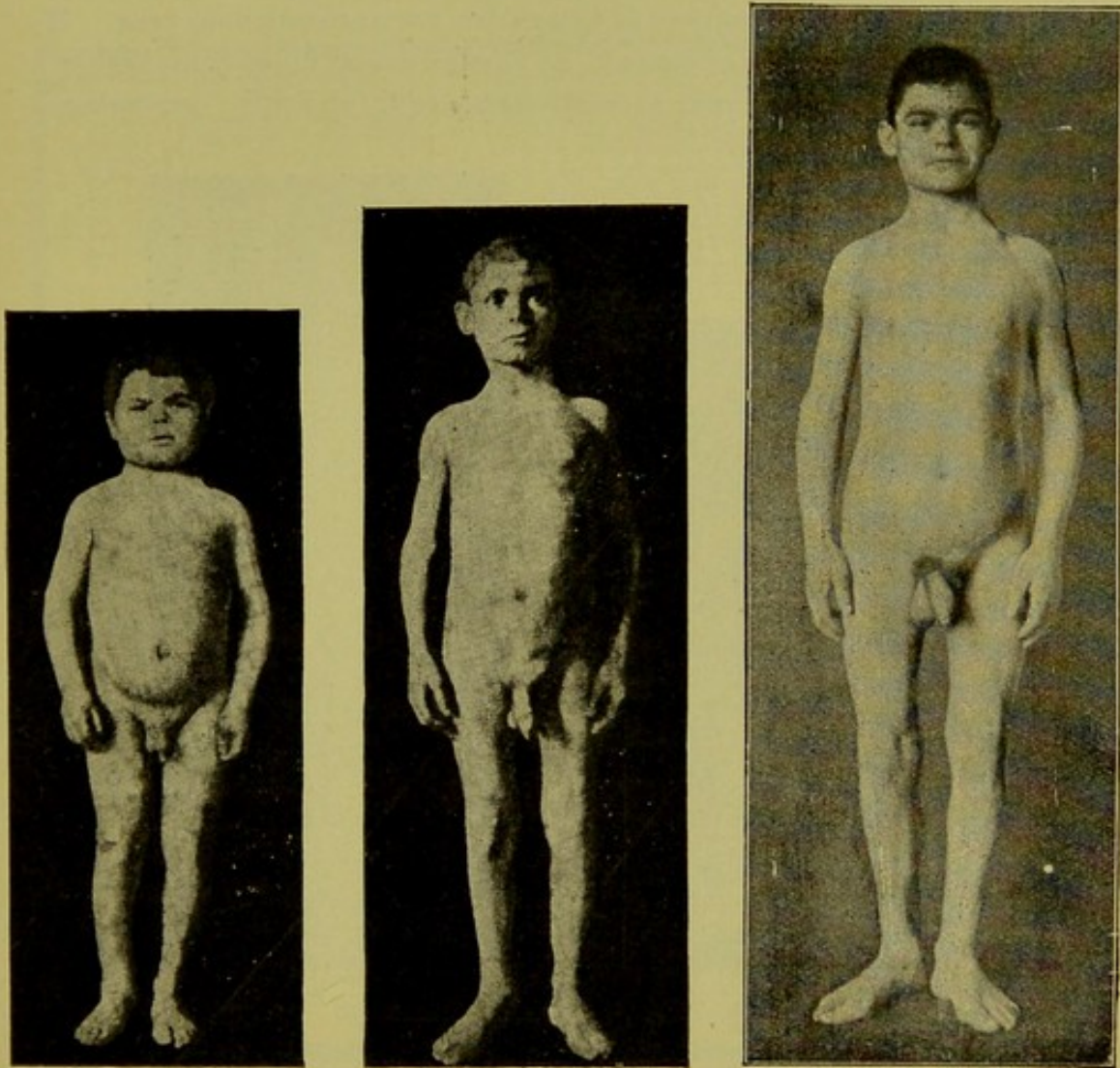
Treatment.

The thyroid treatment of sporadic cretinism in nearly all cases gives brilliant results.

Very soon after the commencement of treatment, even in a few days, an increased activity of the heart and lungs becomes apparent. The pulse and respiration become more frequent. The temperature rises, and reaches the normal, or even exceeds it by a little, if the dose of thyroid has been excessive. The urine becomes more abundant, and the amount of urea is distinctly increased. The appetite for food and drink is improved.

An immediate and constant result of thyroid feeding is the reduction in weight which accompanies the disappearance of the myxœdematous swellings in the skin and abdomen. In a few months the entire appearance of the body changes. The face alters in expression, the hair becomes much finer, and the muscles

begin to show their outline under the skin (Figs. 74, 75, and 75A, 76 and 77). The milk-teeth very soon fall out, and the permanent ones appear. The hair becomes more luxuriant. Later on the body-weight progressively increases, the reduction due to the disappearance of the myxœdematous condition being compensated for by increase in height and development of the



FIGS. 74, 75, AND 75A.—SPORADIC CRETINISM.

Fig 74 shows patient (aged eighteen years) at commencement of treatment with thyroid extract, Fig. 75 after treatment for 485 days, and Fig. 75A after treatment for four years. The three figures are exactly proportionate; scale one-fifteenth of actual (Lugaro).

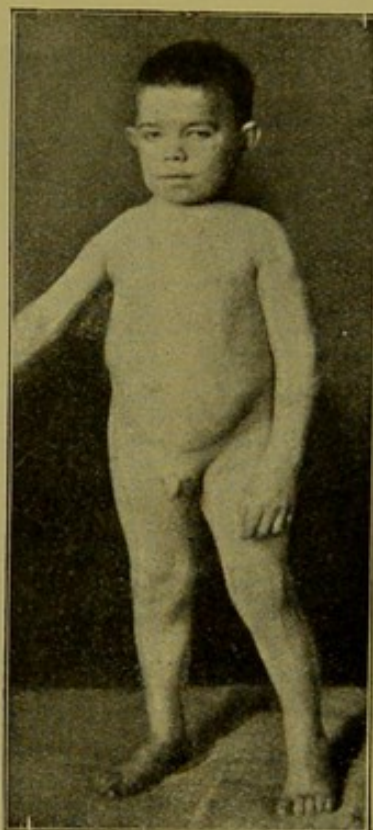
muscles (Fig. 78). The growth in height shows itself immediately, and may be as much as 2 centimetres in the month.

The changes which occur in the bones are shown in the clearest manner by radiographic records. After one year of treatment there may be very distinct progress in ossification. Figs. 72 and 73 show the appearance of all the complementary points of ossification in the metacarpals and phalanges, with considerable

increase in the two pre-existing points in the carpus—namely, in the os magnum and unciform, and the appearance of two other points of ossification in the scaphoid and semilunar, and also the appearance of the epiphysis of the radius.

The improvement in the psychical faculties, and especially in sexual development, is less striking.

On the psychical side there is a sudden disappearance of the torpor, the place of which is taken by an unusual alertness. If the patient is capable of speech, he speaks much more than before, his articulation becomes greatly improved, and his vocabulary



FIGS. 76, 77.—SPORADIC CRETINISM.

In Fig. 76 the patient (aged eighteen years) shows the condition at commencement of treatment, and in Fig. 77 after treatment for two and a half years. These figures, like the preceding ones, are exactly one-fifteenth of the actual size. (Lugaro.)

much more extensive. Alalic patients slowly begin to speak. The improvement in the mental condition is, however, always less than that in the bodily state. It is more marked on the dynamic side—that is to say, in the exercise of functions already developed—than on the static side, that is to say, in the acquirement of new functional capacities.

Remarkable changes occur in the genital organs. The testicles descend into the scrotum, the penis grows larger, and the pubes become covered with hair; but a true and complete puberty has not yet been obtained in any case.

Notable differences in the results of treatment are to be seen in different cases. Much depends upon the age at which treatment is commenced. If the cretin is already advanced in years (uncommonly and even rarely the case), treatment proves ineffective, since ossification, though it has been slow, is completed.

Lugaro placed a woman of forty-six under thyroid treatment, and did not obtain the slightest increase in height. Radiographic

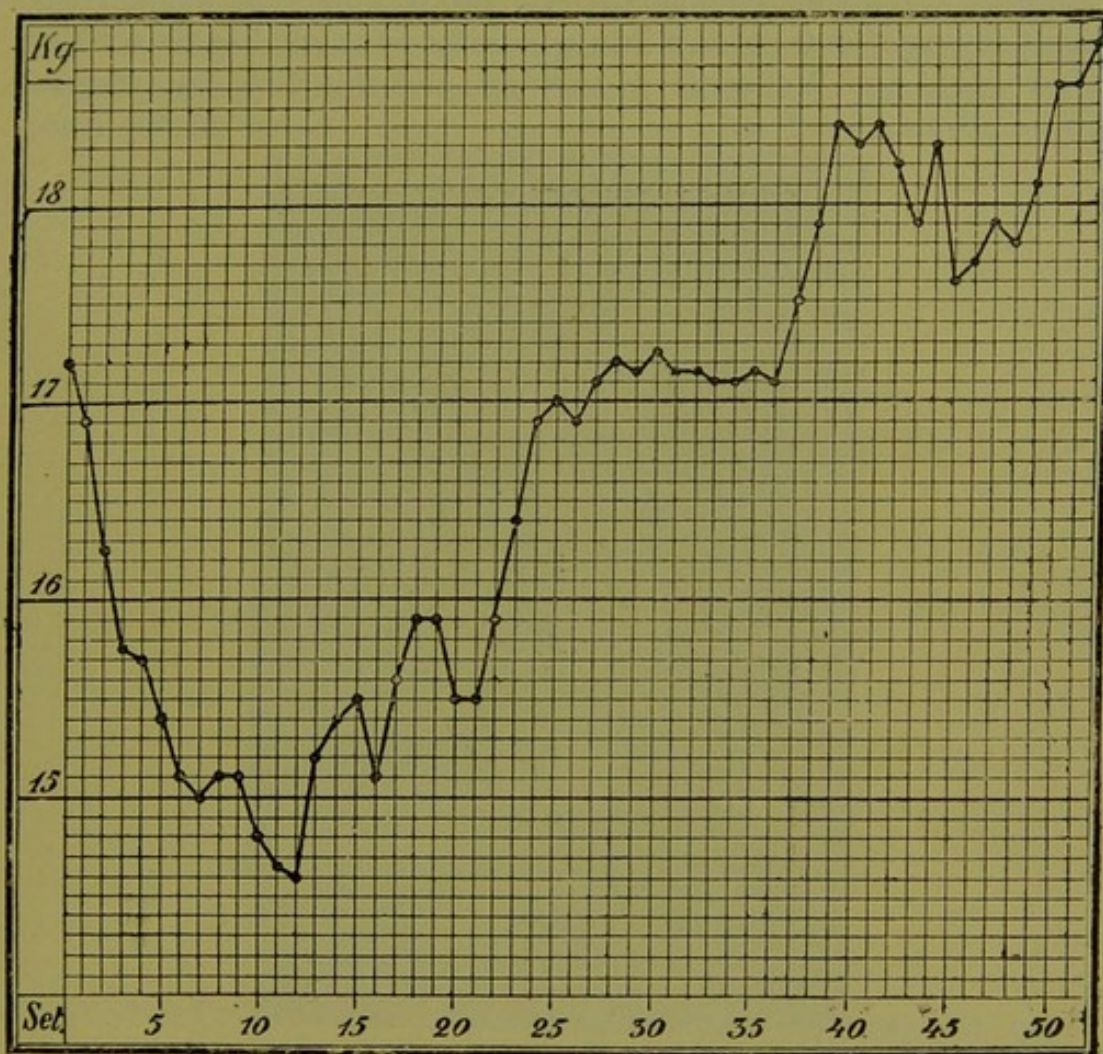


FIG. 78.—SPORADIC CRETINISM: CURVE SHOWING BODY-WEIGHT OF PATIENT, C. G., AGED SEVEN YEARS, DURING THE FIRST YEAR OF THYROID TREATMENT. (Lugaro.)

The abscissæ mark the fifty-two weeks; the parallel lines give the weight in kilogrammes. Note the rapid loss of weight in the first three months, and the ultimate rise beyond the initial weight.

examination showed that ossification was completed. Up to the age of twenty, however, marvellous changes in height may occur, because even at that age ossification is still in the stage of childhood, and capable of being modified (Figs. 74, 75, and 75A, 76 and 77).

A serious degree of the disease has greater importance in view of the way in which it affects the psychical functions. In severe

cases, bodily development is always capable of improvement under treatment, but the same cannot be said of the intelligence. On the other hand, in milder cases, in which the patient is already able to speak, there is a much greater increase in the mental powers.

In sporadic cretinism, as in acquired myxœdema, thyroid treatment should be continued *vita naturale durante*. To begin with, the dose should be very small. At the commencement of treatment some patients exhibit intolerance for even one 5-grain tabloid (Burroughs and Wellcome) in the day, and this dose may require to be administered only on alternate days. Later on the dose

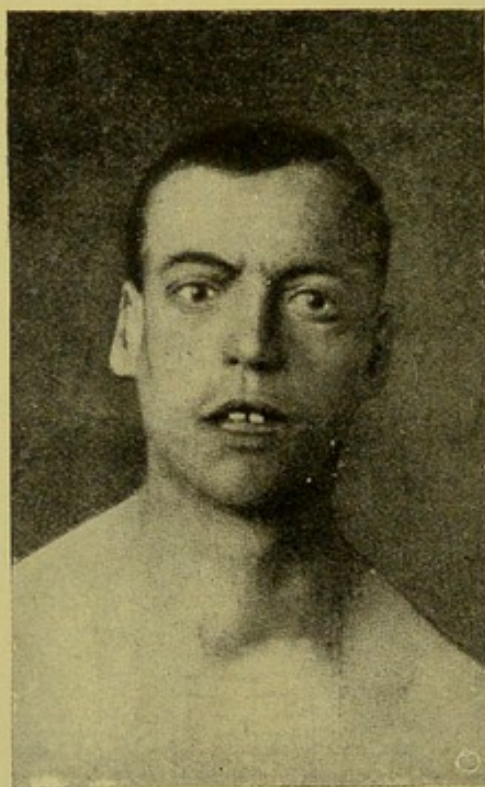


FIG. 79.—EXOPHTHALMIC GOITRE: RECURRENT STATES OF MILD EXALTATION.

may be increased, the increase being proportionate to and required by the increase in body-weight and metabolic activity. Finally, it is necessary to determine experimentally a constant dose which will prevent the return of myxœdematous phenomena without producing the signs of hyperthyroidism.

EXOPHTHALMIC GOITRE (BASEDOW'S DISEASE).

In exophthalmic goitre the psychopathic phenomena are not, as a rule, the most prominent, and the great majority of sufferers from the disease escape the asylum, although they suffer from typical mental disturbances. The most important symptoms are

those constituting the well-known triad—exophthalmos, goitre (Fig. 79), and tachycardia. These are the phenomena which, as a rule, lead the patient to apply to the doctor. The fine and rapid tremor is of the greatest importance from the diagnostic point of view, being more constant than exophthalmos and goitre.

The presence of tremor and tachycardia forms sufficient ground for suspecting exophthalmic goitre, and the diagnosis may be further strengthened by the occurrence of other accessory symptoms, such as profuse perspiration, diarrhoea, insomnia, dry



FIG. 80.—PROGRESSIVE PARALYSIS WITH EXOPHTHALMIC GOITRE.

cough, and diminution in resistance to the electric current. Goitre and exophthalmos are often absent.

The pathogenetic hypothesis most worthy of attention is at present that of an excess in the thyroid function. Hyperthyroidism may occur without the thyroid necessarily assuming the appearance of a goitre. This hypothesis does not detract in any way from the value of former hypotheses which referred exophthalmic goitre to lesions of the central nervous system and sympathetic. These lesions must, however, be the cause of the changes in the thyroid function, and particularly of the hyperthyroidism. As a matter of fact, the syndrome of exophthalmic

goitre may be observed in various organic affections of the nervous system, and especially in progressive paralysis (Fig. 80) and pellagra.

The hypothesis which ascribes exophthalmic goitre to hyperthyroidism is supported by various arguments, chiefly by the diametrical opposition which exists between its main symptoms and those of acquired myxœdema. There are also the facts that in some cases exophthalmic goitre is followed directly by myxœdema, with at the same time atrophy of the thyroid gland; that thyroid treatment is harmful in exophthalmic goitre; and that the administration of thyroid to healthy subjects causes the symptoms of exophthalmic goitre. Rational therapeutic measures based on the hypothesis of hyperthyroidism have been highly successful, and thus furnish another argument in favour of it.

There is, however, one point yet in the pathogenetic process which is far from being clear, and that is the respective parts played by the thyroid and the parathyroids in the production of the disease. Walter Edmunds holds that in exophthalmic goitre the parathyroids are diseased and insufficient; that the first stage of the disease may be due to their functional insufficiency; and that the hypertrophy of the thyroid is only a secondary feature. Decision as to this point will be given by future anatomical and pathological research, and more analytical experimental investigations.

Cases of exophthalmic goitre are very common, especially if irregular and incomplete cases are taken into account. As a rule, they are not regarded as presenting psychopathic symptoms, but they exhibit a characteristic and constant psychical syndrome consisting in excitement, restlessness, anxiety, loss of memory, and indecision of will. Doubts of an obsessive nature are added to the preoccupations of exophthalmic goitre, which concern themselves with any subject, and the patients become irresolute and incapable of mental work, irritable, diffident, quarrelsome, and timid. There is a singular contrast between their exaggerated style of action and their feeble performance. Sometimes such patients suddenly lose power over their muscles, and fall to the ground (*effondrement des jambes*), or allow objects which they hold in their hands to slip through them.

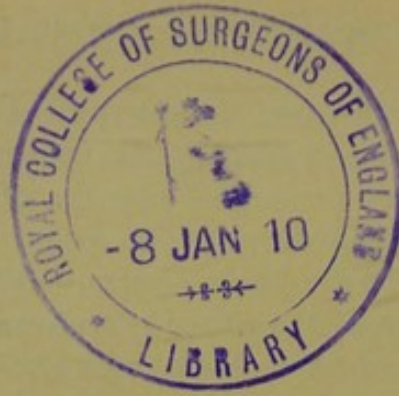
The excitement may readily reach to a true maniacal state, with restlessness, loquacity, and insomnia. On the other hand, if the phenomena of anxiety and self-absorption become prominent, the patient soon falls into a true state of anxious depression. These forms of psychical reaction have generally been regarded as mania and melancholia superimposed upon or associated with exophthalmic goitre, but in reality they are merely

a manifestation of the disease. The supposed psychoses which might be associated with exophthalmic goitre consist for the most part in simple and prolonged attacks of maniacal excitement or melancholic depression. The proof of their symptomatic nature is provided by their course. Although they may disappear independently of the other symptoms of exophthalmic goitre, in the majority of cases they are very constant, and are continued for a longer period than is usual in the common attacks of mania or melancholia. Mania and melancholia, accordingly, if they accompany or are due to exophthalmic goitre, require a guarded and less hopeful prognosis than when they occur in their simple forms.

In certain cases exophthalmic goitre is associated with hysterical phenomena. It sometimes seems as if its symptoms were due to hysteria, but in most cases we have to deal with hysterical symptoms which exophthalmic goitre has awakened, bringing to the surface a latent hysteria.

The treatment of exophthalmic goitre was at one time purely symptomatic, most value being attached to the bromides and sedatives generally, and to cardiac tonics. Surgical treatment, consisting in the partial or complete removal of the thyroid gland, may to-day be said to have been abandoned, on account of the risk of sudden death during the operation and the subsequent cachexia which may be caused by a too radical removal.

Acting, however, upon the suggestion of the new theories as to the thyroid origin of the disease, Burghardt succeeded in curing it by administration of the blood of a myxœdematous person. Lanz obtained good results from the use of the milk of goats deprived of their thyroids, and Möbius has prepared a serum of sheep deprived of their thyroids which has proved efficacious in certain cases. A positive pronouncement on these tentative therapeutic measures would be premature, for experimental trial of them is still somewhat limited, but there is reason to hope that they will yet bear fruit.



CHAPTER XIV

PROGRESSIVE PARALYSIS

PROGRESSIVE paralysis (general paralysis of the insane, dementia paralytica, chronic periencephalitis) is a chronic and fatal disease with well-recognized cerebral lesions, and having highly characteristic symptoms which concern especially the mental and motor functions. It leads to a gradual annihilation of the intelligence and character, and affects persons of robust constitution who have not previously suffered from mental disease, but who have in almost every instance contracted syphilis in youth. It occurs most commonly in males, and between the ages of thirty and fifty.

Symptomatology.

Signs and Course of the Demential Process.

The psychical alterations manifested by the general paralytic, though they may for a time be scarcely perceptible, betray from the first the character of a progressive dementia. They generally increase rapidly, like the force of an avalanche, following a typical course of progressive mental dissolution and ruin, and after a few years, if death does not take place in consequence of some intercurrent disorder, result in a condition of extreme dementia, and even of total cessation of the mental processes. If this fundamental tendency to dementia is kept in view, the various clinical pictures presented by progressive paralysis can be recognized to have a strict unity.

The first signs of mental dissolution often remain unrecognized, because they precede by several months or years the time at which the existence of some mental disturbance begins to be suspected.

In such instances the future general paralytic performs his ordinary duties satisfactorily, and is correct in his behaviour. He appears, however, to be somewhat dreamy and preoccupied. If an animated conversation is started in his presence, he seems to take no interest in it, as if from laziness or indifference. Under the very eyes of the early general paralytic one may make a sign, hand

a note, whisper the diagnosis, and hint at the prognosis without the patient noticing, not because of want of intelligence, but simply from lack of attention, and of sufficient rapidity of perception. Indeed, with the subject of no other lucid form of psychosis could the medical attendant safely take such liberties. Neither the neurasthenic, inquisitive to indiscretion, nor the paranoiac, haughty and diffident, would tolerate them; it is the general paralytic alone who, whilst still rational, remains unmoved by them. He is unconscious of the torpidity which affects his processes of ideation, more especially those of attention. In contradistinction to the neurasthenic, whose subjective sense of fatigue is intensified, whilst the quantity and quality of his mental work are not detrimentally affected, the general paralytic is surprised that others should be apprehensive on his account, laughs at them good-humouredly, and regards the doctor's visit as a superfluity, which, nevertheless, is pleasing to his *amour propre* and to his egotism. There are, however, cases in which the patients, rather on account of a feeling of confusion than from a conviction that there is anything wrong with them, acknowledge that they do not feel quite in their usual health, and thus to an objective diminution of mental vigour add a degree of subjective depression. The sense of mental enfeeblement is, however, always inferior to the reality. It may even happen that the logical correctness and emotional balance of the patient are so well preserved that his relatives, in order to account for his diminished participation in the doings and conversations of his companions, are led to make conjectures far removed from the truth, such as that he is hiding some sorrow, that he is pondering a scientific problem, or even that he has become somewhat deaf.

In this stage of prodromal calm the patient devotes himself with determined but quiet ardour to such things as the collecting of stamps, the care of his dress, of his flowers, or of his house, or he forms new habits which lead him to neglect his professional duties or his business. In his new occupations, which of themselves may be neither irrational nor vicious, but merely frivolous, he displays a punctiliousness amounting to pedantry, wastes much time, and talks of what he is doing with tiresome reiteration. There is thus already some impairment in the sphere of the sentiments, if not in that of the intelligence. These symptoms are of great importance, for, together with the preceding, they render it possible to make an early diagnosis of the disease.

In this initial phase more serious symptoms occasionally present themselves, which, however, being isolated phenomena, cannot as yet be given a definite pathological significance. The patient, while still following his usual vocation and appearing to be in good

health, perhaps fails to keep a business engagement, or stops abruptly in the middle of a public discourse, or writes a prescription containing wrong doses, or suddenly sets out upon an objectless journey. When his friends show concern he makes lame excuses, or offers jocular and insincere expressions of regret, endeavouring to make them forget the incident, or to treat it as merely an accidental occurrence. There may also be errors of conduct of less moment, which generally only attract attention in consequence of their being committed repeatedly. Thus, visits may not be returned, errors may be made in the reckoning of accounts, or scurrilous or impudent remarks may be passed, the significance of which only comes to be understood later when the addition of other symptoms makes it clear that they were the first manifestations of disease.

Such transitory, and in a sense spasmodic, amnesia in early cases is dependent, not upon either mental insufficiency or absolute loss of the mnemonic impressions, but upon insufficiency of the process of evocation. This in its turn is the result of lack of attention and sluggishness of thought, and is to be regarded as the premonitory sign of a dementia that is imminent, but not actually established. The dementia will manifest itself later by symptoms of a more continuous and conspicuous character.

The resistance to mental fatigue is diminished in the general paralytic. He is incapable of sustained attention, and his perceptions gradually become slower and less exact. He remains oblivious or indifferent to what is taking place around or within him; he treats everything as of little importance—his professional work, his domestic affairs, the future of his children, etc.; he ceases, in fact, to conduct himself and to feel as others do. His condition gradually passes from one of simple mental torpidity to a true and profound *metamorphosis of character*.

To the surprise of everyone, the general paralytic publicly plays the fool, and acts like a spendthrift or a libertine. His extravagance of conduct is unsystematic and erratic; it leads him, for example, to refuse without satisfactory reason to pay for something he has bought, to defæcate in improper places, or to blow his nose upon a curtain. Equally childish is the *prodigality* which induces him, for example, to purchase at one time twenty meerschaum pipes, or dozens of neckties, books that remain uncut, or delicacies in ridiculous quantities. Even his dissoluteness is more seeming than real; though it is clamorous, it is without continuity or passion.

This vicious conduct is not the result of any conscious perversion of the moral judgment, or the expression of a deliberate purpose. It is induced suddenly, irresistibly, and spontaneously

through the paralysis, established or transient, of a sentiment, of a thought or virtuous feeling, and hence in the mental scale it represents simply a deficiency. If in the course of this deterioration of character the paralytic sometimes appears to be a better man than he used to be—if the miser distributes presents, if the domestic or business tyrant relaxes the reins of discipline in the family or office—the new mental attitude, though, perhaps, more unselfish, is always less refined than before. The moral *degradation* reveals itself in a more serious and gross fashion by clumsy thefts of articles of no value (kleptomania), or by attempts, usually ineffectual, to commit acts of bestiality, sometimes in public, without the patient showing afterwards any signs of remorse or shame.

These morbid phenomena commonly remit, to recur later as signs of the *demential process*. The less marked of them, excepting when they occur in adults who have already given clear evidence of the seriousness of their disease, would almost pass for normal manifestations. They are such as might be excused on the ground that allowance must be made for youth and for a natural childishness of character. In other words, the foolishness, effrontery, and immorality of the paralytic may bear the interpretation of being dependent upon intellectual insufficiency associated with a certain degree of affability. This insufficiency is further shown in the facility with which the general paralytic can be intimidated, or made to admit his errors, into which he then almost immediately once more falls. Though his schemes may not always be absurd in themselves, they are rendered childishly senseless by his personal unfitness to carry them out. Thus, the illiterate shop-assistant essays to write a tragedy in verse; a man devoid of education, in humble position, and without means, desires to place himself at the head of a geographical expedition, or to promote a new industry, and in order to carry out his purpose sets himself to the drawing up of a high-sounding prospectus, which, however, remains unpublished, and, indeed, little more than sketched.

Notwithstanding the moral deterioration, which, however, is not constant, the affections, more especially those relating to the family, are preserved for a considerable time; but even these suffer some temporary impairment, and become at least more superficial. The dementia becomes apparent to everyone when the paralytic begins to show signs of constant forgetfulness, or when a certain number of his mental impressions seem to have been irretrievably lost. This loss, which at first is confined to recent records, is dependent upon partial or complete incapacity to retain new impressions. Thus, there is produced a state of profound *disorientation* as regards the recent past, indirectly also

as regards the present. The patient is still fairly well able to recollect simple and commonplace events in his remote past, but he does not show much interest in them, and with a lack of reflection that borders upon incoherence voluntarily discards his impressions of them in favour of those that are recent and confused. His fundamental instincts, freed from all inhibition, gain the upper hand, and he becomes and feels himself to be changed even intellectually.

His critical faculty, more especially as employed introspectively, is replaced by the most grotesque *credulity*. Though confined in an asylum, he thinks lightly of the restrictions placed upon his personal liberty, and cherishes the delusion that he is living in a hotel, in his own house, or in some new kind of establishment. If from time to time he asks to be allowed to return home, any simple answer satisfies him. As a rule, he cannot tell the day of the week, and, as if his idea of time were wholly lost, accepts with entire satisfaction the eternal promise, "To-morrow."

Gradually the old records are also blotted out from the mind ; the patient becomes unable to tell his age, the number of his children, or the name of his native place. He loses completely the sense of his own personality, as well as that of his environment. There is nothing that he now regards as improbable. The impressions that have been lost become replaced by others that are false, and by the most absurd convictions : he is a thousand years old ; he has five different native countries, twenty children of the same age ; he is at the same time a peasant and a landed proprietor, a man and a woman, or Adam, Eve, and Charles V. in one person. Reduced to a state of profound marasmus, he does not realize his condition, and even boasts of his good health. Finally, he reaches a state in which his existence is a purely vegetative one ; he retains only the mere glimmerings of reason, a few fragments of language, and some incoherent residua of voluntary activities. He can no longer control the actions of his rectum and bladder ; he strikes out wildly at anybody and without cause ; he fills his pockets with stones ; for months together he will repeat, even though no one is present, the same stereotyped grunts of satisfaction, in which are represented his whole mental activities.

Mental States and Delusions.

The process of dementia which we have described constitutes sometimes the whole psychical picture of the disease, in addition to which there is only the framework of the motor and visceral symptoms. Such cases are examples of the so-called *apathetic form* of progressive paralysis. There are, however, other phe-

nomena of a psychical nature which, though not, strictly speaking, expressive of the demential process, develop concurrently without counteracting or otherwise disturbing it.

Only some general paralytics are indifferent or apathetic. A large proportion of them show *mental exaltation*, which is almost constant in the early stages of the disease, and may be present throughout its whole course, and which gives rise to characteristic phases and varieties that are more common and of greater interest than those of the indifferent and apathetic form.

A peculiar feeling of well-being, or *euphoria*, gives rise to the illusion of an extraordinary increase in the muscular, digestive, sexual, and intellectual powers; all the patient's internal organs seem as if excited by some form of general intoxication, and the resulting condition of continual jubilation is conspicuously and widely reflected in the eyes beaming with satisfaction, the smiling countenance, the haughty demeanour, and the unlimited optimism of feeling. One might almost imagine that the general paralytic was under the influence of some magic potion, which, whilst body and mind are passing to complete destruction, is able to strengthen and exalt to the utmost the idea of self.

The patient becomes sleepless, talkative, and restless, and now and then, notwithstanding his general state of exaggerated joviality, may give way to momentary violence, which, however, is always followed by profuse apologies. Similar exaltation, breaking like a tempest on a brain already devastated by dementia, excites foolish ideas and suggests ambitious schemes. Thus, there are established *delusions of grandeur* which, though neither very stable nor markedly systematized, often attain most exaggerated dimensions. From the beginning of his disease the general paralytic is not thoroughly sincere, and in the narration of his exploits he tends to act the braggart. He may, however, merely indulge in a little boasting, but more commonly the defect in his critical faculty is so gross that it allows him to accept as true any notion that strikes his fancy.

As the range of his desires and imagination is not always very extensive, his megalomania may manifest itself in ways that are quite elementary and ridiculous. The patient boasts, contrary to the facts of the case and quite irrelevantly, that he has a very fine hat, or a stick with a silver head, or that he is able to write like an angel. The most common delusion is that of *wealth*. The patient asserts that he has thousands of bags of potatoes, four million lire, five hundred thousand millions, all the gold in the world, and so on, as far as his imagination and arithmetic will carry him. Generally speaking, however, the delusions of grandeur are expressed in all manner of forms without much cohesion. The patient is more

vainglorious than proud, and calmly asserts the most incredible things : he has lifted half a ton ; he has slain twelve lions ; he can sing baritone, bass, and tenor ; he has a thousand concubines in his harem ; he offers palaces, wealth, and honours, in return for a small favour or for a kind word, and is omnipotent and omniscient. To-day he is general of all Europe, king of Rome and of the stars ; to-morrow he will be pope, antipope, champion linguist, coin-collector, or prime minister.

An entirely different psychical picture is presented by those paralytics whose thoughts are diverted by a series of new, unusual, and disagreeable sensations. These are the neurasthenic paralytics. As a rule, the special condition of mind they exhibit is only slightly marked, and not long maintained ; it characterizes chiefly the beginning of the illness. Not uncommonly, however, the sense of ill-being assumes a more precise form, and becomes systematized as certain *phobias*, or as *hypochondriacal delusions*. The demential ground upon which these delusions arise confers upon them the same characters of incoherence, fatuity, and exaggerated absurdity that mark the delusions of grandeur. Thus, the patient will declare that his head is made of glass, that his legs are of cork, that a stone has replaced his heart, that he is without eyes or internal organs, that his tongue has dropped into his stomach, that he will be dead to-morrow, that he is already dead and putrefying, that he weighs 40 stone, that his anal orifice is permanently blocked, or that he is of microscopic stature.

Sometimes the delusions of the paralytic resemble those of the melancholic, but they greatly surpass them in grossness and absurdity. There is a delusion of *micromania*, which is founded upon paræsthesiæ and has paradoxical manifestations, and which has therefore many points of contact with megalomania, although to a certain extent appearing as antagonistic to it.

In general paralysis there may also be an early and transitory state of *mental confusion*, with or without motor agitation, which does not correspond to any profound degree of dementia, and is, indeed, independent of the demential process. The patient, after exhibiting an extreme picture of incoherence and violence, may quickly return to a condition of comparative lucidity. In the course of a few minutes, the paralytic in this state of mental confusion hurls insulting language at those around him, effusively embraces them, jumps upon the bed, smashes at the door, breaks chairs and glasses, tears his clothes, claws his face or his genitals, shouts disconnected words, spits upon his hands, plasters himself with fæces, upsets the chamber, and scatters the bedclothes. Somewhat rarely violence is the chief feature, and we have the maniacal state ; more frequently disorder

predominates, giving the confusional state, in which true rage is wanting.

On the other hand, if the dementia is not very far advanced, systematized delusions may develop, very similar to those that occur in the course of other mental diseases. Such *paranoid forms* of progressive paralysis represent the least irrational of the psychical reactions to the false suggestions and alarms of the sensory disorders, and therefore develop only in the initial stages of the disease, and during periods of remission. Conditions of apathy, extravagant delusions of grandeur and hypochondria, denote a more profound mental disorganization, and arise or become chronic in the advanced stages.

The affective depression may also manifest itself in the form of *delusions of persecution*. For example, the patient complains that he is made the object of ridicule and hostility, that his companions have put cantharides in the water he has to drink, that they have called him an erotomaniac, that one day he was assaulted and thrashed by persons unknown to him, that on another occasion he was knocked down in the street and shamefully maltreated, that a woman has bewitched him and made him impotent. The exaltation may also express itself in delusions more fixed and coherent than those of ordinary megalomania, which are multi-form and paradoxical. We have an example in the *erotic delusions* of some general paralytics. It is not always easy to recognize in these delusions the demential character which stamps them as of paralytic origin, and sometimes the nature of the case is only discovered indirectly by the observation of physical signs.

Crises and Seizures.

About 60 per cent. of general paralytics are subject to convulsions, as would appear from the statistics of 700 cases compiled by J. G. Smith. Besides *epileptiform seizures*, *apoplectiform* or *congestive attacks*, and other phenomena of a localized character, are of somewhat frequent occurrence. They generally disappear quickly, not depending upon gross focal lesions.

Among these paroxysmal disturbances of function, which impart a characteristic feature to general paralysis, and which are significant for the future course of the disease, the following may be mentioned: temporary aphasia, sudden congestion of the head, sudden elevation of temperature, vertigo, escape of fæces during sleep in patients who are still lucid and physically strong, vomiting without nausea, and bulbar paralysis. Other forms of localized paralysis also occur somewhat commonly, but they scarcely have the same paroxysmal character (Neissler).

All of these more or less conspicuous phenomena, like the

classical epileptiform and apoplectiform seizures, are to be regarded as the outward expression of similar organic conditions essentially connected with the morbid process underlying general paralysis. Clinically they do not constitute new symptoms unknown in the ordinary course of the disease, but rather represent the sudden appearance in a rapid, grave, and well-defined form of one or other of the characteristic symptoms of the morbid process, which becomes acute and more or less temporarily localized in a certain area of the cortex, or in the various grey nuclei of the encephalon. Similar forms of paralysis, following the more violent seizures, constitute the epilogue, usually brief, of a convulsive fit. When they follow a simple apoplectiform seizure, they are almost never dependent upon hæmorrhage, embolism, or other gross focal lesion. It is probable that the essential morbid process of general paralysis, whatever it may be, exercises an irritative or paralyzing effect according to its intensity and to the resistance offered at different times in the various cortical or nuclear centres, and that therefore all the symptoms of the disease, including the seizures, are, at least in the early stages, only the partial manifestation of a general and variable pathogenic action.

There is, in fact, an insensible gradation passing from the most serious motor seizures to those that are extremely slight and transitory, beyond which there are other phenomena, difficult to observe, which, although they are among the most common symptoms of progressive paralysis, are not classed among the seizures, simply because their appearance and disappearance, though probably sudden, almost always escape notice owing to their inconspicuousness. This is the case with regard to the changes in the reactivity of the pupils and the modifications of the patellar reflexes, the sequence of which remains obscure unless it is made the subject of special investigation.

Of all the paroxysmal disturbances, the epileptiform seizure is the most striking. It does not differ in any essential respect from the common epileptic fit. It may occur at any stage of the disease, and with all degrees of intensity and frequency. Sometimes, though rarely, a convulsive fit is the first manifestation of progressive paralysis; more often it is the last, immediately preceding a fatal result. Not infrequently such a seizure cuts off the patient at an early stage of the disease, or its occurrence, in addition to other signs, confirms a previously doubtful diagnosis. In most cases the fits are repeated at long intervals, marking different phases of the disease. Besides the general seizures, *monoclonic*, or *Jacksonian*, fits may occur, limited to one side, and not attended by complete loss of consciousness. Towards the

termination of the disease, convulsive seizures may occur in extraordinary numbers, being repeated every few minutes; some patients succumb after surviving one hundred or even two hundred such fits within a couple of days. Such fits occurring in series, accompanied, as they are, by insensibility, unconsciousness, elevation of temperature, stertorous breathing, irregularity of the pulse, and collapse, bring the patient very near to death's door, but they are not always fatal, and he may improve again for a time.

After a convulsion, paralysis often remains in the form of *hemiplegia*, *hemiparesis*, or *monoparesis*, which, however, quickly disappears, sometimes even in one or two days. *Apoplectiform seizures* may also occur without being preceded by convulsions, and may pass unobserved. The paralysis is followed by *early contracture*, which may appear even within a few hours (Lugaro).

The apoplectiform seizures may affect the centres for speech, and produce *motor aphasia* of cortical type without hemiplegia, which must not be confused with complete inco-ordination of the tongue and lips. The latter is of nuclear origin and progressive, and is, moreover, rarely capable of causing complete loss of speech. There are also to be noted transient attacks of *word-deafness*.

Another kind of seizure that may affect the general paralytic is *congestion of the face*, accompanied by drowsiness or mental confusion. Well-marked congestive attacks of this nature are often the prelude of more grave seizures, or they may be rendered more serious through being complicated by other morbid phenomena, such as the refusal of food, or vomiting. When the attacks are very severe or frequently repeated, it is rare that all trace of them is obliterated after the disappearance of the paralysis. Often the patients develop a condition of permanent motor deficiency, or descend several degrees in the scale of dementia. The slighter attacks leave behind them effects which, though less marked, are equally interesting, such as changes in the mental state, in the nature of the delusions, in the reactivity of the pupils, or in the condition of the patellar reflexes.

The occurrence of *vertigo* would have greater importance, especially in early progressive paralysis, if, when occurring in robust subjects not prone to think there is anything wrong with them, it did not almost always escape early detection. Generally the physician learns of its occurrence only in the course of retrospective inquiries made when the dementia is already so advanced as to render the patient's statements confused and exaggerated, and therefore of doubtful value.

It is much more easy, even at the beginning of the disease, to ascertain the occurrence of certain other suddenly developing

symptoms which, although they may be regarded with indifference by the patient, cannot but attract the notice of those around him. For example, there may be escape of fæces during sleep, or even whilst the patient is awake, without either diarrhœa or pain. More rarely there is sudden vomiting without nausea, or any feeling of indigestion. Such incidents may occur only once.

Although general paralysis is essentially an afebrile disease, it may exceptionally, yet not infrequently, be attended by *sudden elevations of temperature*, which sometimes reach even to 107° F., and usually set in and pass off again without relation to the general course of the disease. These are anomalous febrile attacks due to disturbance of the heat-regulating centres, upon which for some special reason the morbid process is for the time concentrated, inducing a kind of thermic equivalent of the epileptiform fit.

Lastly, it sometimes happens that the patient, either at an early or advanced period of the disease, suddenly develops Cheyne-Stokes respiration, very great pallor, vertigo, difficulty in swallowing, loss of speech, feebleness, rapidity and irregularity of the pulse, general weakness and unconsciousness, or the syndrome of *bulbar paralysis*, resulting in death within a few hours. Severe attacks of this nature may, however, pass off, or may occur once or twice in an abortive form, but usually a relapse occurs, and the patient succumbs. This mode of termination of progressive paralysis is not mentioned as one that is expressive of the natural process of the disease, but the phenomena are not so very rare as to deserve to be excluded from the series of ordinary symptoms, or neglected as indications of an approaching fatal termination in forming a prognosis. The bulbar character of this syndrome does not necessarily imply that it cannot be referred, like the previously mentioned symptoms, to the cerebral cortex, the centres of which may be simultaneously affected, with the exclusion of the motor zone for the limbs.

Motor Symptoms.

In progressive paralysis the occurrence of extensive and well-marked paralyzes is rare. The common condition is one of paresis and partial paralysis, which develop at a somewhat advanced stage of the disease, and produce a special form of *incoordination*, characterized by difficulty and slowness in carrying out delicate movements. It is only in a few cases and very gradually that these motor disorders become so severe as to make it impossible for the patient to move about, to feed himself, or to articulate. There are, indeed, paralytics who, except for some degree of paresis, which may be extensive, display unusual vigour

in walking or in other forms of simple muscular exercise, being favoured sometimes by the absence of the normal sense of fatigue. But, on the other hand, it is very common to find that the patient is unable to wind up his watch, to tie his scarf, to button his trousers, to perform together movements which are ordinarily dissociated, to write and pronounce correctly certain words, to dance, to fence, or to control his facial expression properly when smiling. In the last stage of the disease only is there commonly a state of general paresis with marked hypertonus.

A special seat of various important motor changes is the pupil. In the initial stages of the disease these morbid alterations are generally temporary, and, even if there is not a return to the normal, they show, by giving place to disturbances of an opposite kind, that they may be transitory and independent of any destructive lesions. The most important of the early symptoms is the Argyll-Robertson phenomenon, which consists in preservation of the reaction of the pupil to accommodation, but not to light. Very often the pupils respond to the stimulus of light by a reaction that is merely slower and weaker than normal; they may also be absolutely fixed. I have been able to prove that the immobility of the pupil may disappear and reappear in the course of general paralysis, as it has been observed to do in *tabes dorsalis* (Eichhorst, Treupel). The best method of carrying out the examination consists in increasing and diminishing a steady flame in fixed position, which the observer controls by means of a key, without making movements that tend to cause alteration of the accommodation.

Sometimes the pupils are symmetrical, as in normal individuals; but in consequence of a difference in the reactivity, a momentary asymmetry is produced during the examination, as with each change in the light one pupil reacts much sooner than the other. Much more commonly the asymmetry of the pupil is permanent (*anisocoria*), and in these cases there is more or less complete immobility, generally in the dilated pupil. Myosis is somewhat frequent in the initial stages, as in *tabes*.

Mydriasis is more frequent in the later stages, and it may affect patients who have previously exhibited very distinct myosis. There are also to be mentioned some exceptional cases in which there is an inversion of the pupillary reflex to light, whereby diminution of the intensity of the luminous stimulus causes contraction instead of dilatation, and *vice versa* (Raggi, Morselli, D'Abundo). This remarkable phenomenon may present itself as a fallacious appearance, when the true reaction is so momentary as to escape observation.

It has been observed that the pupils of general paralytics some-

times have an abnormal form—for example, oval or polygonal (Morselli, Musso). As a rule, all these symptoms are dependent upon the action of the oculo-motor nerve, and not upon that of the sympathetic, which does not participate in the morbid process. Myosis, expressive of hyperactivity of the oculo-motor nerve, is more frequent towards the beginning of the disease and in *sthenic cases*—that is to say, during the irritative phase of progressive paralysis—whilst mydriasis, expressive of defective action of the oculo-motor, is more common in the terminal stage of exhaustion, and in cases that run a rapid course.

The lesion, whether irritative, paralytic, or destructive, is almost always limited to that nucleus of the oculo-motor nerve which supplies the intrinsic muscles of the eye. The other nuclei may, however, also be affected, though much more rarely, as well as the nuclei of other ocular nerves—for example, the abducens. Indeed, there have recently been recorded several cases of paralysis of the extrinsic muscles with atrophy of the corresponding nuclei (Siemerling and Boedeker). It is remarkable that the attention of observers had not previously been drawn to this phenomenon; at the same time, strabismus, ptosis, and nystagmus are quite exceptional symptoms in cases of progressive paralysis.

Of no less importance than the pupillary phenomena is the altered condition of the *patellar reflexes*, which are almost never normal in progressive paralysis. In most cases these reflexes are much exaggerated. In almost any position of the leg a clonic reaction can be elicited. In addition to this exaggeration of the knee-jerks, very commonly a confirmatory ankle-clonus and vibration of the patella are obtainable. As a rule, this phenomenon is bilateral, and of equal intensity on the two sides.

When the knee-jerk is not exaggerated it is completely abolished, or nearly so; hence, of the various conditions it is capable of exhibiting, the normal is quite exceptional. The same patient in successive stages of his disease may present exactly opposite conditions of this reflex. Generally it is at first exaggerated, and afterwards abolished. The abolition may, however, be an early symptom.

On account of their very great frequency and general early development, these irregularities of the patellar reflexes become an important diagnostic sign. The modifications of this form of reactivity are often very closely related to the epileptiform seizures (Lugaro). It is not the case that the patellar reflexes are exaggerated when the legs are spastic, and abolished when these are flaccid and paretic. The muscular tone has, no doubt, some relation to the condition of the reflexes, but the origin of

the two phenomena is not identical, and general alterations of the muscular tonus are less constant than abnormalities of the patellar reflexes.

It is equally contrary to fact that in progressive paralysis it is necessary to distinguish two different clinical types—the *spastic* and the *tabetic*. Indeed, since in the same patient the patellar reflexes may be exaggerated or absent according to the time at which the examination is made, it is evident that there are not two such forms of progressive paralysis anatomically and pathologically distinct from each other. By this it is not, however, intended to deny the occasional association of the tabetic process with the paralytic, constituting the condition known as *tabo-paralysis*.

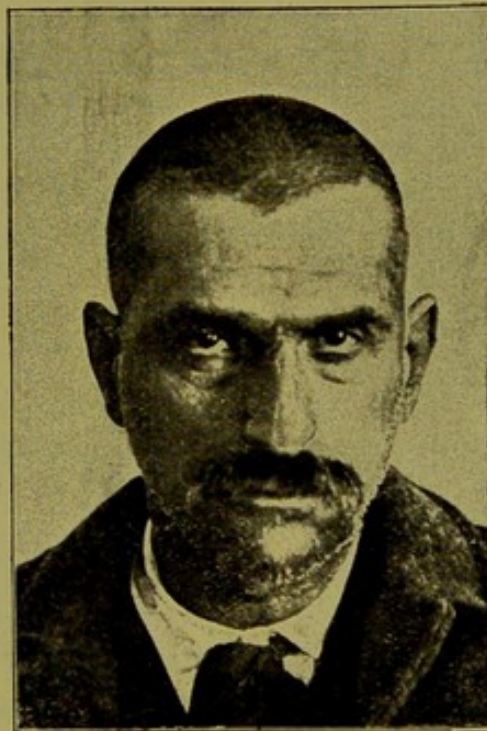


FIG. 81.—PROGRESSIVE PARALYSIS (AMIMIA).

Progressive paralysis is in every case chiefly a brain disease, and the alterations in the patellar reflexes are for the most part determined by cerebral lesions. If to these there are added fairly frequently, but not inevitably, certain spinal lesions, such complications are not sufficiently constant to explain the disorders of various kinds that so constantly affect the patellar reflexes, and still less do they authorize the distinction of two antagonistic forms of progressive paralysis—a spastic and a tabetic. It is true that a certain number of cases occur in which the patellar reflexes are first exaggerated and then abolished. This change is, however, due not to the morbid process being transferred to a different site, but to the fact that its action, by becoming more intense, is able to produce different effects without change of locality.

The symptomatic succession of myosis and mydriasis, which seems to be borne out by experience, also supports this opinion.

A phenomenon that is almost never absent, and which often as an early symptom is of decisive diagnostic value, is *amimia*, or *loss of facial expression*. In the late stages of the disease the face of the general paralytic is an immobile and expressionless mask, in which the eyes alone exhibit animation (Fig. 81). This character is so evident that the experienced alienist is sometimes able to make a lightning diagnosis *in pectore* before the patient or his friends have uttered a word, and to pick out at sight the paralytics from among a hundred other patients not known to him.

The cause of this loss of expression is a state of paresis, or, more correctly, *hypotonus*, affecting the regions supplied by the inferior facial nerve. In fact, whilst the eyes are equally opened, and display animation, whilst the brow contracts and relaxes with sometimes even exaggerated energy, one is struck by the inertia, or, more exactly, the slowness and discontinuity with which the motor impulses seem to reach the region of the cheeks and lips (Fig. 82). It may even happen that a patient who is quite apathetic and demented is thus given a fallacious aspect of depression (Fig. 83).

When the paralytic endeavours to accompany his words with appropriate expression, or to smile, his mouth falters for some seconds in a visible labial tremor; and when, with more or less effort, his object is achieved, no radiation of the expression can be observed beyond the muscular contractions that are strictly necessary. His expression of emotional states is therefore imperfect and contracted, and of the character of a forced grimace. Weeping, especially, is reduced to a simple hyper-secretion of tears. The paralytic has thus commonly an aspect of grotesque indifference that contrasts oddly with his language and with his facile and clamorous, though superficial, emotional state. It must at the same time be borne in mind, however, in order not to be led into error, that some people have normally a countenance which rarely betrays emotion, and which, in consequence of this constitutional peculiarity (resulting, perhaps, from a habit of dissimulation), generally seems to express antipathy.

That in these cases one has not to do with a true paralysis is shown by the fact that the patient is still able to blow and whistle, excepting in the last stages of his disease, whilst, on the other hand, he is unable to carry out movements that are not usually combined, such as the closing of the eyes with simultaneous opening of the mouth, or those that are not commonly dissociated, such as the closing of one eye only.

The paresis of the muscles of facial expression is, as a rule, bilateral and symmetrical, and hence its slighter degrees are not always easy to recognize, especially if the patient has not been known to one before. In order to elicit clearly a symptom of so much diagnostic importance, one may endeavour to make the patient laugh, or to arouse in him some painful emotion, which may generally be done very easily.

The face is sometimes also the seat of involuntary *fibrillar contractions*.

Motor irregularities also show themselves in the areas of distribution of other nerves, especially in the form of involuntary

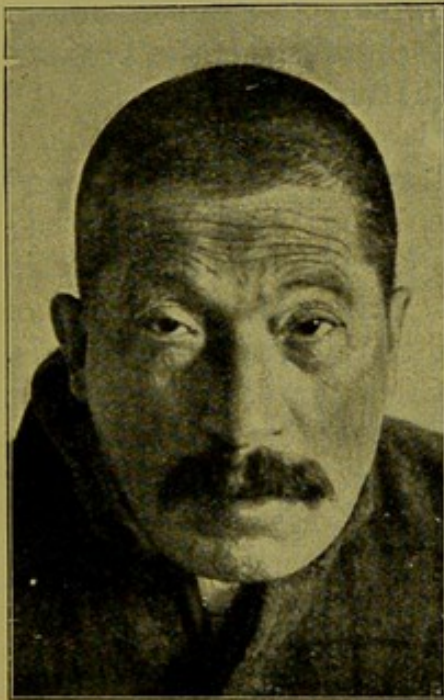


FIG. 82. — PROGRESSIVE PARALYSIS: COMPLETE AMIMIA IN THE REGION OF THE INFERIOR FACIAL NERVE, WITH PRESERVATION OF THE INNERVATION OF THE MUSCLES OF EXPRESSION IN THE UPPER PORTION OF THE FACE.

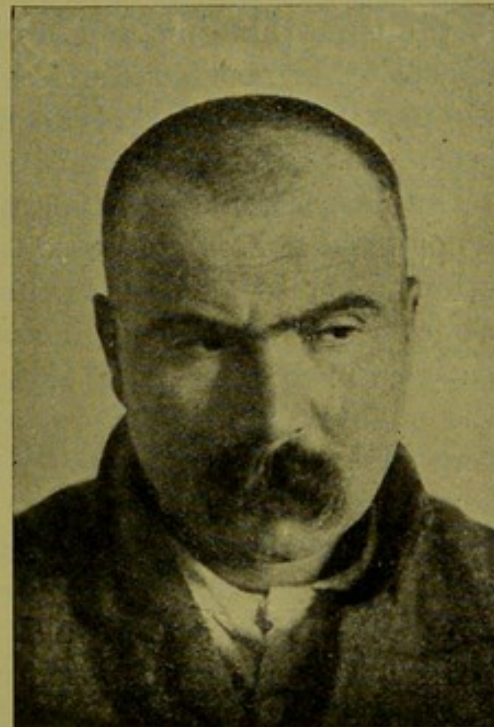


FIG. 83. — PROGRESSIVE PARALYSIS: AMIMIA IN THE REGION OF THE INFERIOR FACIAL NERVE; MELANCHOLIC EXPRESSION OF THE EYES AND BROW.

continuous movements, such as *grinding of the teeth*, *chewing* with the mouth empty and the lips closed, and the clicking of the tongue against the palate. The first two of these have to do with the action of the third branch of the fifth nerve, the last with that of the hypoglossal. Such symptoms are common, also, in cases of severe secondary dementia and in imbecility, but they have a very special significance when they occur in young and intelligent patients, the nature of whose illness is still uncertain. Thus, persons who otherwise behave themselves correctly, and are able with sufficient ease to carry on a conversation, may more or less abundantly interject between one reply and another

these unseemly movements, the obstinate repetition of which attracts the attention even of inexperienced observers. When questioned on the subject, the patients say that they have not noticed anything peculiar, or give an explanation of an unsatisfactory kind.

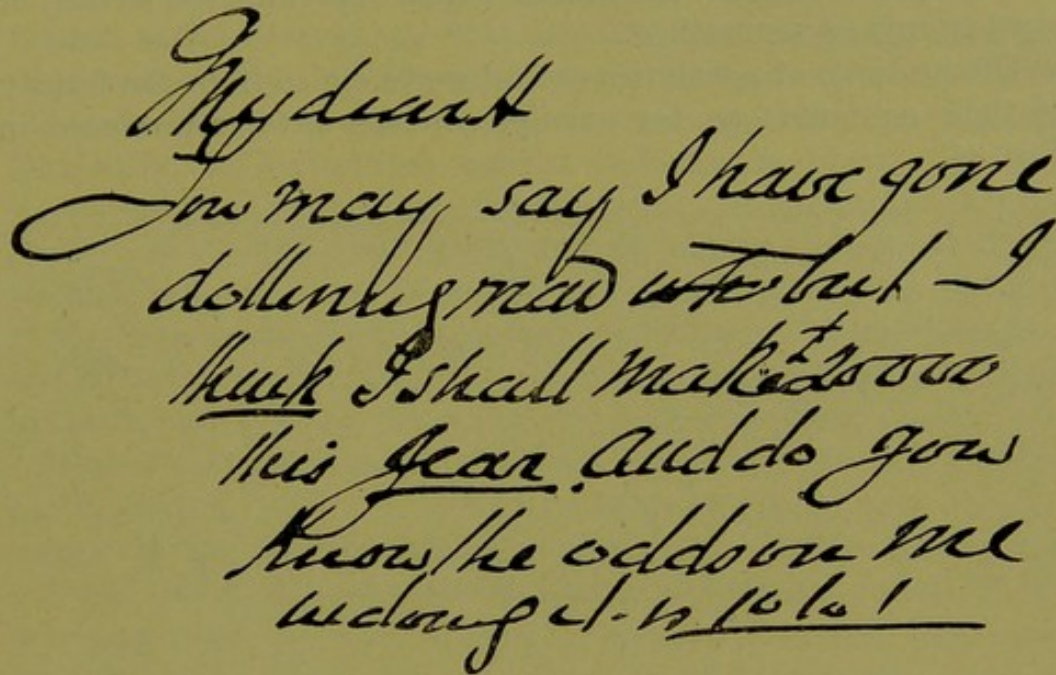
Concerned with the action of the hypoglossal nerve there are also to be observed *vermicular movements of the tongue*, which, however, occur in many other affections, such as alcoholism. Further evidence of motor defect may be noticed in the occurrence of *tremors of the tongue*, which usually involve the whole organ, and which are often so marked as to be a serious hindrance to voluntary movements, more especially those of articulation; but by the time that this symptom, which, moreover, is common in several other nervous diseases, is fully established, the progressive paralysis is so far advanced, and the symptomatology of the disease so abundant, that little notice is generally taken of it.

The associated defective functional action of the facial and hypoglossal nerves gives rise to *dysarthria*, or difficulty of articulation. This may consist merely in the slightest difficulty in pronouncing labials and linguals, or it may reach a condition of *anarthria*, the emission of almost completely inarticulate sounds. The slighter degrees of dysarthria, which manifest themselves from time to time in a hardly perceptible way, have the greatest diagnostic importance, being one of the most characteristic of the early symptoms. The patients exhibit slight slurring, without actual interruption of the flow of words, when articulating numerous closely placed labial or lingual sounds, as in "Royal Artillery" or "hippopotamus." Even the least dysarthric paralytic surmounts with difficulty the obstacle presented by the first of these tests, saying "artrallerary" or "rartrillerie," but so readily and indistinctly that the error entirely escapes the notice of an ear that is not specially listening for it. In the more advanced stages the changes are more marked, as from "hippopotamus" to "tahippotapotapos," and there is then added to the difficulty of articulation an imperfection of the cortical impulses.

In the last stages of progressive paralysis the patients almost always display *bradylalia*. The slowness of ideation and the paresis of the tongue, lips, and soft palate, combine to impede utterance. The voice becomes monotonous, like that of the professional beggar.

Equally characteristic are the changes in the *handwriting*, which sometimes even allow of a diagnosis being made after death—as, for example, upon the inspection of a holograph will. Even from the commencement of the disease tremulousness, limited to the

upward strokes of the letters, may sometimes be observable. It has a significance similar to that of dysarthria, being due to imperfect co-ordination of the movements of the extensors and abductors of the fingers. Later, ataxic disorders of the fine graphic movements become evident, being even more marked than tremulousness or weakness. The patient's writing is *macro-graphic* (Fig. 84), from some compulsion, and not from choice.



My dear
 You may say I have gone
 deliriously mad but I
 think I shall make you
 this year. And do you
 know the odd one me
 welcome it is 16/6!

FIG. 84.—POSTCARD WRITTEN BY A GENERAL PARALYTIC IN AN EARLY STAGE OF HIS DISEASE.

The letters are sprawling, and carried beyond the margin; the downward strokes may be incomplete, owing to the fact that the patient presses too firmly with his pen, and continually exhausts his supply of ink, which he forgets to renew. Finally, the writing becomes a collection of imperfectly formed and indecipherable signs (Fig. 85). In addition to the muscular representation of graphic movements, the visual representation of words and

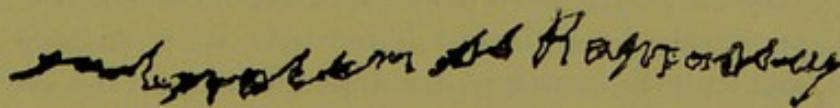


FIG. 85.—WRITING OF A GENERAL PARALYTIC. SIGNATURE: "THOMAS RAMSAY."

letters has become affected. The demential process is no longer localized.

Before these extremes are reached, however, it frequently happens that the writing, though still firm and steady, and betraying no sign of the least defect of muscular innervation, shows, along with other characteristic irregularities, evidence of incipient disorganization of habitual processes. Thus, the

paralytic with a handwriting that is caligraphically satisfactory adds, omits, or transposes letters and syllables. If an error of this kind occurs two or three times in the course of a writing which is logically correct and irreproachable in its caligraphy, a very important significance can be attached to it. The significance is obvious when there are other signs which indicate dementia rather than mere defective caligraphy, such as blots, hieroglyphics, scrawls, unfinished words, superimposed letters, or even simple agrammatism.

The writings of paralytics are interesting also from the fatuity of their contents—as, for example, in the letter reproduced in Fig. 84.

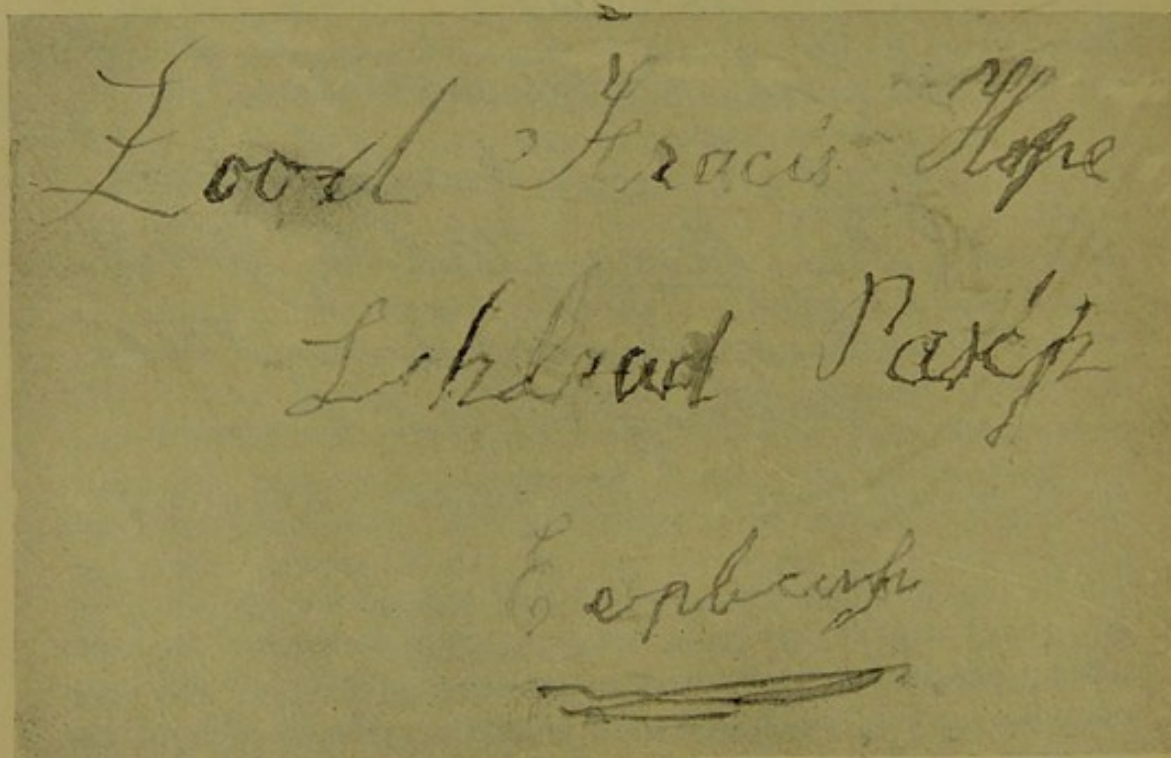


FIG. 86.—ADDRESS OF A LETTER WRITTEN BY A GENERAL PARALYTIC IN AN ADVANCED STAGE OF HIS DISEASE: "LORD FRANCIS HOPE, HOLYROOD PALACE, EDINBURGH."

The pareses of progressive paralysis are almost always of *monoplegic* type, rarely hemiplegic. They may be transitory or permanent, and in both instances are dependent upon the occurrence of apoplectiform seizures, which may escape notice. The transitory pareses are of extremely brief duration; the permanent, which are more rare, and which almost never occur in the early stages of the disease, pass very quickly into contracture. The arms are more often affected than the legs.

Paresis of the bladder may occur in all stages of the disease, but is almost never long-continued. Some cases have been observed in which spontaneous rupture of this organ has taken place, owing to degeneration of the muscular coat (Herting).

Not uncommonly paralytics in the last stage suffer from *difficulty of deglutition*. In these cases the patients let their saliva dribble, have increased difficulty in speaking, and are much annoyed thereby. The disturbance of deglutition may be the prelude to a pseudo-bulbar crisis.

Disturbances of Sensation.

The euphoristic and hypochondriacal delusions of paralytics furnish sufficient evidence that sensation and perception are also disturbed in them, although the fact is rarely brought out by the clinical history or in the course of the interrogation of the patient. Obviously, the inattention, mental confusion, and lack of reactive manifestations, whilst favouring the study of the motor disturbances, are a very great hindrance to the investigation of the sensory functions and their possible alterations. The question of the importance or of the actual occurrence of these alterations will be decided rather by facts regarding the pathological anatomy of the disease than by the study of the clinical phenomena.

Observations regarding the sensory changes in general paralytics, more particularly those affecting the pain sense, have recently begun to be published. In patients who had suffered from intense localized pains, focal lesions have been found in the posterior part of the internal capsule (Edinger, Biernacki, Reichenberg). These lesions, which in such instances have an irritative action, serve to show that pain and cœnesthetic disturbances may occur as transitory phenomena, in consequence of temporary local irritation of the brain; and it is evident that when they are of long standing they will tend to become complete and destructive, the paræsthesia and pain being then replaced by anæsthesia.

On the other hand, as sensory disturbances are rare in early cases, as their occurrence is doubtful in advanced cases, and as really characteristic symptoms of this nature are absent throughout the whole course of the disease, excepting in those somewhat vague cases in which their occurrence is inferred from the existence of delusions of cœnesthetic origin, we are warranted in concluding that in progressive paralysis the motor and associative elements are affected in preference to the sensory, or, at least, at a much earlier period and with greater constancy and severity.

Formication in the extremities, sensations of burning, of weight, and of partial or total mummification of the body, and other forms of *paræsthesia*, are fairly frequent in those cases of progressive paralysis that are initiated by a hypochondriacal or neurasthenic stage. Not unknown, also, are *lightning pains*, such as occur in tabes, and *pains of a rheumatic and neuralgic character*,

which lead the sufferers to seek relief in treatment at hydrotherapeutic establishments.

The question has been raised whether *hallucinations* occur in progressive paralysis. As regards those of sight, which are undoubtedly the most rare, some authorities hold that they are a certain sign of alcoholism or of alcoholic pseudo-paralysis, and that their occurrence excludes the genuine incurable form of paralysis. As a matter of fact, the classical form of progressive paralysis is not incompatible with hallucinations of any kind. Those of smell and taste sometimes attain to an intensity that is almost painful.

Auditory hallucinations are the least rare, and they manifest themselves tumultuously, as in amentia. At the same time, some paralytics, from an error of memory, or owing to undue susceptibility to suggestion, describe hallucinations which they have probably never had, and we need not be too ready to accept their statements. Of the cœnesthetic hallucinations, only those are beyond all doubt that are definitely localized and precise in character. I knew a paralytic who imagined that she was reduced to the size of an infant, and who allowed her arms to remain inactive because she believed that they were too short to reach objects that she wished to grasp. The sincerity of her conviction was shown by the depression that accompanied it, and by the calm satisfaction she evinced when the hallucination passed away.

Some importance used to be attached to *analgesia of the ulnar nerve* as a symptom of general paralysis. Cramer maintained that it was pathognomonic. In health acute pain can readily be caused by pressing with the finger in the olecranon fossa, but its severity depends rather upon the special anatomical arrangements of the region than upon the sensitiveness of the nerve. Analgesia of the ulnar nerve may at least also be observed in epilepsy (Hillenber) and in mental diseases, such as amentia and mania, in which the projection system is intact (Göbel); and, moreover, it was as a sign of tabes that Biernacki originally described this phenomenon which bears his name.

Visceral and Trophic Disturbances.

Progressive paralysis, like tabes, syringomyelia, and many other diseases of the nervous system, gives rise to noteworthy disturbances of the fundamental functions of digestion, metabolism, and nutrition (Mann). Disturbances of this kind are sometimes of a progressive character, and exercise an accelerating influence upon the progress of the disease. They are dependent upon secondary or primary complications of the morbid process

in the spinal cord and peripheral nerves, and perhaps also in other organs.

The general paralytic, notwithstanding his boasted good health, has commonly an extremely *fetid breath*. This symptom reaches a characteristic degree especially in confusional states. Nevertheless, the patient's appetite is almost always voracious, and particularly in the last stages of the disease and in its apathetic forms. The condition is one of true *bulimia*, devoid of the smallest gastronomic refinement. Together with irregularity of meals, it increases the gastro-intestinal disturbance. *Constipation* is common. Some patients remain constipated for several days in succession, in spite of the administration of the most energetic purgatives. Sometimes the constipation alternates with *diarrhœa*. As an expression of the general marasmus there may be, independently of any delusions or suicidal intentions, transitory attacks of *sitophobia*, which contrast strongly with the voracity usually exhibited by the patients.

From an early stage of their disease paralytics suffer from a diminution of their *sexual capacity*, which sometimes even amounts to complete impotence. It is characteristic of them that in such circumstances they fail to recognize their true condition. Often, indeed, they marry without hesitation, and afterwards become obscene scribblers, and brag of their amorous adventures, thus giving evidence of very remarkable thoughtlessness and moral bluntness. Cases are, however, by no means rare in which marriages contracted after the onset of the disease result in issue. It is a curious fact that nearly all general paralytics are married.

Not only is metabolism affected in its finer processes, but its quantitative balance is often likewise profoundly altered. As a rule, the patients grow fat. Their expressionless faces lose every sign of intelligence, so that sometimes even their friends fail to recognize them. This is especially apt to occur when there are added to the corpulence greyness of the hair and carelessness of personal appearance, as is commonly the case. Sometimes the opposite phenomenon is observed—namely, emaciation, not of a slow and progressive nature, but rapid and sudden. Lastly, it is possible for corpulence and emaciation to follow each other in the same patient in successive phases of the disease, and also for the two phenomena to alternate, so that the symptoms are given a cyclical character.

The bones of paralytics may become somewhat fragile in consequence of the prolonged marasmus, but signs of true dystrophy or of osteomalacia are not demonstrable (Meyer).

Bed-sores not uncommonly constitute the last symptom and the immediate cause of death in all those paralytics who do not

succumb to an apoplectiform seizure or to intercurrent diseases. The sores form and advance very rapidly, even though the body of the patient is still well nourished. Multiple dystrophies may also occur at points that are not subjected to pressure or to friction (D'Abundo).

Among the intercurrent disorders pneumonia due to lesions of the vagus is to be noted (Bianchi).

Clinical Varieties of Progressive Paralysis.

The clinical forms and varieties of progressive paralysis are, for the most part, abstractions; they are rarely realized in actual cases. Practically, they are seen mostly as mere temporary phases of a somewhat variable morbid process. It is, however, customary to recognize three forms of progressive paralysis, distinguished by the characters of the mental disorder—namely, the *grandiose*, the *hypochondriacal*, and the *apathetic*. The last is the demential form *par excellence*. The *confusional* and *paranoid* forms must also be remembered. Mendel asserts that in the course of the last twelve years the clinical type of progressive paralysis has undergone considerable modification, whereby the demential forms have become the most prevalent. He attributes this modification to attenuation of the post-syphilitic virus which is the cause of the disease. It is also possible that the increased number of demential cases depends upon improvement in diagnostic methods, and consequent increase in the total number of paralytics recognized.

Of the various forms of progressive paralysis, the *grandiose*, with its extravagant delusions, was the first to attract the attention of observers. It is also the one that actually comprises the larger proportion of cases, and is at the same time the most easily diagnosed. The *hypochondriacal* form, though no less characteristic, is much less frequent. The *apathetic* form is specially common in women and in men of the lower classes, who are habituated to passive obedience and to the chronic endurance of unsatisfied needs, whilst the *grandiose* and *hypochondriacal* forms are the most prevalent among professional persons and the rich.

Further, these different clinical pictures may not only follow one another, but may even be combined. The same paralytic may manifest an association of *grandiose* and *hypochondriacal* ideas, and he may afterwards pass into an *apathetic* state without losing either form of delusion.

To the forms and phases commonly recognized it is necessary, as already indicated, to add the *paranoid* and *confusional* states, one or other of which may predominate throughout the whole course of the disease, or be maintained for a very long period.

They constitute two clinical varieties no less important than the preceding, and it is necessary to be able to recognize progressive paralysis in them as in the three classical forms. Many errors of diagnosis—or, at least, many doubts and delays—are occasioned by lack of acquaintance with these paranoid and confusional varieties.

The subdivision of progressive paralysis into forms distinguished by the somatic symptoms, and more especially the motor, is an impossibility, because each of the numerous symptoms of this nature may be wanting, or may appear or disappear quite suddenly and unexpectedly at various stages of the disease. One cannot say beforehand whether in a certain individual the disease will run its course with seizures or without them, with periods of mental quiet or with continued exaltation. Likewise, there are no very good grounds for the contradistinction of the so-called *spastic* and *tabetic* varieties of progressive paralysis (Stewart), the first said to be associated generally with agitation, acuteness of symptoms, and youth of the patient, the second with apathy, chronicity, and senility.

Moreover, the fundamental ground of this clinical distinction is fallacious, for the clinical analogies between progressive paralysis and tabes dorsalis on the one hand, and between progressive paralysis and spastic spinal paralysis on the other, are only very imperfect. There are, it is true, cases in which progressive paralysis is associated with tabes dorsalis; but it would be a great mistake to diagnose tabo-paralysis whenever the patellar reflex was found to be absent. As for the spastic type, which has been regarded as reproducing the pathological conditions and symptoms of spastic spinal paralysis, while it is true that this syndrome is to be observed with considerable frequency in general paralysis, it is common to other diseases, such as lathyrism, pellagra, infantile diplegia, and hereditary spastic paraplegia. The two fundamental elements of this syndrome—paresis and rigidity—merely signify that there is a lesion of the pyramidal tract; they do not indicate whether the lesion is primary or secondary.

Following hereditary syphilis, cases of *juvenile progressive paralysis* may occur, though they are somewhat rare. About one hundred cases in all had been recorded in international literature in 1898. This paralysis of adolescents develops between the twelfth and the twentieth year. It affects the two sexes equally, and its only symptomatic peculiarities are that it runs its course with great rapidity, and that confusional disorders predominate (Justschenko, Alzheimer). The cases are extremely few in comparison with the extraordinary number of adult paralytics.

A study of the course of the disease allows of the distinction being made of a *circular variety* of progressive paralysis, although it is only rarely that the alternation of two opposite affective states is maintained from the beginning to the end of the disease. As is natural, the melancholic delusions and the delusions of grandeur occur in association with the states of mind that inspire them, and, exhibiting similar alternation, they complete the resemblance to circular insanity.

A Florentine lawyer, who became ill at the age of thirty-five, and died at thirty-eight, had presented for seven months in succession the following curious alternation of symptoms: For two or three days he was bright and cheerful, thought he was clever and active, boasted that a most celebrated and beautiful singer was his mistress, though he had never been introduced to her, and said that he was going to sing with her in the Paris Opera. Meantime he wrote poems and drew portraits, planned a daily paper and a school in which clinical medicine and law were to be taught, rejoiced in the adoration which he imagined was given to him by the whole population, and would not leave his house for fear of being overwhelmed by congratulations, applause, etc. During the next two days he was dull and greatly depressed, ashamed of his boasting, thought that he was monstrously fat, and that his flesh was rotten, and imagined that the birds and the leaves whispered to him, "Go to the asylum," and that his wife and daughter had usurped his authority and wished to get rid of him.

Lastly, on the evidence of clinical facts and of pathological anatomy, we are warranted in recognizing a very rare *ascending form* of progressive paralysis, which begins with tabetic and spinal phenomena, and ends with the usual cerebral symptoms. Several clinicians describe a combined form of general paralysis and tabes under the name of *tabo-paralysis*, in which ataxia, lightning pains, and well-marked dystrophies precede, follow, or accompany the dementia. Such cases are by no means rare, especially if we include the incomplete cases in which the signs of tabes are only slight, or are masked by the more prominent paralytic phenomena. As regards the anatomical evidence, the *cerebral* lesions of tabes, if there can be said to be any, are not marked by constancy or by characteristic form; and the *spinal* lesions of general paralysis are localized in a multiple and irregular fashion, and not exclusively in Lissauer's tract, nor have they the schematic distribution that characterizes those of tabes. Tabes and general paralysis, though they may be associated, are two distinct diseases, even though they are due to the same cause.

Course of the Disease.

The prodromal period of progressive paralysis nearly always passes unobserved. Only occasionally it becomes the subject of purely retrospective investigation, in which it is generally im-

possible to obtain exact information as to dates. If, however, we recognize the earliest and remote beginnings of disease in some former act of folly, some lapse in regard to the recognized codes of morals and honour, some indication of early mental weakness or thoughtlessness, an unsuitable marriage—perhaps hastily contracted—or some ill-considered apostacy, we are obliged to conclude that the prodromal period of progressive paralysis may extend over several years, and prolong the total duration of the disease to a period little short of that of tabes, which, it is known, may be very long. The paralytics who survive for ten, fifteen, or twenty years are becoming less and less rare.

If we inquire into the earliest symptoms as far as is possible, we find that neurasthenia opens the scene more frequently than would appear from a study of old textbooks, in which the states of mental exaltation and the delusions of grandeur, placed in too strong a light, throw the other symptoms into the shade. During this indefinite prodromal period, the first alterations of character and the earliest slight and very occasional defects of intelligence manifest themselves. Of the physical signs, the earliest are those which, not occasioning any subjective disturbance, and not occurring spontaneously, can be elicited only by the doctor who, happening to be called to the patient, thinks of examining for them. Among these signs are rigidity of the pupils, myosis, the Argyll-Robertson phenomenon, and exaggeration of the patellar reflexes. The transition to a distinctly marked syndrome usually occurs gradually, but sometimes as the result of a seizure, although the seizures are, as a rule, late symptoms.

With the occurrence of dysarthria, loss of facial expression, inequality of the pupils, euphoria, and signs of incipient demential delusions, the patients pass from the latent period of general paralysis to the stage in which the disease has fully declared itself, and in which confinement in an asylum becomes called for. During this stage, well-marked attacks of mental confusion sometimes occur. The delusions may undergo profound alteration in character; vertiginous and motor seizures may occur. By no means infrequently, however, the disease runs its entire course without any incident of special gravity. At least 30 per cent. of paralytics escape convulsions, attacks of excitement, and all other forms of violent seizure.

Even advanced paralytics may exhibit *remissions*, which lead the patient's friends to cherish the false hope, naturally shared by the patient himself, that a genuine convalescence has been established, and that therefore an error of diagnosis has been made. These periods of arrest of the disease may last for several

months, or even for a year, or still longer, but the patients who enjoy the benefit of them for so long a time are very few. Their lucidity returns, and all the more prominent symptoms become quiescent. Yet a certain residuum remains. A degree of superficiality of judgment, an inadequate appreciation of their past illness, transient psychical disturbances without apparent cause, and deficient or exaggerated affectivity, serve to show that the mind is weakened. A hardly perceptible degree of *hypotonus* in the muscles of facial expression, of inco-ordination in those of speech, of exaggeration of the patellar reflexes, and of diminution of the pupillary reaction, show that the morbid process is not extinguished. Besides these principal remissions, others of a minor nature are fairly common, during which the patients become, if not lucid, at least tractable and fit for treatment at home. The disappearance of the delusions, confusion, and exaltation is more than sufficient to produce this result, which is always very gratifying to both friends and patients.

The termination of the remission is often abrupt. The patients suddenly become possessed once more by the delusions they had abjured and forgotten, or, after a convulsive or apoplectiform seizure, they awake in a condition of mental confusion. Sometimes the periods of lucidity alternate with those of mental disorder, and some of the somatic symptoms—for example, those connected with the pupils—may more or less imperfectly correspond to the oscillations in the general mental state. In some paralytics, however, the return of the delusions after a remission takes place gradually.

The last stage is reached either after repeated seizures or gradually, but almost always some years after the first manifestations of the disease. Intelligence is now destroyed, and the patients are either as submissive as little children, or conduct themselves in a quite incoherent fashion. The delusions are reduced to dissociated fragments of expression, repeated from mere habit, or they are lost in the general oblivion. The motor changes are numerous and conspicuous. They include dysarthria ending in anarthria, dysgraphia becoming agraphia, loss of facial expression, irregularity of pupils, and loss or exaggeration of the patellar reflexes.

The following are some data collected by Sprengler.

Out of 314 cases :

Pupils equal and of normal size in	..	..	62 cases.
Pupils with bilateral myosis in	..	..	53 „
Pupils with bilateral mydriasis in	..	..	18 „
Pupils unequal in	..	..	181 „

Reaction of the pupils in 265 cases :

Normal	..	..	..	..	53 cases.
Sluggish	..	..	..	..	90 "
Absent on one side	..	..	..	..	8 "
Absent on both sides	..	..	..	..	112 "
Paradoxical	..	..	..	..	2 "

Out of 304 cases :

Patellar reflexes normal in	..	..	..	31 cases.
Patellar reflexes exaggerated in	..	..	..	93 "
Patellar reflexes diminished in	..	..	..	56 "
Patellar reflexes abolished upon both sides in	..	..	..	106 "
Patellar reflexes abolished upon one side in	..	..	..	17 "

Paralytics in the terminal stage often exhibit bulimia. Sometimes they are fat and flabby, sometimes extremely thin. On account of their various infirmities, they lie immobile in bed. They present general paresis, contractures, and bedsores. Notwithstanding their progressive deterioration, they are often happy or indifferent, and have never a clear sense of their real condition.

Death in the early stages is very rare. It may occur in consequence of a bulbar seizure, a simple apoplectiform seizure, some intercurrent disease, or from suicide. All these sudden causes of death, excepting suicide, operate with much greater frequency in the second and especially in the third stage. Many paralytics, after reaching the terminal period, with its complete dementia and motor paralysis, remain in the same condition for many months, and then die from septicæmia, from suffocation, or slowly from exhaustion.

Although it is dogmatically stated that progressive paralysis is essentially an incurable and fatal disease, we cannot entirely exclude that if it is promptly diagnosed and energetically treated the morbid process may be arrested. It is not to be forgotten that in some instances a diagnosis of neurasthenia rather than of progressive paralysis is given, or that a diagnosis of paralysis is altered to one of neurasthenia, solely for the reason that the disease has had a favourable issue, in which case there is a clear begging of the question (Régis). Moreover, the essentially initial lesions of progressive paralysis (chromatolysis of nerve cells, tumefaction of the cell-body) are not of a destructive character, nor are they irreparable. It has been asserted that profuse spontaneous suppuration has a beneficial influence (Schaefer), and consequently some have been led to produce abscesses artificillay, although the operation is not without some risk, by means of subcutaneous injections of turpentine (Marro).

Etiology.

An ascertained factor in the etiology of progressive paralysis is syphilis. According to some high clinical authorities (Fournier, Möbius), no one can become a paralytic who has not previously suffered from this infection. Even if this is so, it still remains to be determined if syphilis suffices to produce progressive paralysis—in other words, if syphilis is both the necessary and sufficient etiological element.

Although this opinion has never been definitely maintained by anyone, those who hold that syphilis is an absolutely necessary factor in the etiology of progressive paralysis have not troubled themselves very much about the elucidation of the other more or less essential factors of the disease. Whilst, therefore, the advocates of the syphilitic origin cannot be accused of having denied the existence of other factors, it has been chiefly the opponents of this view who have endeavoured to discover these factors. There is, indeed, a very obvious reason for believing that such concomitant causes occur—namely, that all syphilitics do not become paralytics. Emotional influences, traumatisms, sexual and alcoholic excesses, pellagra and other intoxications or infections, including yellow fever (Belmondo), are beyond question capable of acting as contributory causes of progressive paralysis. According to some observers, one or other of them may even be the sole etiological factor, but this view must still be regarded as very doubtful.

Other authors with more reason believe the concurrence of an individual *diathesis* necessary, and they even go so far as to advance the view that there are *born paralytics*. Now, if by this paralytic diathesis is meant a latent inherent predisposition of the organism which does not imply any perceptible abnormality, either in the mental functions or bodily development, the idea seems most reasonable and quite acceptable. We have to account for the fact that though all paralytics may have had syphilis, every syphilitic does not become a paralytic. Even gummata and other well-marked tertiary phenomena may exist without any accompanying sign of paralysis. If, on the other hand, it is meant that the born paralytic is a common degenerate, with anthropological and psychological stigmata of inferiority (Naecke, Cristiani), then the theory is entirely at variance with fact. There is the clearest evidence that persons who are intelligent, mentally well balanced, robust, and without any neuropathic heredity, are often the subjects of progressive paralysis. Indeed, of all asylum patients, the paralytics are those who, to judge from their history and their physique, are furthest removed from the type of the degenerate.

Instead, therefore, of being content with the explanation that all the insane are degenerates—a hypothesis that has never been proved, and that is useless, and therefore inadmissible—we must regard the paralytic diathesis as something of a nature entirely different from that of mental and physical degeneracy. Like the tubercular diathesis—or, better still, like the gouty diathesis—it implies only a special vulnerability in relation to a certain agent or to a certain pathogenic force. Hirschl has advanced the view that predisposition to general paralysis depends upon the existence of a negative factor—namely, the absence of syphilitic taint in the near progenitors. He suggests that the person with a heredity of this kind is more liable, when infected by syphilis, to suffer from this disease in a severe form, whereas a person who has inherited some power of resistance to the specific toxins will enjoy a certain degree of immunity, both to tertiary syphilis and to the metasymphilitic diseases—tabes and progressive paralysis. These considerations seem, at least, to warrant the practical conclusion that progressive paralysis is dependent upon the operation of two equally necessary factors—namely, *the paralytic diathesis and syphilis*.

With regard to this question of the relation of progressive paralysis to syphilis, we must at least recognize the following facts: (1) A very large number of paralytics, as shown by their history and by bodily signs, have without doubt had syphilis—for example, of 200 cases in the clinic directed by Obersteiner, previous syphilis was definitely ascertained in 112, probable in 50, and uncertain, though not absolutely excluded, in 38; (2) the geographical distribution of progressive paralysis appears to coincide pretty closely with that of syphilis; (3) men, who are more exposed to syphilitic infection, are affected more frequently than women; (4) the women who take progressive paralysis are generally prostitutes; and (5) there is a juvenile form of progressive paralysis which is associated with congenital syphilis. These facts justify the conclusion that the absence of a history of syphilis in many cases of general paralysis simply implies failure to discover it (Möbius).

That syphilis may pass undetected in a large number of cases is proved by a bold but convincing communication made in 1897 to the International Medical Congress of Moscow by Krafft-Ebing on behalf of an anonymous physician. This experimenter *in corpore vili* inoculated with the syphilitic virus nine paralytics who denied ever having had syphilis, and after keeping them under observation for 180 days, was able to determine that no signs of primary or secondary syphilis appeared in any of the cases, and that therefore the declaration made by each of these patients was incorrect.

In order to settle this question, it would be necessary to follow for a very long period the history of a considerable number of surviving syphilitics, and to observe how many and which of them escaped having general paralysis. An investigation of this kind is, however, attended by much greater difficulty than would at first appear, for progressive paralysis is known to develop fifteen, twenty, or even twenty-five years after infection with syphilis, and it is impossible to keep very many persons under observation for so long a time. A considerable proportion of syphilitics die from the effects of syphilis or in consequence of other diseases before the lapse of twenty-five years. In cases in which syphilis has been contracted at a somewhat advanced age, if general paralysis develops some years afterwards, it is apt to have merely the clinical features of a senile involution which was more or less expected.

Pathogenesis.

Accepting the view that the great majority of cases of progressive paralysis are the result of syphilis, we have still to analyze the mode of operation of the pathogenic agent. The interval that elapses between infection by syphilis and the appearance of the earliest symptoms of progressive paralysis has a minimum length of some years, and throughout this period the patient appears to be perfectly well. The possibility of the action of the syphilitic toxine being direct is, therefore, entirely excluded. Moreover, the characteristic lesion of tertiary syphilis is a gumma, whereas in cases of progressive paralysis this and other tertiary syphilitic lesions are rare. The morbid process of general paralysis would, therefore, appear to be quite distinct in nature (as well as in the symptoms it occasions) from that of cerebral syphilis. It can be regarded only as a remote consequence of syphilis, and as something that cannot be included within the limits of the three classical stages of this disease. According to Fournier, progressive paralysis and tabes are *metasyphilitic diseases*, or a sort of *quaternary syphilis*, which requires for its manifestation, in addition to a certain longevity, the concurrence of various unfavourable conditions, such as nervous exhaustion, and, it may be added, a special paralytic diathesis. That this diathesis is necessary is shown not only by the fact that many syphilitics are cured and remain healthy for thirty or forty years, but also by the circumstance that others become affected by tabes dorsalis only, their mental faculties remaining unimpaired. Quite a large number of tabetics have no cerebral complications, or suffer merely from transient slight neurasthenic symptoms, or present

an incomplete symptomatological picture. Erb has recently sought to widen the clinical conception of tabes, and has in a considerable measure increased the number of those who may be regarded as the subjects of this disease.

On other grounds than that of its probable etiology, general paralysis would also appear to be a disease that is of toxic origin. Its course, the character of certain of its symptoms, and, as we shall presently see, its pathological anatomy, unite in supporting this view. The exacerbations, the seizures, the elevations of temperature, the remissions, and the more temporary arrests of the morbid process, depend in all probability upon the accumulation and the destruction or elimination of a poison. The marked differences in the mental state in individual cases, ranging between the extremes of euphoria and depression, are sufficiently explained as depending upon differences of individual reactivity or of intensity of toxic action. A similar variety of effects is to all appearance presented in chronic alcoholism, acute alcoholic intoxication, and morphinism. The epileptiform and apoplectiform fits, generally ephemeral, and yet often extremely violent, are comparable to the convulsions and paralyses of uræmia, diabetes, and eclampsia (Kraepelin). In other words, they are capable of being regarded as manifestations of irritability or exhaustion, associated with a morbid action which is temporarily localized in certain cerebral areas, but which readily passes to other areas, and, indeed, threatens the whole brain. In harmony with this view is the fact that true focal lesions are only very exceptionally to be observed at *post-mortem* examinations upon cases of general paralysis.

That progressive paralysis is not merely a cerebral disease is further shown by the very marked changes that occur in the weight of the patients, independently of the nature of the food they are given or of their mode of life. The entire organism, and not merely the nervous system, gives evidence of being implicated. The morbid action appears to be general, and therefore of toxic origin. The heart is often affected by fatty degeneration; the liver is very frequently the seat of a similar morbid change; whilst nephritis and arterio-sclerosis, by no means limited to the cerebral vessels, are equally common.

If progressive paralysis is due to some form of poisoning, and if this poisoning, though the result of syphilis, cannot be attributed directly to the syphilitic toxines, it is evident that the disease must depend upon a consequent auto-intoxication. Many infections, such as typhoid fever, scarlet fever, and influenza, by the action of their special toxines, cause a permanent alteration

of metabolism, a constitutional modification, in consequence of which the body becomes either permanently or temporarily a manufactory of autotoxines.

It is probable that the primary toxines of syphilis induce a similar succession of events, leading to the gradual production of autotoxines that are able to disturb the functional action of the nervous elements, and also to injure them structurally. This view is supported by the fact of the very different efficacy of antisiphilitic remedies in syphilis and in progressive paralysis. It is well known that antidiphtheritic and antitetanic sera, though able to act powerfully upon the diphtheritic and tetanic toxines, are ineffective if used at a late stage of infection, when autotoxines have begun to accumulate. Similarly, iodide of potassium and mercury, the value of which in syphilis is beyond dispute, do not produce any perceptible beneficial influence upon the course of progressive paralysis.

This theory has the defect of being somewhat indeterminate. More precise indications are, however, to be found in the recent researches of Lewis Bruce and of Idelsohn. The former has found that in the first stage of progressive paralysis febrile attacks are not infrequent, occurring once or twice per month. Accompanying these elevations of temperature there is hyper-leucocytosis, following which there is a remission of the disease. The hyper-leucocytosis is probably a reaction of the system to toxines formed in the gastro-intestinal tract by bacteria, more especially the *Bacillus coli*, which is present in abnormal numbers in the intestinal mucus of paralytics. The leucocytes probably elaborate antitoxines, which for a time protect the patient from fresh auto-intoxication. Indeed, the blood-serum of the paralytic during a period of remission has an agglutinating power upon the *Bacillus coli*, whereas blood-serum obtained from a paralytic in whom the disease is progressive does not give this reaction. Blood-serum taken from a paralytic in a state of remission, and injected into a patient in whom the disease is progressive, causes a marked improvement. In the same year (1901) W. Ford Robertson, from the histological examination of twelve cases of progressive paralysis, obtained evidence in favour of the theory of chronic toxæmia. In the stomach and intestines he found gross lesions, apparently of bacterial origin, as well as evidence of excessive development of bacteria in the gastro-intestinal contents. He advanced the view that the toxines formed by these bacteria were the cause of the morbid changes, and contended that the part played by syphilis was essentially that of weakening the natural immunity, probably mainly through making a prolonged excessive call upon the leucoblastic function

of the bone-marrow. The absorbed toxins produced proliferative and degenerative changes in the walls of the cerebral and spinal vessels, those parts of the nervous system being most affected which are best supplied with blood. He concluded that, in order to combat the morbid process, it would be necessary to obtain specific antitoxines by which to counteract the influence of those bacterial forms to the growth of which the toxæmia should be found to be specially due.

NOTE BY TRANSLATORS.—The following is a summary of the results of the investigations carried out more recently in the Laboratory of the Scottish Asylums, Edinburgh (Ford Robertson, Douglas McRae, John Jeffrey, and Dods Brown): Bacilli of the diphtheroid group, possessing prominent metachromatic granules, can be shown to be invading the tissues in all cases of advancing general paralysis and tabes dorsalis. The chief seats of invasion or of the infective foci are the genital tract and the naso-pharyngeal and oral mucosæ in general paralysis, and the genito-urinary tract in tabes. In tabes the bacterial and toxic invasion is essentially lymphogenous, the channel of conduction to the spinal cord being the lymphatics of the large nerves, as maintained by Orr and Rows on the ground of their experimental researches. In general paralysis there is not only a lymphogenous, but also a hæmatogenous invasion, and secondary infection of the walls of the cerebral vessels, which have been damaged and rendered permeable by the previous action of the syphilitic virus. Evidence of invasion has been obtained during life from the direct examination of scrapings of the superficial layers of various mucous membranes, and post-mortem from the examination of sections, more especially of the genital tract and of the nasal mucosa and subjacent tissues. Confirmatory results have been yielded by bacteriological examination. It has been shown that in the cerebro-spinal fluid removed by lumbar puncture diphtheroid bacilli can be demonstrated in a majority of cases of general paralysis, and not infrequently even when the cerebro-spinal fluid yields no culture. Growths of diphtheroid bacilli have been obtained from the cerebro-spinal fluid in six cases of general paralysis out of thirty-five examined. In several cases they have also been obtained in pure culture from the blood. Similar micro-organisms have been grown from the brain in numerous cases, and they have also been demonstrated in sections of the brain with the aid of special staining methods. They occur chiefly in the walls of the inflamed vessels, and there is evidence that, as a rule, they undergo rapid disintegration when they reach the neighbouring nervous tissues and cerebro-spinal fluid. It has been ascertained that two species of the diphtheroid bacilli isolated from cases of general paralysis or of tabes dorsalis are often virulent to mice and rats, whilst innocuous to guinea-pigs. Rats fed with these micro-organisms have died after displaying well-marked nervous symptoms, and their nervous tissues present either the changes characteristic of early general paralysis or acute nerve-cell lesions. The first of these two species of diphtheroid bacilli has been termed the *Bacillus paralyticans longus*. It is characterized by certain morphological and cultural characters, and by the fact that it produces an acid reaction when grown in an alkaline glucose test-broth, but not when grown in numerous other test-broths

employed in determining biochemical reactions. The second species has been named the *Bacillus paralyticus brevis*. It is specially characterized by the fact that it produces an acid reaction in a saccharose test-broth as well as in the glucose broth, whilst it gives a negative result with several other test-broths. Individual strains of these bacilli show great differences in their vigour of growth. The first species is, indeed, as a rule, a very feeble grower. Patients suffering from general paralysis have been treated with specific antisera (obtained from immunized sheep) and vaccines, and by daily spraying of the naso-pharyngeal and oral mucous membranes with 1 per cent. perhydrol. Under this treatment the progress of the disease has been arrested in several cases. Similar results have been obtained in several cases of tabes. Confirmation of the bacteriological, experimental, and therapeutic observations has been furnished by the results of the independent researches of J. D. O'Brien (Ohio).

Idelsohn maintains that the bactericidal action of the blood-serum upon the *Staphylococcus pyogenes aureus* is abolished in paralytics. This action is present in healthy persons, and persists in tabetics. Its disappearance in the paralytic is not dependent upon cachexia. Notwithstanding the disadvantage at which, in this respect, the patient is placed, his blood does not contain bacteria—at least, in the early stages of the disease. It is not improbable that the fact ascertained by this observer is connected with diminution in the alkalinity of the blood, or in the amount of sodium chloride it contains, or with changes in the leucocytes.

Pathological Anatomy.

Three very different explanations have successively been given of the essential nature of progressive paralysis. It was first regarded as an inflammation, afterwards as a systemic degeneration of certain fibres in the brain, and now it is commonly held to be a toxic degenerative process in which the nervous elements in general are primarily affected.

In former times observers were very ready to recognize an inflammatory character in almost every disease. Progressive paralysis, regarding the pathological anatomy of which only the lesions commonly present in the terminal stages of the disease were known, had many features that tended to justify this way of viewing it, such as adhesion between the brain-substance and the pia mater, thickening of the meninges, changes in the vessels, and small-cell infiltration of the vessel walls and meninges. These morbid alterations occur frequently, it is true, but they are merely secondary. They have led to the introduction of the names *periencephalitis*, *meningo-encephalitis*, and *chronic diffuse periencephalitis*, which are still in use, and serve as the terms of

pathological anatomy corresponding to the clinical expression "progressive paralysis."

The inflammatory theory, inasmuch as it is in large part based upon the existence of vascular lesions, appears to some to accord better than either of the others with the syphilitic origin of the disease. It is maintained by a number of the most convinced supporters of this view of the etiology of the disease—for example, by Mendel—on the ground of the existence of this agreement, but the post-syphilitic nature of progressive paralysis accords equally well with a toxic degenerative process beginning in the nerve cells. Lastly, setting out from the idea that the morbid process is inflammatory, some of these authorities consider themselves warranted in recognizing in the clinical stages of progressive paralysis a striking, though, it must be said, somewhat strained, correspondence to the anatomical stages of inflammation. Thus, exaltation (without delusions) would correspond to the hyperæmia, a delusional state to the neuroglial sclerosis (resulting in simple irritation of the nervous elements), and dementia to the atrophy of the nervous elements.

Is it, however, really the case that progressive paralysis begins with cerebral hyperæmia, goes on to sclerosis, and is only attended by nerve-cell lesions when this sclerosis has reached its height? In 1884 Tuzek, using Exner's method (described in 1881) and that of Weigert, observed that in paralytics the tangential fibres of the cerebral cortex disappear, or become atrophied, or at least lose their myeline. This observation was confirmed by Zacher, with the aid of Friedmann's method, and afterwards by Schutz and by Dejerine. Now, inasmuch as the tangential fibres are distinguished from the other fibres of the brain by a certain individuality, in virtue of their anatomical position, their embryological origin (they are among the last to be myelinated), and probably, also, their function (they convey stimuli over the pyramidal nerve cells to great distances), the idea suggested itself that these fibres form a system, and that therefore progressive paralysis might be regarded as a *systemic disease*, consisting principally in primary atrophy of these fibres. In this case we should have in mental and cerebral pathology an example of that selectiveness of morbid processes which in spinal pathology is seen in anterior poliomyelitis and tabes.

Whilst, however, it is true that in paralytics large tracts of the tangential fibres become destroyed, that before these fibres disappear they lose their myeline, and that before the myeline is lost or diminished in amount qualitative changes occur in the medullated sheath (as shown by the fact that osmic acid stains

it greenish grey, instead of black), yet there is no need to exaggerate the importance of these qualitative alterations. The tangential fibres are always poorly provided with myeline; their medullary sheaths are delicate, and on this account they do not seem so dark as other nerve fibres even in the normal state, but their comparative clearness does not authorize the conclusion that they are chemically altered in any special way. Nevertheless, sooner or later the medullated sheath does disappear, and its loss is followed by a profound change in the axis-cylinder.

If the probable physiological value of the tangential fibres is duly estimated, the importance of the disappearance of these tissue elements in progressive paralysis becomes evident. The molecular layer of the cerebral cortex, in which these somewhat closely crowded fibres run, is the seat of numerous special and very varied association processes. In addition to the tangential fibres, the cells of Cajal, with several axons, are here also located. Into this stratum, moreover, there penetrate from below the dendritic branches of the large and small pyramidal cells, as well as the axis-cylinder processes of the cells of Martinotti and the collaterals given off from the deep association fibres and from those that traverse the corpus callosum. Atrophy of the tangential fibres is not, however, a primary morbid change, and it is very far from constituting the whole pathological anatomy of progressive paralysis; it represents only one part of the picture. The changes in the nerve cells are not consequent upon those of the tangential fibres, and the nerve-cell lesions do not precede, but accompany, and perhaps follow, those of the neuroglia.

These morbid tissue changes have been more perfectly understood since post-mortem examinations have begun to be made upon paralytics who have succumbed at an early period of the disease, and in whose cases the diagnosis has been established by the utilization of improved diagnostic criteria and of the most recent staining methods, such as those of Nissl and Weigert for the nerve cells and neuroglia respectively. Independently, however, of these advances in the means of microscopical and clinical diagnosis, there are in the pathological anatomy of progressive paralysis not a few macroscopical data, known to science for a long time, which are of great diagnostic value, and which have therefore to be enumerated.

Macroscopical Lesions affecting the Brain.

Cranial *hyperostosis* and *exostosis*, by no means rarely seen at autopsies upon individuals who were mentally sound, are very common in paralytics. The *diploë* may be increased or diminished. *Pachymeningitis interna* and *hæmatoma* of the dura mater are frequently to be observed, as well as *hæmorrhagic effusions* into the pia-arachnoid. The latter membrane is almost always milky, more especially in the fronto-parietal region. It is also thickened locally, particularly along the course of the vessels. The *veins* are dilated and their walls thickened. The lumen of some of the vessels is occasionally found to be obliterated. The *pachionian granulations*, which protrude from the pia-arachnoid, are increased in size. They may produce not only impressions on the inner surface of the calvarium, but also actual perforations of the bone.

The brain is atrophic. Its average weight, as ascertained from the examination of a very large number of paralytics, is at least from 20 to 25 per cent. less than that of other patients. In some instances, even in men who had once been of normal intelligence, the weight is as low as 32 ounces. The convolutions are wanting in fulness, or even flattened; the sulci are wide. Here and there atrophic areas may be observed in the cerebral cortex. The cerebro-spinal fluid is very abundant, having to fill up the spaces resulting from shrinkage. Added to this external hydrocephalus, there is *dilatation of the ventricles*.

The pia-arachnoid is very often firmly adherent to the cortex over considerable areas. When an attempt is made to strip it off, the cortex is lacerated, small fragments being left on the inner surface of the membrane. The walls of the ventricles, especially the floor of the fourth ventricle, are rough in appearance and to touch. This is the condition commonly referred to as *granular ependymitis*, or ventricular granulations.

Independently of the reduction in volume which concerns the whole cerebral mass, including, without doubt, the white matter, and which leads to a loss of weight amounting to from 7 to 10 ounces, there is a manifest destructive change in the cortical grey substance. The breadth of the cerebral cortex, especially in the frontal and parietal lobes, is diminished, in some places by as much as 50 per cent. Although this reduction in breadth may be appreciable to the unaided eye, and the best means of determining its extent is that of microscopical examination, there was a time when it was studied macroscopically, but with exactitude of measurement, by means of suitably constructed callipers. This purely quantitative method, which is suitable for

making rapid comparative observations upon a large number of fresh brains, was applied by Conti in the Anatomical Laboratory at Turin, when it was under the direction of Giacomini.

Microscopical Lesions affecting the Nervous System.

Microscopical examination confirms the narrowing of the cerebral cortex, but at the same time it reveals numerous special facts, without which the pathological anatomy of progressive paralysis would be very incomplete and indefinite.

Of the general facts, the most important is *derangement of the cortical strata*, which Nissl regards as the most trustworthy anatomical evidence of progressive paralysis, and even as the only distinctive feature. The topographical relations of the various kinds of cortical nerve cells (large and small pyramids, fusiform and polymorphic cells) are at places profoundly altered. The elements belonging to a superficial layer may be found in or below those of a deeper layer, and *vice versa*. The distance that separates one cell from another laterally is also altered. In consequence of atrophy it may be diminished, so that on first view the impression of an opposite process—that is to say, of hyperplasia—is produced; on the other hand, owing to proliferation of the neuroglia, the spaces may be filled up—sometimes, indeed, to excess—so that the original distance between cell and cell is increased.

The molecular layer is often much narrowed as the result of disappearance of the tangential fibres.

In the white substance of the hemispheres there is distinct rarefaction and secondary degeneration of the fibres of definite paths, although the morbid change is not a complete one.

In the basal ganglia and cerebellum there are analogous changes—namely, disappearance of the nerve fibres and proliferation of the neuroglia.

In the nuclei of the cranial nerves the ganglion cells are affected by changes similar to those which we shall presently describe as occurring in the cells of the cerebral cortex. The hypoglossal, facial, and trigeminal nuclei are more especially implicated. Of the trigeminal nuclei, that which innervates the muscles of mastication is particularly involved. As regards the oculomotor nerve, only those fibres suffer which innervate the intrinsic muscles of the eye, and especially those that are concerned with the light reflex. The others are only rarely affected. The nuclear pareses of progressive paralysis, associated with dysarthria, loss of facial expression, and rigidity of the pupils, are, as a rule, somewhat incomplete; they are not accompanied by muscular atrophy or by the reaction of degeneration.

Still more instructive in regard to the pathogenesis of progressive paralysis are, however, the special alterations which affect the nerve cells, nerve fibres, neuroglia, and vessels. Indeed, without a knowledge of these, we cannot form a complete conception of the pathological process that constitutes the disease.

Nerve Cells.—The nerve cells of the cerebral cortex, as well as those of the nuclei, when stained by Nissl's method, present evidence of well-marked degenerative changes, which may be divided into the acute and the chronic. The acute changes are related to the toxic, the infective, convulsive, and agonal disturbances. The chronic changes are the expression of the morbid process in its essential form, the clinical expression of which is the gradual dementia. The anatomical picture presented by the brain of the paralytic dying at an advanced stage of the disease may be described, in so far as regards the nerve cells, as consisting in chronic alterations, affecting especially the anterior portion of the organ, and in superadded acute lesions which are general in distribution, and sometimes of a very pronounced character.

1. *Acute Degenerative Changes in the Nerve Cells.*—Some of these changes are regarded as reparable, others as irreparable. The reparable changes, which constitute the anatomical substratum of those transient symptoms that form so common and prominent a feature of progressive paralysis, consist in swelling of the cell-body and nucleus, and chromatolysis, which is complete in the cells in which the alterations are most advanced. The acute and recent, but irreparable, changes are characterized by chromatolysis, shrinkage, and deep staining of the nucleus (which normally, as well as in the case of the reparable changes, is only very faintly stained, or not at all), progressive disintegration of this portion of the cell, and even its complete disappearance.

2. *Chronic Degenerative Changes in the Nerve Cells.*—The protoplasmic processes of the nerve cells, which normally have no affinity for the stain, excepting near their point of origin, are coloured throughout a considerable extent of their course, and are at the same time atrophied. The cell-body is also atrophic (Fig. 87). The nucleus is darker than usual. Many of the small cells show *yellow pigmentation* (Fig. 88), a condition which never occurs normally in these cells, even in the aged. In such persons cellular pigmentation is, of course, common, but it affects only the larger elements.

These acute and chronic changes may occur side by side, or in adjacent and circumscribed areas in the same cortical layer, or the acute changes may be superadded to the chronic in the same

cellular elements. Here and there in an affected area normal cells may be observed.

With regard to the question of the relation between the nerve-cell lesions and the symptoms of the disease, it may be said that the complexity of the cerebral processes, and more especially

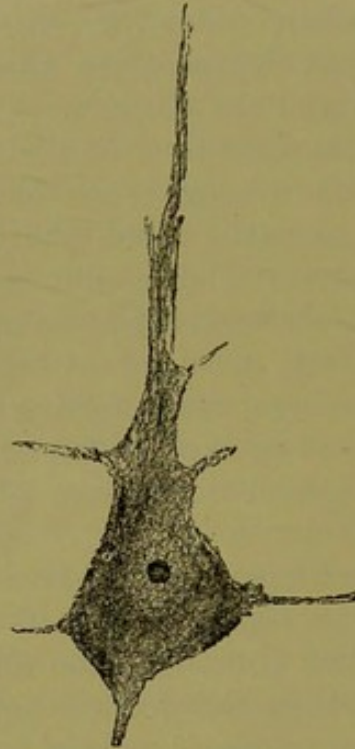


FIG. 87.—PROGRESSIVE PARALYSIS: CELL OF BETZ IN A CONDITION OF ATROPHY.

Compare with Fig. 18, p. 87, which shows the normal cell of Betz under the same magnification. (Nissl's method.)

of those that concern the intellect, precludes the possibility of tracing such a relationship in any detail. The small pyramidal and polymorphous cells would appear to be affected earlier and more severely than the large cells. The only parallel that one is, however, authorized in recognizing is that between the severity



FIG. 88.—PROGRESSIVE PARALYSIS: CELLS OF THE POLYMORPHOUS LAYER LOADED WITH GRANULES OF YELLOW PIGMENT. (NISSL'S METHOD.)

and extent of the lesions on the one hand, and the severity and generalization of the mental disorder on the other.

Nerve Fibres.—In preparation by Weigert's method, both the tangential and the radial fibres are seen to be undergoing a degenerative process, which, however, is not uniform in its dis-

tribution. It sometimes causes complete disappearance of the tangential fibres, but it does not lead to more than diminution in the number of the radial fibres. In preparations by Marchi's method, there are to be observed evidences of degeneration, the result of the destruction of the nerve cells.

Neuroglia.—The selective method of Weigert, besides showing thickening of neuroglia fibres and increase in their number (changes which occur here and there diffusely), reveals an abundant proliferation of astrocytes and of other glia cells. The astrocytes make their appearance even in the deep layers of the cortex, from which they are normally absent, but in which there occur in abundance glia cells with mossy prolongations and devoid of true fibres. In the molecular or tangential layer, which normally contains neuroglia fibres, though only a few, the proliferation of neuroglia cells and the new formation of fibres are more marked than in any other situation. Some of these newly formed cells attain to relatively huge dimensions (*Monsterzellen*).

The presence of astrocytes in situations from which they are normally absent is evidence that the process of gliosis is extremely active. This process occurs widely throughout the encephalon. It was observed by Weigert, and afterwards by Ræcke, even in the cerebellum. The cells of Purkinje may in some instances be surrounded by a dense basket-work of neuroglia fibres, and the molecular stratum may contain numerous fibres of Bergmann. Sometimes the basket-work is visible, whilst the contained cell has become destroyed. The layer of granules, which normally is devoid of neuroglia fibres, may show a small number of these elements.

Among the lesions of the neuroglia there is also to be mentioned the so-called *granular ependymitis*, for it consists essentially in the formation of gliomatous nodules, accompanied by loss or metamorphosis of the ependymal cells (Fig. 89).

The proliferation of the neuroglia cells occurs only in small part by karyokinesis, and it is for this reason that mitotic figures are to be observed so comparatively rarely. Direct division of the nucleus is much more common. The newly formed glia cells, prior to the elaboration of fibres, have migratory and phagocytic powers. They are to be observed everywhere in large numbers, but especially in areas in which there has been destruction of nervous elements (Fig. 90). The astrocytes, which are the cells essentially concerned with the formation of glia fibres, also congregate around the vessels and in the free spaces of the cortex. A true cicatricial process thus occurs, resulting in shrinkage and loss of cortical substance. Some of the nerve cells are closely embraced, and, as it were, strangled by the young neuroglia

fibres which radiate from a satellite element (*Trabantzelle*). These cells occur also as normal elements, lying in close contact with the nerve cells; five or six, or a smaller number, commonly surround a single cell, tending especially to cluster about its axon, as observed by Cajal. They are cells with mossy prolonga-

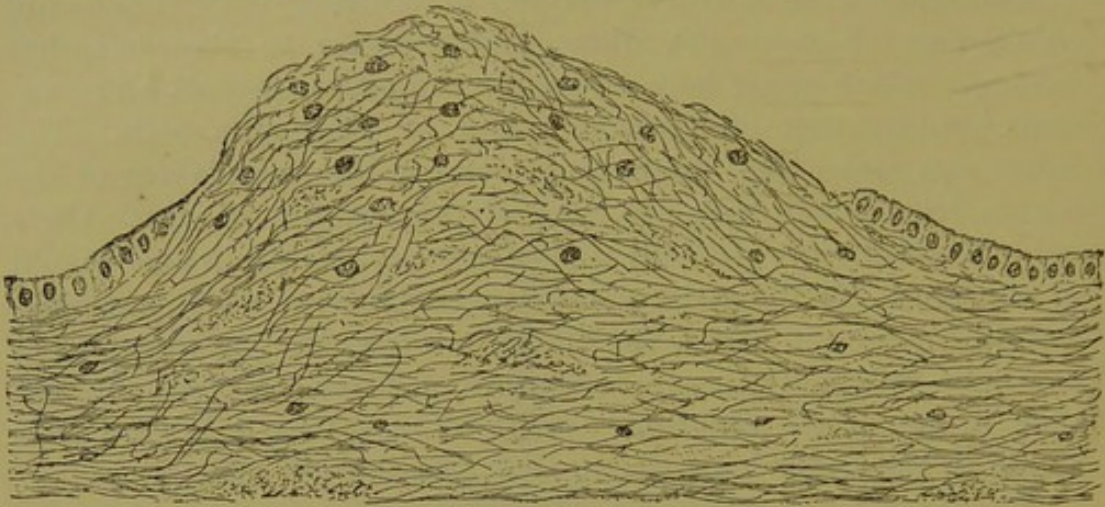


FIG. 89.—PROGRESSIVE PARALYSIS.

Small nodule resulting from granular ependymitis. Loss of ependymal cells in the more projecting portion; abundant formation of neuroglia fibres. (Weigert's selective method.)

tions and without fibres; they often lie in little depressions at the surface of the nerve cell, and on this account have been mistaken for leucocytes in the act of penetrating the cell. The error was pointed out by Nissl and also by Lugaro. In patho-



FIG. 90.—TWO NERVE CELLS OF THE POLYMORPHOUS LAYER OF THE CEREBRAL CORTEX OF A PARALYTIC.

Both are invaded by neuroglial nuclei, and greatly swollen and vacuolated. The nucleus of the cell *a* still persists, being recognizable by the presence of its nucleolus. It is diminished in volume, and deeply stained. The cell *b* shows no nucleus, and its cytoplasm is represented only by debris. (Nissl's method.)

logical conditions, and particularly in general paralysis, these pleiades of satellite cells acquire the power of elaborating neuroglia fibres.

It must not be forgotten that neuroglia cells, after having formed fibres, undergo regressive changes and disappear. The cell-body atrophies, the nucleus shrinks and becomes dark in colour.

Bloodvessels.—The vessels show dilatation, thickening of their walls, and increase in the number of their nuclei. There is an increase in the number of the capillaries. There may be obliteration of the lumen, but this is not a very common occurrence. Locally, there may be observed constrictions, small aneurisms, hyaline degeneration, and in some instances traces of *syphilitic endarteritis*. These severe vascular lesions, which were formally regarded as the initial morbid changes, and as occurring with a constancy that it is now known they do not really have, and which passed as the only genuine lesions of progressive paralysis, are not observable at autopsies upon early cases. This, however, does not exclude that the vessels are actually and severely affected in the later phases of the disease.

Occasionally, but by no means constantly, with the aid of the microscope, there may be observed in the neighbourhood of the vessels of the brain small foci of *softening* which cannot be recognized with the unaided eye; but extensive foci of this nature, capable of being correlated with the paralysis, are never present.

In advanced cases, the bloodvessels, more especially the capillaries, are enveloped by aggregations of small cells with deeply stained nuclei. This covering may have a width six or seven times greater than that of the lumen of the vessel. The elements composing it have been variously described as free nuclei, leucocytes, glia cells, etc. The most recent investigations show that they are in large part *plasma cells*. These cells, which were first studied in the skin by Unna, and afterwards more accurately by Marschalko, are, like the *mast cells* of Ehrlich, of pathological origin. R. Vogt found them in abundance in all of fourteen brains of paralytics examined, whilst they were absent in forty out of forty-two brains of other insane patients. In the remaining two cases they were present in only very small numbers. One of the patients had suffered from syphilis. These plasma cells are always accompanied by *lymphocytes*, and also by occasional mast cells. Lymphocytes and mast cells are, however, common in many diseases with cerebral complications. On the other hand, the plasma cells of Unna appear to be pathognomonic of progressive paralysis (Fig. 91).

Changes in the Spinal Cord and Peripheral Nerves.

Notwithstanding the hesitation, doubts, and controversies through which certainty in regard to the point has been reached, it is now clearly established that the spinal cord never escapes morbid change in cases of progressive paralysis. It presents both *diffuse* and *systemic* lesions.

Among the diffuse lesions there are to be mentioned those

affecting the nerve cells, such as atrophy, excess of pigment, changes in the chromatic substance, due partly to states of terminal cachexia, and also hyperplasia of the neuroglia, rarefaction of the feltwork of medullated fibres that course through the grey matter, diminution in the number of fibres in the marginal part of the tracts subjacent to the pia mater, and thickening of the pia mater.

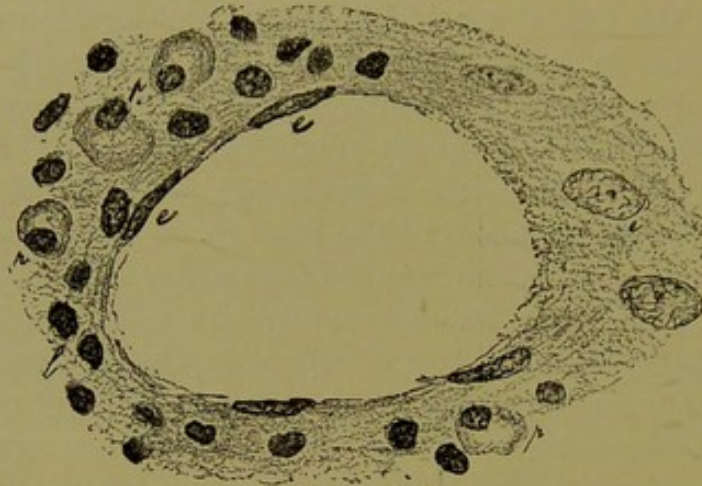


FIG. 91.—PROGRESSIVE PARALYSIS: PERIVASCULAR INFILTRATION.
e, Endothelial nuclei; l, lymphocytes; p, plasma cells. (Nissl's method.)

With regard to the systemic lesions, those that affect the *pyramidal tracts* are not, as a rule, very well marked, consisting mainly in degeneration of isolated fibres consecutive to necrosis of the corresponding cortical cells. Other fibres may show primary atrophy of the medullated sheath. The *posterior columns* are more frequently and more extensively affected. Both the

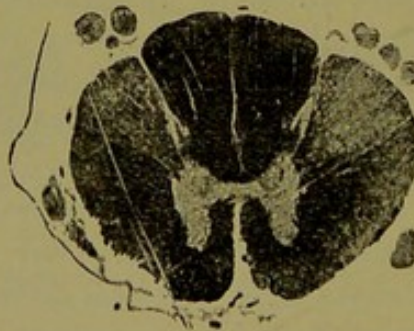


FIG. 92.—PROGRESSIVE PARALYSIS: DEGENERATION OF THE CROSSED PYRAMIDAL TRACTS, ESPECIALLY OF THE LEFT.

endogenous and exogenous fibres suffer, but especially the latter. Not uncommonly the posterior columns present very extensive lesions, distinctly of the root type, and identical with those of tabes. This condition is found in cases of tabo-paralysis (Fig. 93).

The changes in the meninges and vessels are similar to those that occur in the brain, and, like them, are of a secondary nature.

Lesions of the peripheral nerves have been described by Pick,

Fürstner, Bianchi, and Colella, but the changes have been variously interpreted. According to Pick, they are to be regarded as merely complications resulting from the central lesions. Fürstner, on the other hand, thinks that this relationship has not been proved. He considers that neuritis, like other terminal morbid changes in progressive paralysis, is more probably due to traumatism, compression, exposure to cold, cachexia, and intoxications. This view seems well founded, for in the cases related by these observers the paralysis was of an isolated nature, and therefore hardly capable of being included in the special symptomatology of progressive paralysis. For example, in the cases described by Bianchi, the vagus nerve was the one affected, and the atrophy of the fibres was the result of a primary degeneration. Death occurred in consequence of a form of pneumonia,

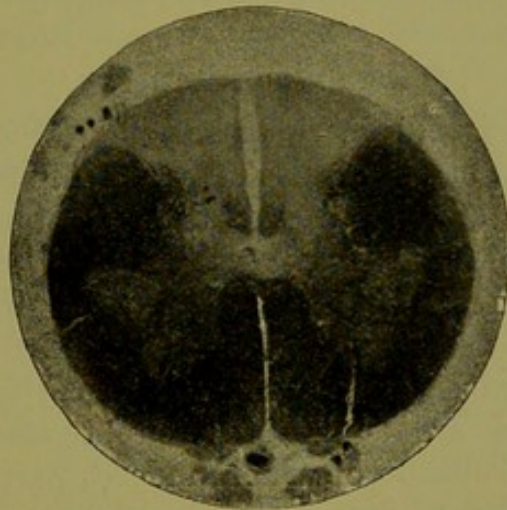


FIG. 93.—TABO-PARALYSIS: DEGENERATION OF THE POSTERIOR COLUMNS; PRESERVATION OF THE ENDOGENOUS FIBRES (CORNU-COMMISSURAL ZONE AND OVAL FIELD OF FLECHSIG).

resembling that which may be produced experimentally by section of the vagus. In Colella's six cases, parenchymatous neuritis had attacked motor and sensory branches indiscriminately, and the severity of the changes increased in a distal direction. This condition is somewhat common in states of marasmus, and therefore has no special significance in regard to the morbid process of progressive paralysis.

Changes external to the Nervous System.

The toxic nature of progressive paralysis is evidenced by the occurrence of visceral lesions and general disorders that cannot be looked upon as merely secondary. Of the extra nervous morbid changes, perhaps the most common is *atheroma of the aorta*. In sixty-nine cases out of eighty-four, Straub found that the aorta presented signs of a syphilitic process, which he main-

tained was different from the ordinary atheroma of aged persons. In the course of seventy-one *post-mortem* examinations upon persons who were not paralytics, evidence of a similar morbid process was found in only seven instances, in each of which the patients had suffered from syphilis.

Valvular lesions of the heart are also somewhat frequent, and they serve to explain some of the cases of sudden death. They probably depend, like the atheromatous condition of the aorta, upon syphilis.

Another complication of progressive paralysis, of somewhat common occurrence in long-standing cases, is infective *pyelonephritis*. *Granular atrophy of the kidneys* (of vascular origin), *cystitis*, and *bed-sores*, are also common. The last are a frequent cause of septicæmia, which in many instances brings the paralytic process to a fatal termination.

Differential Diagnosis.

Progressive paralysis is liable to be confused with the following diseases: Cerebral syphilis, alcoholism (syphilitic and alcoholic pseudo-paralysis), amentia, neurasthenia, paranoia, and mania. The criteria by which one may be enabled to avoid such confusion are of a fairly simple nature, and they are fully adequate, provided that the physician does not profess to be able to arrive at an immediate diagnosis in every case, and that he has the wisdom, when the symptoms are few and indefinite, to allow time to decide the question, the solution of which, indeed, partly depends upon the course taken by the malady.

In *cerebral syphilis* there are signs of focal lesions which mercurial treatment serves to remove or to abate. If there is mental disturbance, it consists mainly in simple dulling of the intellectual faculties. Mental exaltation does sometimes occur, but it is not associated with the childish optimistic carelessness and the demential boasting that characterize progressive paralysis. In view of the existence of these differential characters, the term *syphilitic pseudo-paralysis* is hardly justified. An acute clinical observer will have little difficulty in drawing between cerebral syphilis and progressive paralysis a perfectly sharp line of distinction, allowing of no intermediate forms.

Alcoholism is more insidious than syphilis in its imitation of the symptomatology of progressive paralysis, for it can, and, indeed, very frequently does, produce a form of disorganization of the character and intelligence which is very similar to that which occurs in the initial stages of dementia paralytica, and hardly less serious. Rigidity of the pupils, abolition of the knee-jerks, dysarthria, loss of facial expression, and dysgraphia,

accompanied by tremulousness and by the characteristic omission or repetition of syllables in the written passage, may all be present, forming a complete clinical picture of pseudo-paralysis. According to some authorities, the occurrence of visual hallucinations serves to remove all doubt as to the nature of the case. This differential diagnostic test is not, however, always applicable, for many alcoholics do not suffer from hallucinations. It is, moreover, never certain, for some undoubted paralytics have visual hallucinations exactly like those of alcoholics. A more trustworthy means of distinguishing the two morbid conditions is that of subjecting the patient to strict confinement, and to complete abstention from alcohol. Within a month or so an alcoholic, no matter how inveterate he may be, or how closely he may resemble the most hopeless paralytic, will lose all his motor and mental disabilities with a rapidity and completeness that would be out of the question in a true paralytic in a state of remission.

In order that one may not fall into the very serious error of inflicting a diagnosis of progressive paralysis upon a patient suffering from *amentia*, it is necessary to bear in mind that this form of insanity, which may be either a mild and transient or rapidly fatal disorder, always occurs as a consequence of serious and acute exhaustive conditions, such as hæmorrhages, infections, the puerperium, and gastric catarrh, accompanied by fever and emaciation. Exciting causes of this nature are wanting in general paralysis. Moreover, paresis and motor inco-ordination, in the absence of which it is rarely safe to make a diagnosis of general paralysis, do not form part of the clinical picture of *amentia*.

In *neurasthenia*, *paranoia*, *dementia præcox*, and *mania* there is an entire absence of both the amential and demential characters. The physician must be careful not to allow himself to be deceived by the motor complications of *neurasthenia*, the delusions of grandeur of the *paranoiac*, the incoherence manifested by the subjects of *dementia præcox*, or the disorderly behaviour of those suffering from *mania*. It should be borne in mind that although *neurasthenia* may often be associated with exaggeration of the patellar reflexes, tremulousness of the eyelids, hands, and tongue, outbursts of temper, disturbances of general sensibility, and mental depression with pretended loss of memory, it never gives rise to rigidity of the pupils, genuine amnesia, or true weakening of the intellectual capacity. Similarly, *paranoia* may be marked by fatuous delusions in a person whose intellectual development is poor, but in such cases the delusions have a fixity, preciseness, and form of expression never observable in the paralytic. In

dementia præcox, the dementia, though profound, is always partial and systematic. The patient retains his memory and his sense of relationship to his environment in a way that the paralytic almost never does, even in the still lucid initial phase of his disease. Motor complications are entirely wanting, or, if they are present at all, they are of an insignificant nature. So also the patient suffering from mania, who is voluble and positive in his utterance, writes with a firm hand, understands at once what is said to him, and takes note of trifling occurrences that do not attract the attention of normal persons, notwithstanding his mental exaltation and disorderly behaviour, presents a striking contrast to the general paralytic, who, though happy, is confused, and, though no less noisy, is sluggish in his mental operations.

In all cases in which there is the least doubt as to the diagnosis, lumbar puncture should be performed and the cerebro-spinal fluid examined for increase of lymphocytes. If this is well marked, and other forms of meningitis can be excluded, the case is one of general paralysis.

Treatment.

Though general paralysis may be a disease that is incurable (a conclusion not accepted by everyone), it is not one that cannot be treated. According to the independent testimony of many clinicians, the date of the death of paralytics has for some time past been steadily receding from that of the diagnosis. It is now not uncommon to see patients who live for ten or more years after the onset of their terrible disease. It may be that this change is dependent upon gradual attenuation of the syphilitic virus, in consequence of syphilis becoming more diffused from generation to generation, and thus tending to produce immunity. This view is favoured by the fact that a certain attenuation of the symptoms of progressive paralysis is observable, the quiet forms, with slight disturbance of intelligence, beginning to be more prevalent than the agitated and confused types. It is probable, also, that, as the result of improvements in methods of diagnosis, a considerable number of mild and early cases, which would not formerly have been taken into account, are now included in the statistics of this disease, and that for this reason the tables of mortality have been favourably modified. It would, however, not be right to ignore the possibility that this result has also been in some measure contributed to by the rational treatment of progressive paralysis as a chronic disease of toxic origin.

Antisyphilitic treatment, whether in patients who have already undergone it when suffering from syphilis, or in those who, though they have suffered from syphilis, have never been treated

for it, is always inefficacious, and, indeed, leaves things absolutely *in statu quo*. Exception cannot be made even in the cases of those paralytics who have contracted syphilis comparatively recently—as, for example, five, six, or seven years prior to the time when they come under observation. In other cases, if benefit seems to result from the treatment, and recovery takes place, it simply means that the patient was a pseudo-paralytic, still in the third stage of syphilis.

On the other hand, symptomatic treatment, which aims at preventing seizures, avoiding the causes of progressive decay, protecting the brain from excessive intoxication and from secondary toxæmias, and fortifying the organism by means of careful hygienic measures and suitable diet, should in all cases be employed with every care, even though no specific cure or any more direct means of treatment are known to science. It therefore behoves the physician to keep a careful watch upon all the organic functions of the patient.

Paralytics should be made to abstain from all forms of excitement and from alcohol, as well as from excesses in eating, to which they are prone on account of their euphoria and optimistic carelessness. In order to prevent the excessive formation of toxic products in the alimentary canal, it is desirable to have frequent recourse to purgatives, enemata, tonics, milk diet, and intestinal antiseptics. Garnier and Cololian very rightly recommend the daily cleansing of the teeth and mouth, which the patients sometimes neglect for weeks together, under the delusion that they are in perfect order. The physician requires to supervise such patients, and to instruct them as if they were untrained children, slow to obey, and exposed to many special dangers.

Ordinary baths, of a temperature of 99° F., are useful for patients suffering from excitement. They should be continued for an hour or longer, and combined with the application of cold compresses to the head or of the frontal shower-bath. Independently of periods of excitement, frequent use should be made of tepid baths for the purpose of maintaining the healthy action of the skin, and of mildly stimulating the general processes of metabolism. For this purpose iodide of potassium or sodium, in doses of from 4 to 15 grains per day, is also recommended. At one time it was customary to bleed paralytics freely, and in view of the modern conception of the nature of progressive paralysis, this method of treatment is not unworthy of being reinvestigated by means of careful, periodic, and intelligently planned experimental observations upon robust patients in the initial phase of the disease.

Many years ago counter-irritation was systematically employed. The use of the seton, inserted at the nape of the neck, goes back as far as the time of Baillarger. The application of the actual cautery to the neck and spine, the use of blisters and irritating ointments, and the application of leeches, were included in this early therapy.

Electricity has been recommended by Hitzig, Arndt, and Newth. They used it in the form of a somewhat weak galvanic current, applied either to the dorsal spine—the negative pole being placed upon the nape of the neck and the positive on the leg—or to the region of the cervical cord (Hitzig). Electrical treatment has, however, found little favour. Most alienists are not convinced of its utility, and, indeed, fear its exciting effect upon the patients. For similar reasons hydrotherapy is contra-indicated.

As a means of radical treatment of progressive paralysis, even trephining of the skull has been tried. It was carried out for the first time in 1889 by Claye Shaw, who expressed himself satisfied with the results. The later observations of Batty Tuke, in whose cases the dura mater was incised and the cerebro-spinal fluid allowed to escape, were, however, inconclusive. Of a much more simple nature, and not so devoid of rational indication, is the bloodless operation of lumbar puncture, which has now been practised to a considerable extent, but with doubtful success.

The euphoria and optimistic carelessness of paralytics form a serious obstacle to the careful and continuous treatment that they require. For this reason, during the first stage of the disease, in which the patients like to go out of doors and to enjoy a certain amount of independence, treatment can be satisfactorily carried out only in a sanatorium. On the other hand, paralytics who are dominated by hypochondriacal delusions may remain at home, and, indeed, it is not very satisfactory to remove them. Confinement of the paralytic in an asylum is, however, often necessary for his personal safety, as well as for reasons of a public nature. During the early period of his disease the paralytic is generally quarrelsome, dissolute, and extravagant, and dangerous to himself and others. The regular hours, rest, and attention experienced in an asylum have an immediately beneficial effect. The patients regain that degree of calmness and lucidity that is necessary for even a merely vegetative existence. They become docile, less boastful, and reaccustomed to an orderly mode of life. After a short residence in an asylum they are thus often rendered fit to return to their homes.

The regime indicated ought to be maintained during periods of remission, although the patient may be allowed an illusory

amount of liberty. The antiseptic washes for the mouth and nose, the tepid baths, and the administration of caffeine and sparteine, in cases in which cardiac complications are threatened, should be continued. When the disease reaches an advanced stage, it is necessary to attend with increased care to the hygiene of the skin. For the prevention of bed-sores, some, following the recommendation of Brown-Séquard, have recourse to the alternate application of very warm and very cold compresses ; others use dusting-powders. It is not, however, advisable to be very exacting in regard to the use of preventive measures, or to prescribe various inconvenient forms of treatment, for the danger is not a constant one, and, in any case, it presents itself only towards the end of the disease.

CHAPTER XV

INFANTILE CEREBROPATHIES (ACQUIRED IDIOCY)

INFANTILE and foetal cerebropathies, although dependent upon very various causes, arise in a manner so similar, and produce results so uniform, that they permit of being considered together under a common title. Whatever may be the primary nature and extent of the lesion, it affects the brain at a special and delicate phase of development, to which there is nothing comparable in adult life. In the infantile brain many of the nerve fibres are not yet myelinated, and comparatively few of the nerve cells have reached structural perfection. Moreover, cells and fibres interrupted in their process of formation by an acute disease or traumatism may not again be placed under suitable conditions, and may even not have the necessary space to expand further in those dendritic and collateral ramifications that would have developed in ordinary circumstances. On the other hand, infective, toxic, and traumatic lesions in such instances provoke reactions in the young and vigorous neuroglia, which is in the full activity of natural proliferation, and which exercises its defensive functions much more powerfully and extensively than the neuroglia of the adult. In the adult the power of the neuroglia to proliferate becomes dormant, and it is aroused only by the stimulus of pathological processes, and with moderate intensity; in the young neuroglia the normal work of growth is going on, and consequently reactive proliferation is excited to an extreme degree.

The organic diseases of the brain that occur in early life therefore merit a place by themselves, both because, apart from the initial lesion, they interfere with the development of intact and more or less distant regions of the nervous system, and because they stimulate the neuroglia in their neighbourhood to undue proliferation. Corresponding to this radiation of structural changes there is a radiation of symptoms, and the abundance of symptoms gives rise to the variety of the clinical pictures. This does not exclude a certain constancy of result, and even of

course. Indeed, all these cerebropathic processes that occur in infancy and in foetal life lead to irreparable loss of the active and prominent functions, among which there is often, unfortunately, to be included that of intelligence; and this loss is certainly not compensated for by the silent presence of protective tissue in cumbersome amount. In some instances, indeed, the extensive areas of cicatricial neuroglia tissue are the starting-point of irritative stimuli, which become active from time to time, although they may also gradually cease.

If it is desired to express the anatomical resemblances that give unity to these morbid processes, we can summarize them in the common formula, *atrophy of the nervous elements* and *excessive proliferation of the neuroglia*. In contrast, however, to what we see in the cerebropathies of adults, the atrophy assumes the appearance of a simple *aplasia*, whilst the gliosis acquires almost the character of a *teratological hyperplasia*. Hence it is that in cerebropathies whose abnormalities are of foetal or infantile origin the disease becomes complicated by imperfections, anomalies, and monstrosities. The quantitative relation between the specific tissue and the complementary tissue becomes altered, to the loss of the nervous elements and to the gain of the neuroglia. Consequently there is a more widespread lesion than that which a similar injury would have produced in the adult.

Indeed, whilst in the adult the reactive gliosis encloses the focus of ischæmic or hæmorrhagic softening in a delicate wall, thereby almost circumscribing its harmful effects, in the infant it increases the defects, forming a frame more extensive and harmful than the picture. The neuroglia continues to proliferate beyond the proper age, and becomes the seat of morbid changes which prolong the duration of the initial disease, and, after having extended its anatomical field, render it chronic.

It is hardly possible for the psychical zones to escape entirely from morbid processes, which, whatever part they affect, have so great a tendency to spread. If a comparison is made between the area destined for the associative functions and that occupied by the cortical projection centres, it will be understood at once that the associative centres are those more exposed to the first assault, and to the further diffusion of the disease, for the reason that they present a mark which is more widely dispersed and collectively larger. It is to be added that the intellectual territories, being the last to be formed, preserve for a longer time those infantile structural characters that cause cerebropathies occurring in the first years of life to have specially grave consequences. We should not, therefore, be surprised that motor and sensory paralyses, without defect of intelligence, are somewhat rare in the

cerebropathies of infancy, and that, on the other hand, those forms of simple idiocy to which Freud gave the name of "cerebroplegia without paralysis" are much more common. It is certain, however, that the mixed forms of idiocy, with partial disturbance of the motor functions, constitute the majority of these cerebropathies.

Both in idiocy without paralysis and in idiocy with cerebroplegia the picture of the psychological deficiency is devoid of true intellectual and affective anomalies, and this constitutes another characteristic element of infantile cerebropathies, which in its turn confirms the clinical unity of these processes. Indeed, acquired idiocy thus comes to be opposed to degenerative and hereditary imbecility. The latter is not accompanied by visible lesions of the brain, but manifests itself in ethical and intellectual perversions, which ally it to constitutional immorality and paranoia, and separate it, even clinically, from idiocy dependent upon infantile or foetal cerebropathies.

Between imbeciles by inheritance and idiots from accidents of circumstance there thus comes to be a dualism not recognized in contemporary psychiatry. Hitherto alienists have seen in the infantile cerebropathies only the essential result—that is to say, the arrest of development—and as a cause of the arrest of development they have not been able to recognize any other factor than hereditary degeneration. The forms of mental deficiency, on account of their gravity, and still more on account of their motor complications, have seemed the typical expression of a profound decadence, the last stage of degeneration, and all imbeciles and idiots, with or without paralysis, have seemed to them to imply a less severe degree of degeneration in the ancestors, extending back in long series through pathological genealogies that they have constructed upon slight evidences of neuropathic disorders. In this way a great unification of mental deficiencies of very different origin and form has been effected, but it is one that is superficial, founded upon preconceptions, and probably erroneous.

Science is now lopping off from the trunk of hereditary imbecility all the forms of acquired idiocy that so clearly appear to be due to cerebropathic processes, and the branches thus detached already form a clinical mass larger than the stem, and very varied in character. In studying microcephaly, Giacomini distinguished the pathological cases, in the sense of Virchow, from the atavistic cases, in the sense of Vogt, and thus he recognized the importance of the former. The autopsies made by Bourneville, and the clinical observations of Sollier and those of König, have confirmed the necessity of this dualism. There can be no doubt that many of the microcephalics described by Giacomini are true cerebro-

pathies ; Bourneville has actually described the lesions characteristic of cerebropathic idiocy ; Sollier has sharply distinguished between idiots (the subjects of disease and amenable to treatment, notwithstanding the greater gravity of their defects) and imbeciles (degenerates insusceptible of amelioration by treatment) ; and König, founding his conclusions upon original observations and upon the work of Freud, boldly advances the idea of cerebroplegia without paralysis, according to which even imbeciles and simple idiots are to be regarded as cases of cerebropathy, either partially cured or limited to the involvement of the mental functions, but not different in their pathogenesis from the common cases of cerebroplegia, and therefore, like these, devoid of hereditary defect.

If in course of time the cases of mental deficiency in which there is demonstrable an organic and fortuitous lesion become increased in number, and if observers cease to attribute to morbid heredity all the diseases of which they do not know the cause, it is probable that we shall soon return to the conception of all mental deficiencies (phrenasthenias, insufficiencies, arrests of psychical development) as forming a unity, but composed of pure forms in which there are gross lesions, or lesions that are less evident (microscopic), and mixed forms with motor paralysis and without paralysis. The present dualism will have served as a stage of transition in passing from the old unity, which was entirely in favour of hereditary degeneration, to the modern unity, which is entirely in favour of cerebropathies.

Hereditary imbecility, or the pure form without lesions, taking its place in the clinical unity which includes all infantile deficiencies of intelligence, will cease to be the type, and will instead represent their more attenuated, limited, and masked forms.

Etiology.

The pathological processes affecting the brain and its envelopes that are capable of retarding, arresting, and limiting the development of the psychical functions, take origin either during intra-uterine life, at the time of birth, or shortly afterwards. One criterion for the classification of the infantile cerebropathies is, indeed, the time of origin. Practically, it is certainly not always easy to determine if the initial lesion occurred before or after birth, and in cases in which it is post-natal it may be difficult to say exactly at what time it began, because the morbid process is capable of remaining latent for a long time, and of manifesting itself suddenly with all its force through some accidental cause which of itself would be insufficient to produce the same effects.

The same varieties of causes that act directly on the child may act directly on the foetus. Physical and psychical traumatism, acute infections, states of cachexia consequent upon chronic infections and intoxications, syphilis, and states of ill-health of obscure origin (such as rickets), may determine in a child cerebroplegia and acquired idiocy.

All of these accidents or diseases—traumatism, fright, infections, and acute and chronic intoxications—are capable of affecting the mother during pregnancy, and of being reflected upon the foetus with the same effects—that is to say, producing cerebroplegia and idiocy, which, although congenital, are not to be included among truly hereditary diseases.

Among the causes of infantile cerebropathies there are those that are predisposing and those that are determining. Wachsmuth asserts that he has found hereditary taint in fourteen out of twenty-two cases of cerebroplegia, and that in seven out of the fourteen there was paternal alcoholism. Among the various causes, the action of syphilis is somewhat open to question. According to Fournier, syphilis in the ancestors is handed on in the form of parasymphylis, and the lesions that are to be observed in the cerebropathic descendants are to be interpreted in this sense, especially when they are manifested by the syndrome of Little. Other clinicians assign to parental syphilis the perhaps too modest part of simple preparer, and they at least recognize that the most frequent factor in Little's disease is the abnormal manner of birth, as Little himself maintained. According to Freud, on the other hand, dystocia cannot determine any form of cerebroplegia, except in conjunction with some predisposition, otherwise it would be impossible to explain how abnormal parturitions result in the production of a much greater number of normal than of diplegic children.

König also attaches great importance to neuropathic heredity, and especially to paternal alcoholism; he considers that spontaneous aplasia of itself predisposes the brain to cerebropathies. There would thus be *cerebropathic* idiocies, *biopathic* idiocies (from spontaneous aplasia), and *biocerebropathic* idiocies, as De Sanctis terms them—that is to say, from cerebropathies supervening in a defective individual, biopathically predisposed. It seems to me that all these distinctions, not very clearly in harmony with symptomatology, are too subtle. In view of the morbid alterations that actually occur, the external factor is the only necessary one. It is true that it is not always sufficient to produce these cerebropathies, and, indeed, it is often present without causing any lasting harm. In such a case, however, it may be maintained that either the occasional agent was too weak, or that the resistance of the

organism was sufficiently strong. Incapability of the organism to resist does not of itself constitute an hereditary predisposition, because it can depend either upon the excessiveness of the morbid action, or upon momentary conditions of weakness which have nothing in common with the individual structure, and much less with the nature of the stock. As a matter of fact, the majority of cerebropathic children have healthy brothers and sisters, and are to be found among the common people, who are specially exposed to, but not specially defenceless against, the external factors of disease. Out of twenty-two cases of infantile cerebroplegia, Seppilli found only four with hereditary predisposition; his diagnosis included cases of cerebroplegia without paralysis, provided that the idiocy was associated with epilepsy.

On the other hand, if we take into consideration the external causes of the cerebropathies, and seek to correlate them with the clinical pictures, we must admit that, notwithstanding certain symptoms common to all the processes and to all the causes, the lines of a useful classification come into view. Thus, according to Freud, premature delivery determines more especially the paralytic forms, delayed labour or asphyxia gives rise to general rigidity, psychical traumatism results in choreic cerebropathies. According to König, cerebral syphilis is the cause of special cerebropathies, which are to be placed midway between the true cerebroplegias (hemiplegia, diplegia, and paraplegia) and juvenile progressive paralysis. It has also been noted that diplegias are almost always pre-natal, hemiplegias post-natal.

Pathological Anatomy.

As has already been said, the difference between the cerebropathies of childhood and those of adult age consists especially in the facility with which the former spread from the initial lesion, which is often only of slight extent, to involve an entire lobe or even the whole hemisphere. On account of this tendency, focal lesions may produce results of no less importance than those which are due to generalized morbid processes or to serious deformities. Thus a cerebral embolism is the cause of necrosis of the nerve elements which occupy the area supplied by the occluded vessel, but the proliferation of neuroglia, which in the adult does not extend beyond the immediate neighbourhood of the anæmic zone, in the brain of the child induces atrophy and even complete sclerosis. Epileptic attacks give ample evidence that gliosis does not form simply a passive obstacle to the expansion and specific activities of the brain. The sclerotic focus represents, indeed, a source of active irritation, which,

as a rule, is not present in adults, and which at any rate does not suffice to cause violent convulsive reactions.

What is the site of the initial lesions in the infantile cerebropathies? Their primary localization is almost always connected with the bloodvessels, whether it takes place during intra-uterine life, or at birth, or after birth; whether its origin is mechanical, or inflammatory, or infective; and whether, lastly, it is a case of focal and gross lesion or of microscopic and diffuse lesions. When the head of an infant is damaged by a serious trauma, the nervous elements of the cerebral cortex may suffer direct injury, but even in these cases much of the damage is caused by effused blood, which compresses or infiltrates the cortex.

Is it possible for the primary changes in the neurons to constitute the sole origin of the true cerebropathies, without any macroscopic lesion of the vessels or visible hyperplasia of the neuroglia? It would seem to be proved by some recent researches that simple, arrest of nerve development, even when caused purely by disease, is sufficient to produce the syndrome of certain cerebropathies. In 1898 Spiller found, in an autopsy on a diplegic idiot, that the brain and spinal cord were small, but showed no traces of macroscopic lesions; that there were no giant cells in the central gyri; and that the fibres of the pyramidal tracts were not degenerated, though they were remarkably delicate. In a case of spasmodic paraplegia the convolutions were atypical, the cortical cells small and diminished in number, and the pyramidal fibres normal. A diplegic idiot, described by Bourneville in 1890, had a normal brain, with atrophy of the cerebellum and hyperplasia of the pyramidal tracts. These were all examples of an idiocy which was clinically cerebropathic, even cerebroplegic in the full meaning of the term, but which, from the anatomical point of view, bore some resemblance to the idiocies of former descriptions without any sign of an exogenous process.

According to Pellizzi, developmental arrest of the neurons may constitute the determining cause of pathological processes that are to be regarded as endogenous; thus *sclerosis tuberosa* consists in an exuberant proliferation of neuroglia which is condensed into pale and elevated patches, but the cause of these foci of gliosis is to be sought in some defective process of cortical histogenesis. By the eighth month of intra-uterine life the primary and secondary fissures are already formed in the brain, and its further differentiation is about to begin. If this does not take place, the result is the occurrence of numerous and serious anomalies in the stratification and general arrangement of the nerve elements, such as are to be observed in the neighbourhood of the tuberos plaques, and also within them. On account of this, Pellizzi regards *sclerosis*

tuberosa as a condition consecutive to nerve agenesis, or as the macroscopic symbol of psychical degeneration, and excludes it from the category of exogenous cerebropathies.

Apart from *sclerosis tuberosa*, the pathogenesis of which is obscure, and which is the cause rather than the effect of nervous aplasia, it is not possible to recognize in the arrest of nervous development any other influence upon the cerebropathic processes and their clinical symptoms than that of an indirect and passive cause, in so far as the power of resistance to morbid agents is diminished. There are pathological records of cases (Giacomini, Mierzejewski, Betz) in which, in addition to the primary anomalies of development which resulted in imperfect formation of the convolutions, there were also traces of accidental diseases which had occurred at subsequent epochs of foetal existence, or in the early months of extra-uterine life. Such cases are grouped together by De Sanctis under the title already referred to as bio-cerebropathic idiocies.

Lesions of the neuroglia do not occur among the initial lesions of the infantile cerebropathies. The hypothesis of a primary gliosis, adopted by Chaslin for the pathogenesis of epilepsy, and by Bourneville and Brissaud for hypertrophic sclerosis, finds few supporters at the present day. It is therefore admitted, and will remain so until fresh proof to the contrary is presented, that the most important factor in the pathogenesis of infantile cerebropathies consists in vascular lesions, arterial and venous. Of these, the most common are occlusion (from embolism or thrombosis) and hæmorrhage. The most common site of embolism is the middle cerebral artery. Thrombosis occurs most readily in the venous sinuses of the dura mater. Multiple hæmorrhages (capillary) form the characteristic pathological condition found in *acute encephalitis* (Goldscheider).

Occlusion and rupture of the cerebral vessels may arise from external causes: indirect traumata, or those suffered by the pregnant mother, and direct, or those inflicted on the head of the child. Other causes may be found in general disturbances of the circulation, cardiac disease, febrile states, excessive cerebral blood-pressure during the spasmodic attacks of whooping-cough, changes in the vessel walls (syphilitic arteritis), acute infections and states of dyscrasia, all of which have obtained some kind of localization in the brain. Changes in the vessel walls, in addition to obstructing the circulation and favouring the escape of blood, may also over-stimulate the formative processes of the neuroglia, increasing its normal powers of growth and expansion. According to Marie, the gliosis of lobar sclerosis develops from small peri-arterial foci, which subsequently join, forming foci of larger size.

Granted this vascular origin of the cerebropathic processes, we must now consider the secondary lesions. Among these there may be distinguished the following :

1. Terminal and permanent changes, which are the residua of spent morbid processes.
2. Active changes with a chronic and progressive course, which may extend from the site of the primary lesion to involve the entire hemisphere.
3. Aplasic and paraplastic changes, which may either be in proximity to the primary focus or at a distance from it.
4. Atrophies and consecutive degenerations of the intracerebral, cerebro-cerebellar, and cortico-medullary neurons.

Belonging to the first group are the cerebral cysts, yellow areas

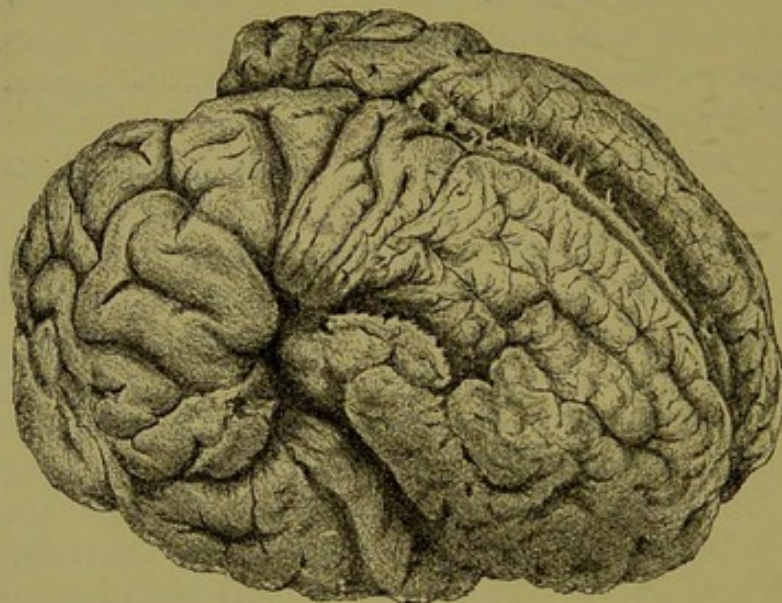


FIG. 94.—MICROGYRIA, PARTICULARLY OF THE FRONTAL LOBE. HALF NATURAL SIZE. (Bresler, "Archiv für Psychiatric," Bd. xxxi., H. 3.)

of softening, shrinkages, porencephalies, and circumscribed scleroses. Atrophic lobar sclerosis is simply cicatricial tissue—that is to say, the permanent sign of repair of a morbid process that has terminated (Wernicke). The primary process may have been either the occlusion of a vessel or hæmorrhage.

Among the changes of the second group we must place gliosis, which may lead to sclerosis, atrophy, and in some cases to pseudo-hypertrophy of the convolutions. The progressive nature and chronicity of this process are characteristic. Of equal reactive importance, also, are hydrocephalus and those vascular and connective-tissue proliferations which are associated with meningitis and meningo-encephalitis.

In the third group are included microcephaly (spurious), microgyria (Fig. 94), structural anomalies of the convolutions,

such as porencephaly, or, in a word, all the cerebral dysgenesias. It is to be understood that all these anomalies of development are met with principally in cases of prenatal cerebropathy. Vascular lesions are not always the immediate cause of these intra-uterine morbid processes, which are more commonly due to proliferation of the neuroglia, destruction of the elements destined to form the nerve fibres, and defective nutrition caused by disease or the primary disorder. Microgyria may be caused, according to Marinesco, by hydrocephalus alone.

As regards the changes of the fourth group, which contains the atrophies and degenerations, it is only necessary to mention that their localization depends upon the site of the primary lesion. According to whether the lesion is focal or diffuse, and the time of its initiation, there will be non-development, or atrophy, or degeneration of the nerve fibres which arise from the injured territory. This degenerative or atrophic process may extend from the primary neurons to the secondary, and thus spread still further. Sclerosis of one hemisphere may be associated with atrophy *en masse* of the entire brain, and with hemiatrophy of the pons, bulb, and spinal cord in their corresponding halves.

All of these lesions may be arranged in pathological groups in correspondence with the various morbid processes, but the best-known and most interesting phase of each is the last—namely, that in which the different processes blend and come to resemble one another.

Symptoms and Clinical Forms.

Psychical Changes.—The infantile cerebropathies have long been studied with great interest and from many sides, but not until quite recently from the point of view of psychiatry. Treatises on psychiatry make no mention of them. In 1899 Kraepelin, while recognizing that it would be reasonable to separate cases of psychical arrest due to imperfect development of the cortex from those due to pathological processes in the brain, declared that any clinical classification of this kind was premature, and adhered to the old distinction between idiots and imbeciles. As for text-books of neuropathology, they accord very little space to the psychical manifestations of the infantile cerebropathies.

The distinction between idiocy and imbecility, which was due to Esquirol, and which is still that used by the great majority of alienists, does not involve more than a difference of degree. "Idiot" is the superlative of "imbecile," and the idiot does not speak because he lacks ideas or the faculty of speech. Imbeciles are not so lacking in intelligence; they are rather lively in character, and sometimes talk loquaciously, though childishly. To these

two classes of backward minds there may be added a third, consisting of the simple-minded. Such persons possess and make use of regular forms of speech, and constitute, as it were, the aristocracy of imbecility, but by their credulity and fatuity they show themselves to be inferior to normal persons.

In 1893 Sollier succeeded in investing this chapter of psychiatry with new interest. He preserved Esquirol's distinctions, but placed them on a more scientific basis. To regard language as the sole indication of intelligence, as Esquirol did, was too systematic and rigid, and liable to lead to erroneous conclusions; the power of speech might be lacking through an infantile aphasia which had not been compensated for, or it might remain imperfect from want of education. Sollier accordingly preferred, and with reason, to estimate the intellectual power by the capacity for attention; he called by the old name of imbecile those who exhibit the lesser degrees of disattention, and by that of idiot those who are incapable of any spontaneous attention. This method of distinction led him to discover in these two classes of developmental arrest unlooked-for differences of intellectual and moral quality of much greater importance than simple differences of quantity or degree.

There is, for example, a remarkable contrast between microcephalics and hydrocephalics, which completes their physical contrast. Microcephalics, according to Sollier, are distinguished by their disconnected loquacity, and in some cases by flashes of wit; their expression is mobile, mirthful, and malicious; they are capable of crafty conduct, but also of gross and brutal actions, and they are liable to sudden changes in temper, like epileptics and hysterical patients. Hydrocephalics, on the contrary, are apathetic, slow of action and speech, and taciturn, and seem always to be half asleep; they exhibit neither affection nor dislike; they do not have fits of temper; as a rule they are mild, timid, and unimpressionable, and show little curiosity; they do little to amuse themselves, never laugh, and appear to be indifferent to stimulation through the senses.

Imbeciles are formed more or less on the model of microcephalics, idiots on that of hydrocephalics. It is a strange fact that in these lowly classes of feeble-minded persons semi-incapacity, like semi-ignorance among normal individuals, is more harmful than absolute mental incapacity. Imbeciles, though they are less enfeebled than idiots, are refractory, arrogant, untruthful, hypocritical, voluble, and therefore not easily educated; idiots, although on a lower level, but for this very reason, are (in all cases, according to Sollier) vacant in mind, and free from virtues or vices, and thus tractable, open to suggestion,

docile, and even capable of being educated. They are at least able to preserve a memory, a habit, or a taste that it has cost them great labour to acquire. Further, idiots are essentially patients, like hydrocephalics, whilst imbeciles are degenerates, though only of the first degree, like the classical or agenesial microcephalics.

It is clear that Sollier was on the point of describing in a masterly manner the psychical symptoms which should distinguish clinically cerebropathic patients from other sufferers from arrest of intellectual development, but one circumstance escaped his notice. His idiots are not the subjects, as he believed, of any one disease, or, still less, of a serious, complex, and predetermined form of hereditary degeneration. They are only the victims of chance, of an acquired cerebropathy. His imbeciles, on the other hand, are perfectly correctly placed among the hereditary degenerates, but they remain among them as the last and only genuine representatives of the degenerative tendency in the clinical group of patients suffering from mental arrest. That Sollier did not recognize this difference between the two varieties of mental arrest is due to the fact that he instituted his comparison without regard to the morbid alterations that are present. Post-mortem investigation has thrown light upon the pathogenesis of the cerebropathies, and has transferred the majority of them to the category of acquired and accidental diseases, in which heredity does not appear to exercise any influence.

In the opinion of Sollier, hereditary degeneration is therefore the evil spirit and the hidden agent of psychical arrest, both in idiots and in the imbeciles; but when it has reached an extreme degree it assumes the form of a true disease, and deprives its victims not only of the power of co-ordination and action, but also of ability to react, to resist, and to inflict injury. The idiot, according to Sollier, is a patient (and here he is right), an *extra-social* person (and here he is also right), whilst the imbecile is a simple degenerate, an antisocial person, like the paranoiac and the criminal offender. To complete the parallel it is necessary to add that the disease in the case of the idiot is acquired, even if it begins during foetal life, and that thus there is no necessity to seek for its origin in the fatal and problematical degeneration of a stock.

Founded on this basis, the distinction, and, as it may also be called, the psychological antithesis, so clearly drawn by Sollier between imbeciles and idiots, certainly has much force; it is, indeed, strengthened by the antithesis between the two kinds of pathogenesis. It is not simply a matter of distinguishing two categories of cases of mental arrest placed at different levels

(and, it may be, presenting very different appearances) in the scale of degeneration. On the one hand there are the more or less serious cases of imbecility due to hereditary causes, not far removed from the normal as a rule, and without cerebropathic defect; and on the other there are, in larger number, the cases of idiocy due to acquired cerebropathies, generally more lacking in intelligence, but free (with a few exceptions) from hereditary defects.

The cases of cerebropathies occurring in the same family, to which attention was drawn by Bouchaud in 1894 and Cantalamessa in 1895, do not invalidate this point of view. They may either constitute a distinct variety, though a small one, in the etiology of infantile cerebropathies, or they may probably be attributed to an external and accidental cause—as, for example, an infection to which have been exposed several individuals living in the same house, and of much the same age, and therefore equally liable to suffer from it. As a matter of fact, in many cases of *family idiocy* there are not only defects of intelligence and microcephaly, which may be regarded as simple anthropological anomalies, but also motor and trophic changes that distinctly represent the remains of a true morbid process (Figs. 95 and 96).

The conception of an acquired idiocy does not, however, receive much favour from neurologists, and still less from alienists, who are still infatuated by the sterile theory of psychical degeneration. Freud alone, followed with some reserve by De Sanctis and Pellizzi, seems to accept it. Lukàcs, on the other hand, holds that a considerable number of cerebropathic patients have an hereditary taint, and ascribes to them all the faults commonly attributed to degenerates, such as restlessness, changeability of temper, impulsiveness, and waywardness. Dejerine assigns the same stigmata to infantile hemiplegia in particular, and Strümpell to acute poliencephalitis. With greater insight Krafft-Ebing has reported some cases of moral idiocy (in Italy they would be termed cases of constitutional immorality) due to injuries to the head. It is evident, however, that degeneration, when it is of traumatic origin, is too closely connected with an external cause to have the slightest analogy with the neuropathic heredity.

Mercklin has made use of the psychopathic symptoms, not so much with the object of distinguishing clinically cases of cerebropathy, and of contrasting them with cases of hereditary imbecility, as for the purpose of subdividing the cerebropathies into clinical groups. He classifies them thus:

1. Cerebropathies with intellectual deficiency as their predominant feature.

2. Cerebropathies with predominance of emotional and volitional disturbances.

This second group of psychical cerebropathies may easily be confused—at least, on the clinical side—with cases of hereditary imbecility, for in it there are displayed perversions of the moral sense, impulsiveness, and the other morbid manifestations of

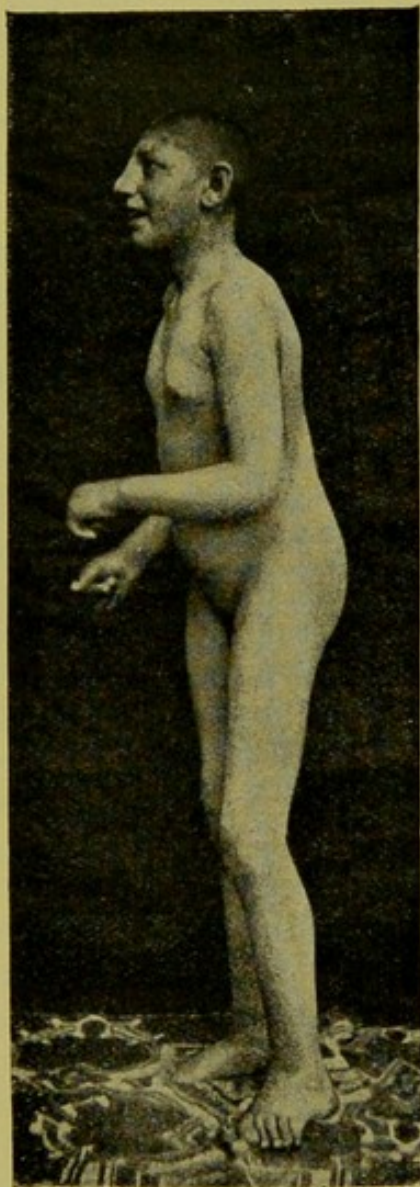


FIG. 95. — INFANTILE CEREBROPLEGIA, WITH MICROCEPHALY, PES EQUINUS, AND SPASTIC CONDITION OF THE LIMBS. (From a photograph made by the permission of E. Gonzales.)

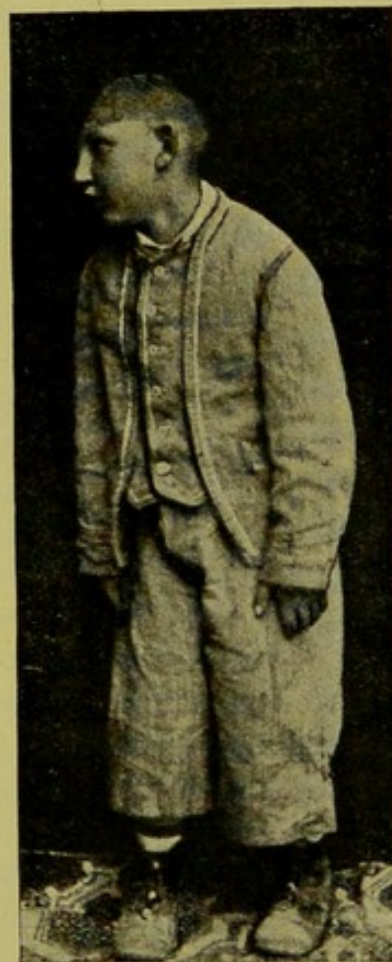


FIG. 96. — INFANTILE CEREBROPATHY, WITH PES VARUS AND MICROCEPHALY. (BROTHER OF THE PRECEDING MICROCEPHALIC.)

imbecility without cerebral lesion. Even the first group does not entirely exclude the common forms of imbecility without cerebral lesion, for Mercklin, in 1887, stated that he had found even paranoia and progressive paralysis in various patients who were the subjects of infantile cerebral palsy. Further observations on psychoses, which have developed at an advanced age in the

subjects of infantile cerebroplegia, have been published in recent years. In 1900 Scheffer described the case of a female patient with arrested development of intelligence who exhibited periodic attacks of depression and exaltation amounting to a true circular psychosis. Post-mortem examination in this case revealed a condition of porencephaly.

The observations opposed to the clinical dualism between the cerebropathies and hereditary imbecility may be divided into two groups. Some authorities do not recognize, or they ignore, the occurrence of acquired idiocy; others admit it, but they persist in seeing behind it the phantasm of degeneration, which allies it to the hereditary forms. Now, it may easily be shown that the infantile cerebropathies, although they specially entail obstruction to psychical progress, also produce, like all accidental and chronic diseases, a true regression of the intellectual functions. It is frequently the case that the speech of children who will develop into idiots is already in process of development when the cerebropathic process occurs, reducing it again to the infantile stage of development. In other cases it is the memory which, after having appeared normal, shows rapid loss of power. According to Wuillamier and Wachsmuth, there is a deterioration of intellect in cerebroplegics which, as a rule, soon reaches a stationary phase, but the idiocy of meningo-encephalitis and the amaurotic idiocy of Sachs are characterized by a progressive and complete dissolution of intelligence. To this result a purely acquired epiphenomenon of cerebropathic conditions also contributes—namely, the convulsive seizure, which leads to a state of true dementia in the patients. Acquired idiocy is thus in many cases an infantile dementia, since it disorganizes an intelligence which, without its intervention, would have developed normally and completely, and without arrest or regression. The same cannot be said of hereditary imbecility, which does not constitute a true disease, and which accordingly we call intellectual enfeeblement, or constitutional immorality.

Acquired idiocy does not include only the cases of profound intellectual deficiency, but, although it certainly tends towards the more serious forms, may assume all shades of intensity, till it can scarcely be distinguished from the normal. As a rule, the most extreme degree of idiocy is to be met with in *diplegics*, if an exception is made of the syndrome of Little, which, according to Van Gehuchten and Brissaud, is never complicated by mental disturbance, and which, as will be seen, may not even be a cerebropathy, but a spinal disease. In the authoritative opinion of Freud, the most complete form of idiocy is that which is to be observed in cases of *double hemiplegia*. Bourneville is alone in

upholding the theory that there is a ratio between the paralysis and the degree of mental deficiency, which may be regarded *a priori* as improbable, and which is also contradicted by experience *a posteriori*.

Statistical inquiries carried out by Freud and other neurologists show that only a minority of cerebropathic patients with paralysis, or true cerebroplegics, exhibit any mental defect. If to cases of true cerebroplegia we add cases of incomplete cerebroplegia—*i.e.*, cerebropathies with simple motor disturbances—the proportion of idiots is always below 50 per cent. On the other hand, if the conception of cerebropathy is enlarged without reference to the presence of any motor manifestation, and the purely psychical cerebropathies are included, it then appears that the cerebropathic idiocies without paralysis are perhaps not less common than the true or incomplete cerebroplegias without idiocy.

To sum up, the infantile cerebropathies may be considered as divided into three groups :

1. Cerebropathies with paralysis—*true cerebroplegias*.
2. Cerebropathies without paralysis, with minor but characteristic disturbances of the motor and trophic functions—*incomplete cerebroplegias* (Figs. 97 and 98).
3. Cerebropathies with simple deficiency or retrogression of the intellectual functions—*psychical cerebroplegias*.

These three forms of cerebropathy, without the cases in which the intellect is intact, constitute the condition of *acquired idiocy*. The use of this term does not imply any indication of quantity or degree. Although it is the more serious forms of mental insufficiency that are most common in cerebropathic patients, slighter and almost imperceptible forms also occur, as we have seen. Acquired idiocy is thus diametrically opposed, both in its pathological anatomy and in its pathogenesis, to *imbecility*, or *feeble-mindedness*, in the traditional meaning of the term—that is, as a developmental or degenerative anomaly.

The antagonism between these two groups of mental insufficiency, in which the only feature common to both is the early age at which their first symptoms appear, is also confirmed clinically up to a certain point. Between cases of arrest due to cerebropathic conditions and others due to weakness or spontaneous aberrations of developmental processes there are somatic and psychological differences, which in some cases render it possible to make a differential diagnosis independently of the clinical history and presence of motor changes.

A cerebropathic patient may not exhibit the paralyses and other characteristic features which we shall describe among the changes that take place in the motor activities, but cases are very rare in

which exaggeration of the tendon reflexes, sensory disturbances, facial hemiatrophy, or infantilism may not be observed. These anomalies and defects are not of developmental origin, but represent the vestiges of a morbid process. Many cases of mental arrest suffer from epilepsy, and when the mental insufficiency has been associated from infancy with epilepsy, it can be asserted positively that they have as a common cause some form of cerebropathy (Seppilli).

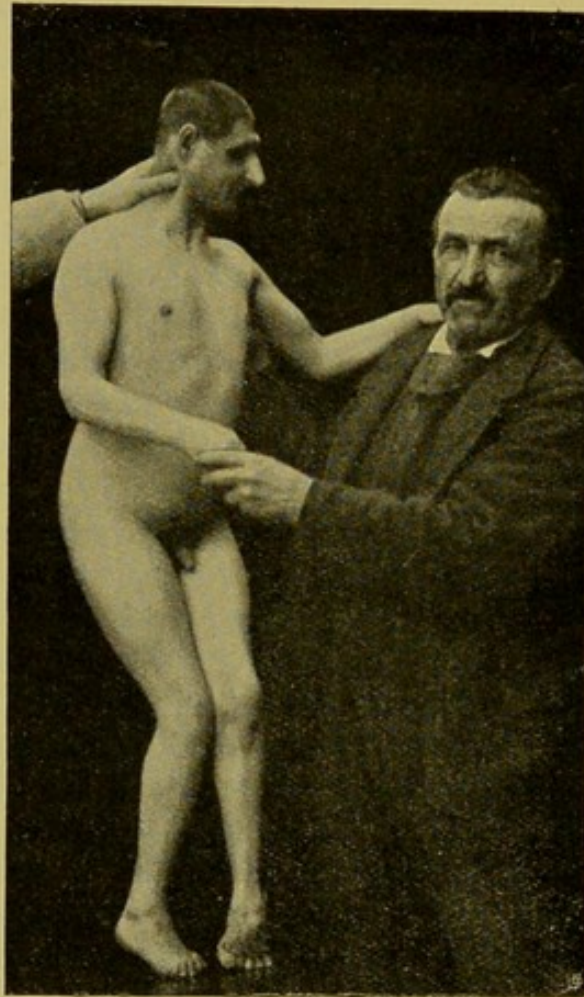


FIG. 97.—MICROCEPHALIC, AGED THIRTY: CEREBROPLEGIA, WITH PES EQUINUS AND HABITUAL ROTATORY MOVEMENTS. (From a photograph taken at Turin, with the permission of Professor A. Marro.)

As regards their mental faculties, cerebropathic patients more than any others exhibit characters of a negative nature, or of deficiency, such as want of affection, anideism, alalia, and inactivity. Their violence, tempers, and misdemeanours have an origin that is rather visceral, reflex, or instinctive, than psychical; they are irritative phenomena in which, it may be said, the will, memory, and consciousness take no active part. Save for a few vivacious reactions which indicate nothing as to their moral character, and from which, moreover, the majority of such

patients are free, cerebropathic patients seem to be dominated by a profound apathy. This apathy is favoured by a certain degree of bradytrophism, and tends to starve not only good initiatives, but also evil instincts. Further, the gliosis, though it may be of little extent, virtually renders all cerebropathies microcephalic, and the arrest of anatomical development of the active elements of thought adds to the harm occasioned by their small number. The active army of the mind is composed of an abnormally small number of cells, which, at the same time, are poorly supplied with dendrites, badly nourished by an impoverished organism, and poorly stimulated by sense of bodily need; ideation is scanty and slow, and has neither the occasion nor the power to increase its strength.

With such poverty of intellect and such barrenness of emotion partial talent is rare, intercurrent attacks of acute psychoses are



FIG. 98.—THE SAME MICROCEPHALIC AS IN FIG. 97.

unimportant, and paranoid delusions are impossible, since these would necessitate some powers of original co-ordination and a moving passion. This dearth of positive symptoms is, as we shall see, in strong contrast with the fairly rich psychology of hereditary imbecility.

On the other hand, however, cerebropathic processes, though in this respect so colourless, present certain clinical changes outside the field of psychology which may be sought for in vain in the gradual development of genetous imbecility. Even if there has been failure to ascertain the cause of the disease that has directly acted on the child, on the foetus, or on the pregnant mother, such as asphyxia in parturition, an injury, psychical shock, and hereditary syphilis, it is fairly often possible to ascertain that the earliest symptoms appeared suddenly, with fever, delirium, or convulsions. Such cerebropathic processes have, as a rule, an acute

beginning which is followed by a chronic phase. In this chronic phase there is usually a slow retrogression on the part of the patient, but in some cases there is a defervescence of all the symptoms, from which the patient issues improved and almost cured. The disappearance of epilepsy is an important factor in the improvement and cure.

Motor Changes.—Cerebroplegias, properly so called, or cerebropathies with paralyses, may occur in the two classical forms of *hemiplegia* and *diplegia*, or in incomplete forms with certain motor phenomena which commonly complicate the true cerebroplegias, such as epilepsy, hypertonus, spasms, strabismus, and exaggeration of the tendon reflexes. These cases of incomplete or abortive cerebroplegia represent the terminal stage in the transition to the purely psychical cerebropathies (König). The infantile cerebropathies thus come to form a single and distinct group, in which the extreme types are represented by the cerebroplegias with normal intelligence and the acquired idiocies without motor complications. Between these two extremes there are the following :

1. The classical cerebroplegias with different degrees of mental enfeeblement.
2. Cases characterized by dispasms and paraspasms.
3. Forms of idiocy with motor complications (Freud, König, Wachsmuth).

Hemiplegia.—This is the form of infantile cerebropathy which has been longest known, and which also has been most fully described by neurologists, and it is therefore necessary only to mention its principal features. Infantile hemiplegia is almost invariably post-natal in origin, and accordingly there is usually evidence of a prodromal period of more or less serious and protracted ill-health, with fever, vomiting, convulsions, and coma. The abolition of movement on the affected side may become apparent at once or gradually. As in the case of adult hemiplegias, it affects the muscles innervated by the facial nerve, and those of the arm and the leg. To begin with, the paralysis is flaccid, but it very soon becomes spastic, being accompanied by exaggeration of the tendon reflexes. In process of time there is atrophy of the muscles of the paralyzed limbs, and also of those of the face. The limbs assume abnormal attitudes. The bones of the arm and leg, and sometimes of the whole of the hemiplegic side, become arrested in their development (Fig. 99). In a few cases complete hemiatrophy without paralytic phenomena has been observed. Microcephaly is frequent, and also asymmetry of the cranium.

As a rule the paralysis is permanent, but it may gradually diminish and even disappear. Simultaneously with the diminu-

tion of the paralysis other motor disturbances make their appearance, such as hemichorea, hemiathetosis, hemitremor, and epilepsy. The succession and changes exhibited by these late complications are very various. Typically, three stages may be distinguished: the paralytic stage, that of hemichorea or hemiathetosis, and the epileptic stage. The chorea may, however, occur at the same time as the paralysis, or it may be present as the primary symptom instead of paralysis, which does not manifest itself. This constitutes the *choreic paresis* of Freud and Rie. Cases of *hemitremor* not preceded by hemiplegia have been described (Lukàcs). *Epilepsy* also may occur at an early stage,

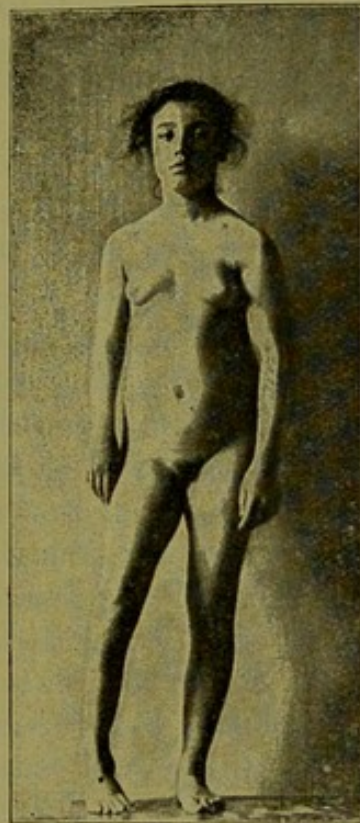


FIG. 99.—RIGHT INFANTILE HEMIPLEGIA: ATROPHY OF THE UPPER AND LOWER LIMBS; PES EQUINO-VARUS. INTELLIGENCE AND BODILY DEVELOPMENT INFANTILE; NO PERVERSIONS; CHARACTER QUIET AND AFFECTIONATE.

while the paralysis disappears, and in such cases, if their history is not known, the patients seem to be genuine epileptics.

As is only natural, hemiplegic patients, being in possession of an uninjured hemisphere, present the most favourable conditions for the occurrence of infantile cerebropathy without mental enfeeblement.

Diplegias.—The different varieties of diplegia have been described by Freud as forming a distinct clinical group. He recognizes the following different types:

1. *General rigidity* (Little's disease in the strict sense of the term).

2. *Paraplegic rigidity*, corresponding to spastic spinal paralysis or spastic tabes.
3. *True paraplegic paralysis*, or spastic paralysis.
4. *Bilateral hemiplegia*, or total diplegia.
5. *General chorea*.
6. *Double athetosis*.

In addition to these fundamental types, Freud recognizes numerous intermediate or mixed forms. He regards Little's disease, not as a distinct affection, but as a syndrome, not differing either clinically or etiologically from the other syndromes or diplegic forms. This view is supported by Sachs, Raymond, Dejerine, Cestan, and others, and opposed by Marie, Brissaud, and Van Gehuchten, who hold that Little's disease is dependent upon a lesion of the spinal cord, and distinct from the group of cerebral diplegias.

Differences of opinion are not, however, limited to the pathological position of Little's disease, but are concerned also with the delimitation of its morbid features, its etiology and course, and the presence or absence of cerebral and particularly psychical complications. So great are these differences of opinion that some clinicians, in order to avoid confusion, advise that even the name of the disease should be banished. The followers of Freud recognize as Little's disease only the syndrome bilateral spasmodic rigidity without paralysis. Other authorities, on the other hand, among whom are Brissaud and Muratow, regard as typical cases those in which paraplegia is associated with contracture. As regards causation, some authors, following Brissaud and Van Gehuchten, attribute the condition to premature birth, and others, including Little himself, to difficult labour (asphyxia). Others, again, regard it as congenital, since the characteristic rigidity appears immediately after birth; but cases have been recorded in which the bilateral rigidity has appeared much later. Fournier considers Little's disease to be a parasymphilitic affection.

Dejerine, in his treatise upon nervous symptomatology, has formulated a theory which occupies an intermediate position, since to a certain extent it reconciles opposing tendencies. The syndrome of Little, from the symptomatic point of view, may be divided into two distinct varieties, according to whether the morbid condition decreases in severity or remains stationary. In the first category he includes all cases which are due to slight lesions of the cerebral cortex, the result of injuries received at birth. The patients suffer only from contracture, not from paralysis; "they are spasmodic, not paralytic," and are intelligent, free from epilepsy, capable of improvement, and exhibit only

some delay in development of the pyramidal tracts without other spinal complication. In the second category, which Dejerine entitles the cerebro-spinal, are included the cases in which there is a gross lesion of both of the cerebral hemispheres, a true paralysis affecting especially the lower limbs, contracture, general arrest of development, mental disorder, absence of tendency to improvement, and often also epilepsy. In one of these cases Dejerine found a primary lesion of the spinal cord. The cerebro-spinal forms of diplegia are related to the cerebral and curable forms by intermediate varieties—dispasms and paraspasms—which, according to König, represent the most favourable forms of infantile cerebroplegia.

A closer analysis of the symptoms of the various forms of diplegia and of their differences gives the following results :

1. *Generalized Contracture*.—The chief characteristic of this clinical variety, in addition to muscular rigidity, is the prevalence of affections of the lower limbs. The child remains motionless, or moves about with his limbs rigid as if they were all of one piece ; he resists movement of them, and especially abduction of the thighs ; he can neither stand nor sit erect ; if he is raised from the ground, his thighs cross each other in a characteristic manner. There is very frequently a marked degree of *pes equino-varus* (Fig. 95). The rigidity in nearly all cases dates from birth. Convulsions make their appearance immediately after birth, or during the first few days of life, but do not recur subsequently. In course of time the disease becomes less marked, but traces of rigidity in the legs always remain.

2. *Paraplegic Contracture*.—This differs from the foregoing in that the arms are functionally intact.

3. *Paraplegic Paralysis, or Spastic Paraplegia*.—This is a rare condition ; in addition to muscular rigidity in the legs, there is a serious paralysis of movement with atrophy.

4. *Bilateral Spastic Hemiplegia*.—The symptomatology of this form is more complex than that presented by a right hemiplegia followed by a left, since the paralysis, in addition to being more serious in the limbs, extends also to the muscles which are supplied by the cerebral nerves, and to the muscles of the nape of the neck and back. The paralysis may, however, be more marked on one side of the body than on the other. According to Freud, the most profound degrees of idiocy are to be found in this form of infantile cerebropathy.

5. *Generalized Chorea*.—This type has as yet been imperfectly studied, and is insufficiently distinguished from the other forms of chorea. Little drew attention to it, and had formed a right conception of it, but the syndrome was subsequently forgotten.

It regained its place, however, among the incomplete cerebroplegias through the work of Audry, who distinguished two varieties of generalized chorea—the first with choreic and spastic elements associated, the second with choreic element alone. The common chorea of Sydenham exhibits itself in rather flabby muscles.

6. *Bilateral Athetosis*.—This condition corresponds clinically to a doubling of the hemiparesis choreica described by Freud and Rie, or to the hemiathetosis of Outmont. There are, however, mingled with it spasmodic phenomena which are not present in hemichorea, or are not so apparent. Bilateral athetosis may occur as a primary condition, or subsequent to a double hemiplegia, as happens in the case of hemichorea connected with post-hemiplegic hemiathetosis. *Muscular hypertrophy* is also then observed, analogous to the hemihypertrophy of hemiathetosis; deformities may also occur due to rickets, scoliosis, lordosis, or kyphosis (Audry). In the congenital form especially the intelligence is markedly affected. In about 25 per cent. of the cases the mental functions are not affected. The disease is stationary (Dejerine).

The nosological position of double athetosis is subject to the same differences of opinion as have been noted with regard to Little's disease. By some authorities the condition is considered to be a morbid entity, while others look upon it as a syndrome which represents clinically a primary irritation of the pyramidal tract (Dejerine).

Cerebral Complications common to the Hemiplegic and Diplegic Forms—1. *Ocular Disturbances*.—Paralyses of the external ocular muscles are very rare in hemiplegia (Kissling). In the diplegic forms, on the other hand, strabismus is common (according to Freud it occurs in about 30 per cent. of the cases), and is most frequently convergent. Some cases of cerebroplegia exhibit unilateral or bilateral rigidity of the pupil to light. Ossipow explains it as being an anomaly of development, or the result of some lesion in the nucleus of the oculo-motor nerve; König looks upon it as being a sign of hereditary syphilis. König has also observed in one case the phenomenon of jumping mydriasis (*springende mydriasis*), which had previously been observed in tabes.

Nystagmus frequently occurs in diplegia, and, according to Muratow, may be due to hæmorrhage in the nuclei of the third nerves.

Atrophy of the optic nerve is a complication common to all the forms of cerebropathy.

Homonymous hemianopsia, which was observed for the first

time by Freud, and which is to be included among the few sensory symptoms, is, on the other hand, rare and transitory.

2. *Disturbances of Speech*.—Dysarthric disturbances are common, especially in diplegics, and produce a characteristic bradylalia. Infantile cerebroplegics speak with a scanning utterance, sometimes in a double-toned voice. Often the first syllable of a word is hissing in character. In choreic subjects, if the movements of the tongue and larynx are affected, there is serious disturbance of speech.

Motor aphasia, due to a focal lesion in Broca's convolution, is not uncommon in infancy, especially in cases in which there is hemiplegia, but improvement readily takes place through the organization of the speech function in other parts of the brain. Aphasia thus does not involve any consequence beyond delay in the production of articulate speech. This fact is perhaps responsible for the opinion held by Bourneville and Cotard that aphasia never occurs in cerebropathics, not even in cases in which there is diffuse sclerosis with implication of the third left frontal convolution.

3. *Changes in Facial Expression*.—Diplegics are pre-eminently distinguished by their rigid, immobile, almost anxious cast of countenance, which gives them an appearance of stupidity, sometimes not corresponding to the real state of their intelligence. In such patients, also, abnormal or perverted modes of expression are not uncommon—as, for example, when excited by some emotion they cry with a sort of ironic laughter (Freud). These abnormalities in expression are the result of contractures, athetotic or athetoid movements, and sometimes of unilateral spasms (*intermittent lateral hemispasm*, *tic labiale* of Dejerine). In the severe forms of idiocy automatic attitudes and movements are frequently to be observed—for example, bending forward in a sitting position, sometimes accompanied by expiratory sounds.

4. *Epilepsy*.—Of all the complications associated with cerebropathic processes, epilepsy is certainly in general the most important. It occurs with the same frequency in hemiplegia and diplegia, with the exception of Little's disease, in the limited meaning of the term, in which it does not occur; and it is not uncommon in the forms of idiocy without paralysis. In cases in which the cerebroplegia is post-natal there is a certain interval between the occurrence of the paralysis and the appearance of the epilepsy. This interval varies greatly in length. It may extend from a few weeks to a number of years, and in some cases is not present. In one case Lukàcs observed the gradual development of the epilepsy from the initial eclampsia.

It is held by some authorities that there are certain differences between true epilepsy and the epilepsy of cerebroplegics. In the latter the convulsion is almost always preceded by an *aura*, and rarely occurs without warning. If the patient is hemiplegic, he often falls to the paralyzed side. As a rule, there is no initial cry, or involuntary escape of urine, or biting of the tongue, and blood-stained froth is rarely seen. Milder convulsions are not accompanied by loss of consciousness. The epileptic stertor is absent, or, if present, lasts for a very short time, and the seizure terminates abruptly, and is not followed by any coma or delirious condition. According to Lukàcs, however, the epilepsy of the infantile cerebropathies is not different in any way from other kinds of epilepsy; indeed, it may even occur in the form of psychical equivalents and of simple losses of consciousness. As regards differences between the convulsions of cerebroplegic idiots and those of non-paralytic idiots, König holds that there are none.

The convulsive seizures of cerebropathic patients are usually Jacksonian in type, and follow each other at irregular intervals. In process of time they become generalized, and progressively more like those of ordinary epilepsy; but the attacks are not so complete, and do not involve such deep loss of consciousness. Although cases recorded by Lukàcs constitute exceptions, it is the rule for psychical equivalents to be absent, and Fuchs has conferred on this circumstance the dignity of a differential character.

Epilepsy is the symptom that constitutes the most prominent feature in the chronic phase of cerebropathic processes, investing it with its characteristic course and variations. In the majority of cases the convulsions occur less frequently with the progress of time, especially in hemiplegics, and they finally cease altogether. This happens commonly between the ages of forty and fifty (Bourneville). In diplegics the epilepsy is more obstinate. In certain cerebropathies, however, in which the lesions are widely disseminated or very extensive, the epilepsy assumes a distinctly progressive course. *Meningo-encephalitis* and *tuberous sclerosis* render the patients liable to serious convulsive attacks, which grow worse with time. The paralytic phenomena may even ultimately take a second place, yielding their pre-eminence to the epilepsy. The convulsions occur in series, and as many as 100 attacks may take place in one day. *Status epilepticus* is not uncommonly a cause of death.

A fact that is important, though denied by Bourneville, is that the seriousness of the epilepsy is not at all proportional to that of the paralytic phenomena. Epilepsy may occur as the sole

symptom of a focal lesion. According to Pellizzi, who considers tuberculous sclerosis to be an endogenous cerebropathy due to *histiopathy* of the cortex, and therefore places it among the hereditary diseases, the epileptic seizure in such patients is to be regarded as of essential origin. It is, however, more reasonable to consider epilepsy as a reactionary phenomenon due to irritative causes.

Sensory Changes.—In the sphere of sensibility the symptoms are much fewer and more obscure than those that are to be observed in the realm of the motor functions, and they are at the same time the subject of greater difference of opinion. It is, indeed, doubtful if purely sensory cerebropathies do occur. There is no question, however, that there are mixed forms in which the morbid processes are localized in the sensory and psychical areas without involving the motor. In the absence of motor symptoms, sensory complications are of value in confirming the diagnosis of infantile cerebropathy in cases in which the condition of idiocy might otherwise be mistaken for a developmental aphasia or an hereditary degeneration.

Among the sensory changes, the condition of *homonymous hemianopsia*, first observed by Freud, is rather rare. In some cases it would seem to be only transitory, pointing to a lesion situated outside the visual centres, but not far distant from them. Less rare, but as a rule equally transitory, is the occurrence of *verbal deafness*. It is probable that, in cases in which it becomes chronic, it hinders cerebropathic patients in their first attempts at speech, or renders speech actually impossible. In cases of pre-natal cerebropathy *deaf-mutism* has occasionally been observed, and among the post-natal forms there have been instances of congenital *mutism without deafness*, which perhaps may be due to early lesions of the first temporal convolution, although no such condition has as yet been revealed by post-mortem examination.

Treatment.

As we have to deal in these conditions with morbid processes which profoundly damage the brain, which compromise the development of specific and irreplaceable elements, which destroy one part of the brain and arrest or pervert the development of the whole organ, it is obvious that medical intervention cannot effect much of value. Active morbid processes can be met only with weak or at least inadequate weapons, and the conflict with their residua is still less hopeful.

Therapeutic endeavour may nevertheless be directed to a modest but by no means useless task. In the first place, it must

attempt to overcome the irritative phenomena, and especially epilepsy, which exercises so injurious an influence on the course of cerebropathic affections in their chronic stages. In the second place, by means of suitable hygienic measures, amends require to be made for the functional deficiencies of the entire organism, which in many cases constitute a danger to life. Such patients, if left to themselves, are often incapable, not only of moving about and making themselves understood, but also of feeding themselves. It is necessary to anticipate and provide for their needs, and to give them reasonable satisfaction.

The most delicate and special task is, however, that of endeavouring to utilize to the best advantage the functional capacities that remain. Where movement is concerned, electricity, massage, and gymnastic exercises may promote the nutrition of paralyzed muscles, or of muscles which are liable to become atrophied. Deformities of the limbs may be corrected by orthopædic and surgical measures. Tenotomy and transplantation of tendons have been of much value, and have been able to establish, principally in the case of the lower limbs, functional powers that had previously not been exercised. In the psychical field, the less serious the degree of functional impairment, the better opportunity is there for education. Speech is the function which may be cultivated with most success.

The majority of cases of backwardness are really cases of mild cerebropathy which have partially recovered, but which, on account of the lesions sustained, are not capable of completing their recovery, either spontaneously or with the aid of the usual educational methods. The education of such cases is an onerous undertaking, and not very productive of good results.

When we consider the symptomatological variety of the cerebropathies, and the wide differences in the intensity of the morbid processes associated with them, we can readily understand that educational methods must be strictly adapted to individual cases. The teacher, in the great majority of cases, requires not only to apply, but also to devise, a special programme. To carry this out, a large experience and the possession of the requisite means are necessary, and the education of idiots and backward children is thus elevated to a true pedagogic specialty. The progress and practice of such a specialty are best promoted by the organization of suitable institutions which provide agreeable surroundings for the defective, whilst the other members of the family are enabled to return to normal domestic arrangements. The spectacle of a deformed idiot is not a helpful factor in the education of healthy brothers and sisters.

Knowledge of the causes that produce the greater number of

cerebropathic diseases, such as parental alcoholism, syphilis, defective nutrition of, and insufficient attention to, new-born children, reveals the possibility and emphasizes the necessity of social prophylaxis, and there is also to be kept in mind the increased burden which such patients impose on public charity, as well as on private resources. According to official figures, there are in Italy about 30,000 idiots and imbeciles. These numbers include some of the hereditary imbeciles, who are not so common, and who may easily escape notification in the census, but the majority of them are cerebropathic cases.

CHAPTER XVI

THE CEREBROPATHIES OF ADULTS

UNDER the above heading we include all those morbid processes that produce gross lesions of the nervous elements in the adult brain, whether directly, such as tumours and injuries to the head, or indirectly, such as collateral lesions of contiguous tissues, especially the vessels and the meninges, which occur in the various forms of cerebral arterio-sclerosis, and in embolism, thrombosis, cerebral hæmorrhage, cerebral syphilis, and insular sclerosis.

In cases of the latter description there is some general cause of disease which more specially affects the brain, though not actually its nervous elements. It is not, however, impossible that the same general cause, since it also damages to a greater or less extent the whole of the rest of the organism in its various tissues, may produce some immediate effect on the nervous elements of the cerebral cortex. In any case, it is the cerebral changes that are the most important, and of these especially the focal lesions. Thus in all the cerebropathies of adults there is a predominance of symptoms of a focal character.

It is evident that when the vascular lesions are minute and diffuse the morbid clinical picture will approximate to that produced by chronic intoxications which directly injure the nervous elements of the brain. In these diseases there may intervene, as accessory symptoms, the effects of lesions which are due to the same general cause, but which are localized in other organs, such as the heart and the kidneys.

The localized lesions of the adult brain differ from those which occur in the infant and child in their tendency to be sharply circumscribed, and thus to give rise to symptoms characteristic of injury to a certain area, and to no others. Whilst in the cerebropathies of childhood the injured points are the starting-places of processes of diffuse gliosis, which may involve even the entire brain, in adults the reaction of the neuroglia is much less intense, and rather tends to the formation of a protecting line of demarcation between the diseased and healthy areas.

On the other hand, lesions which are strictly localized may produce a series of general phenomena, as when a tumour, through its effect on the cerebral circulation or intracranial pressure, exercises an influence on the whole of the cortex.

SENILE DEMENTIA.

Of all the organs in the body, the brain is without doubt that which, less than any other, feels the effects of old age. When the sixtieth year has been passed, many persons show a falling off in their state of general nutrition, sexual power, and muscular force. This progressive involution is, however, much less evident in the sphere of intellectual activity, and in many cases may not be observable at all. There is a small minority of aged persons in whom the mental faculties maintain up to the end of life, or nearly so—if not the freshness and elasticity of youth, at least their robustness and stability. In certain cases, indeed, the exhaustion of instinctive and impulsive activities, such as the sexual functions, restores to the psychical life the conditions of equilibrium and objective serenity. These healthy-minded and kindly old persons, who might, perhaps, seem to be exceptions, are really the representatives of the normal. They have organizations, originally sound and robust and free from any hereditary taint, that have had the good fortune to escape the more serious diseases and to live in comfortable conditions, in the harmonious exercise of all their physiological activities. The fact of the occurrence of such cases gives ground for the belief that the mental deterioration which occurs in old age, although very common, is always a distinctly pathological feature.

The senile involution of the mental activities reveals itself in the milder class of cases in a tendency to systematization. The gradual enfeeblement of perception and memory induces the patient to restrict his thinking to a well-defined field of stereotyped opinions which constitute a sort of defensive fortification. His convictions tend to become organized in a coherent, but simple and schematic manner. His thoughts crystallize in an egocentric form, and in their dogmatic unity become inaccessible to any modifying influences. In more marked cases the enfeeblement of memory becomes apparent, more in inability to make new intellectual acquirements than in the loss of the old impressions. The critical powers are narrowed within the limits of a few but obstinate preconceptions, and judgment is liable to be warped by changes in the emotional state. The source of his ideas becomes exhausted, the contributions from his memory grow poorer, and his whole intellectual field becomes con-

tracted. The feeling of his infirmity accentuates his egoism. Still later his memory becomes uncertain, or is lost altogether, especially for the most recent events. His remembrance of his past life becomes limited and stereotyped in a small collection of anecdotes, which are called to mind by any event, and repeated in his conversation. The general senile deterioration is shown also in his inability to take any active interest in events which do not concern him personally.

In some cases only the intellectual faculties are affected, but more often there are various disturbances of an emotional nature, which in their turn lead to special aberrations in the patient's understanding and thought. There may be enfeeblement with apathy, indifference, and selfish limitation of the emotions, on account of which the old man becomes careless of the pleasures or pains of those nearest to him, and thinks only of his own little needs. The enfeeblement may also be accompanied by emotional depression, a tendency to weeping and to pessimism, which may easily degenerate into ideas of ruin and persecution. Such patients complain that they are despised and neglected, and jeered at by children; they become miserly and jealous, or they become the victims of a true ethical perversion, exhibiting a childish greediness which causes them to commit petty thefts, to cheat at games, and to be guilty of little meannesses and more or less cunning mendacity. They may become scurrilous in their language with the object of amusing foolish persons, and obtaining their applause, even though mingled with contempt. They abandon their habits of cleanliness. They do spiteful actions, even to their own hurt. They become passive resisters to everything new, in order that they may exercise in their own way some influence and satisfy their petty ambition.

From these states of mental deterioration to true senile dementia there is a continuous succession of insensible gradations which it is not possible to separate distinctly from one another. It is especially the judgment formed regarding the conduct of the patient, and the ability of his family to tolerate it, that will determine the treatment to be employed in the case. Some of these patients are so full of energy in their very impotence that, for the protection of themselves and others, it is necessary to confine them in asylums, or to impose restrictions upon them, which is far from easy. They are favoured by the laws to a singular degree. In its Justinian idolatry for the *jus abutendi* the law allows a man to ruin his family, to sacrifice interests that have been entrusted to him, and to subject his household to an irrational tyranny, so long as he does not display the degree of prodigality or cruel mental disease officially recognized. Ruinous affairs, cruel

reprisals, and senseless severities are, however, too often the result of these legal complications.

In senile dementia the bodily signs of old age are also always present. The limbs and features are thin and gaunt, the muscles are weak, the height becomes noticeably less, the cervical and dorsal spine becomes bent, wrinkles and grey hairs appear, and the steps are short and feeble. Muscular tremor is very common, being especially marked in the head and upper limbs. It is a tremor that continues even when the patient is at rest, and, indeed, diminishes during the performance of voluntary acts, such as writing. It is often a coarse tremor, similar to that of paralysis agitans. The eye is sunk in the orbit, the arcus senilis appears on the cornea, the crystalline lens and the vitreous lose their clearness, and the pupil looks opalescent. Myosis occurs, and the power of accommodation becomes greatly diminished. There is apt to be ptosis of the upper eyelid. A considerable degree of deafness is very common, as is also the subjective phenomenon of obstinate humming. The tendon reflexes, if they are not exaggerated on account of focal cerebral lesions, become diminished. The patellar reflex is frequently altogether abolished. The cutaneous reflexes are diminished or absent; one of the first to disappear is the cremasteric. Sexual power is lost. Unexpected exhibitions of it may appear, however, from time to time, with violent erections or simply a subjective sense of sexual excitement, which drives the patient to indecent actions or attempts at masturbation. The signs of general arterio-sclerosis are very common, and the pulse is often slow and irregular. There is also frequently a slight degree of neuritis, of which senile pruritus is one of the most important signs.

The above features belong to cases of the classical senile dementia, which are the most common and which commence after the sixtieth year. To these, however, must be added, on account of their etiology and symptoms, a considerable number of cases of premature senility, in which cerebral and psychical symptoms predominate, whilst the physical symptoms are neither so numerous nor so well marked. Some of these might be described as cerebral senility; even the most precocious of them are entirely free from somatic complications.

In addition to the somatic phenomena which have been described, and which for the most part occur in cases of simple senility, there are also other organic symptoms which are not so constant, and which are due to circumscribed central lesions. They include pareses and paralyses of cerebral origin; rigidity and asymmetry of the pupils; paresis of the muscles of expression; dysarthria (rather rare); exaggeration of the tendon reflexes;

œdema of the extremities ; senile dystrophies and dry gangrene, due to general disturbances of the circulation, vascular lesions, and peripheral neuritis.

The mental or, to use a more comprehensive term, the cerebral symptoms of senile dementia may be divided into three groups, to each of which, as will be seen, there probably corresponds a different pathogenesis. There are, firstly, the distinctly *demential* symptoms, which are permanent and progressive, and insusceptible of improvement. Secondly, there are the *amential* symptoms, hallucinatory and confusional, which may occur from time to time, with widely different characters, introducing periods of exacerbation or of improvement into the progressive process of involution, and thus giving it a most uncertain course. There are, finally, the symptoms of *focal lesions*, of which some are transient and others permanent.

Demential Symptoms.—In senile dementia, independently of the peripheral changes which injure the sensory organs, there is a weakening of perception. It is delayed, or more or less inaccurate and incomplete, because the capacity for active attention is diminished, and the memory of things perceived is transient. If, in addition to this, we remember the enfeeblement of the organs of sense, we can readily understand how such patients frequently suffer from illusions. It is particularly during conversation that this defect assumes a prominent character. Aged persons whose faculties are decaying are unable to follow an ordinary conversation, which they do not understand or only half understand. They require to have a simplified and abbreviated edition made for them of every argument, even of the most simple sentences, as is the case with those who are deaf.

The memory always presents large blanks. General ideas and notions are for the most part sufficiently well preserved ; the greatest dissolution of memory is seen in the recollection of concrete events. The laws of the dissolution of memory are well known ; recent records are the first to disappear ; those of more distant periods, which have had occasion to be repeated and imprinted on the memory, are preserved for much longer. The patients can recollect well the more important events of their childhood and youth, but they cannot recall what they did or heard the day before, or even an hour or a few minutes previously. A demented, half-blind old man may forget the name of the person with whom he is talking, as he rambles on, and may ask it several times in a few minutes. From this defectiveness of memory there naturally arises a failure to appreciate the passage of time ; the patients cannot tell the day, or the month, and may even mistake the year. In this way they come to lose—

and it is a characteristic phenomenon—the idea of their own age, giving it as many years less than it really is, and often showing no respect for even the elementary probabilities of the case. If they have many children, they are able to give with a fair degree of accuracy the dates of the birth of the first two or three, but show great confusion in the case of the others, transposing them, and even completely omitting some, forgetting the children's names, and being unable to enumerate separately the boys and the girls. Even the recent death of a near relative, a son, wife, or husband, may very readily be momentarily forgotten.

Apart from the state of restlessness, peevishness, and irritability which is nearly always present in such cases, the enfeeblement of perception and memory directly gives rise, on its own account, to emotional disturbances and delusional ideas. Often the patients are not sensible of their deficiency; even persons who are almost completely deaf may insist that they hear perfectly well. Through defects of such a nature, and the barriers which shut them off from the external world, such patients erroneously believe themselves betrayed and contradicted, while in reality they have only misunderstood what has been said about them. This leads to complaints and recriminations, resembling those of persons who have delusions of persecution. The disposition also becomes changeable, and may often be turned passively in either one direction or the other by bold suggestions. A remark pleasing to the patient's *amour propre*, or a pathetic reference to a stirring memory, may produce the most clamorous expression of the feelings, shouts of joy, or sobs of emotion. All old people are not, however, so unstable in their emotional equilibrium, and some of them exhibit a degree of insensibility amounting to cruelty.

The conduct of these patients is always coloured by the demential character of their consciousness. The blanks in the memory, the loss of the sense of time, the delusional ideas, and the unconsciousness of their true condition, lead them to form the most absurd intentions. The patient fondly dreams of an impossible marriage, or builds absurd castles in the air; he becomes unconventional in regard to even the most common actions of life; and, having lost all idea of the hour and date, he is led to abandon his former regular habits. He will get up during the night, and insist on going out at all sorts of unsuitable hours without any definite object. An old retired magistrate, who had been settled in Florence with his family for little more than a year, insisted on going out alone. It several times happened that he mistook the street in which his house was, forgot

his address, and had to spend the night in an hotel, leaving his wife and children full of anxiety for him. Nevertheless, but for such incidents, he was a sensible and affable man, pleasant in his conversation.

Amential Symptoms.—The disorientation of senile dement, due to their amnesia, is very often increased transitorily by true confusional attacks. The patients then not only lose any exact notion of time, but fall into gross illusions regarding their surroundings, and sometimes even their own personality. A wealthy old man of seventy-four, under the suggestion of his daughter-in-law, who was anxious to amuse him economically, was led to believe for several days that he was on a steamer with a company of friends, enjoying a pleasure cruise. There is a sort of dream-state in which the patients pass long hours and whole days, and from which they then emerge with the recovery of a comparative degree of lucidity. Such patients during the night, and in their frequent slumbers during the day, have frequent dreams, and the mental images of these dreams become intimately confused in their minds with the records of actual events, owing to their disorientation and diminished critical powers. Between the somewhat misty reality of their waking hours and the fairly lucid fancies of their light slumbers there is not, indeed, a very great difference. The continued intermingling of short hours of sleep with short periods of waking increases the facility with which their respective memories may be confused. Thus, the fantastic world of dreams enters into the real life of these patients, and they will describe how they have made a long journey in a few hours, or met with people who are far away, or who are even deceased, or how they have been attacked by armed robbers, or have taken part in a ball. A senile dement, while being questioned by the judge in a case of interdict, described the nightly traffic to and from a gambling-house, its illuminations, and the noises which came from it, stating that such a house existed opposite his own, whilst it turned out that nothing of all this was true, the first to admit it being the patient himself.

The confusional disturbance may in certain cases become very acute, so as to simulate conditions of the most serious amentia, with incoherent verbigeration, motor agitation, and states of mental anguish and fear.

Focal Symptoms.—These may occur in senile dementia in a passing and altogether transient form, appearing without any signs of a stroke, lasting for a few days, and then fading away, leaving no trace behind them. In this form they are often accompanied by motor aphasia with relative agraphia, and more

frequently still by verbal deafness with paraphasia and dysgraphia. Perhaps various other focal symptoms may also be present, but escape observation, which is only too often rendered difficult by the mental condition of the patients. In some cases, without any stroke, there may be a complete but transient hemiplegia. These forms of more extensive paralysis last, as a rule, much longer than the circumscribed varieties of aphasia, and may even persist for months, and then disappear, leaving no trace behind them. Transitory disturbances of a focal nature are perhaps more common in those cases in which the confusional symptoms are most marked. Much more frequently, however, the permanent character of the focal symptoms indicates their usual origin in cerebral hæmorrhage or softening. They often appear in association with an apoplectic stroke, and are at first very extensive, suspending the motor functions on the whole of one side. After a few days, however, they become considerably circumscribed and gradually pass away, leaving behind a state of paresis. The internal capsule and the basal ganglia are the most common sites of the lesion. As the result of several of such strokes there may be established a syndrome of pseudo-bulbar paralysis, or the patients may exhibit spasmodic weeping or (more rarely) laughter. The paralyzes, which come on gradually, without any stroke, are, on the other hand, more permanent. Their most common cause is softening of the cerebral cortex, which may be localized in a great variety of situations, with corresponding symptoms.

Among the phenomena which are due to focal lesions it is also necessary to mention epileptiform convulsions, sometimes Jacksonian, sometimes generalized. They are always late in appearing, and occur when one or two focal symptoms of paralysis have already been manifested.

Clinical Varieties of Senile Dementia.

Senile dementia may occur in a simple demential form, with amnesia, enfeeblement of the critical faculty, and changes in the emotional and moral character as its most prominent symptoms. Melancholic depression is common in such cases. More frequent, however, are those in which confusional attacks from time to time render the course of the disease more irregular. Phenomena of a focal character may be altogether absent in some of these cases, but in others they assume such a preponderating importance that the dementia has almost been regarded as a consequence of focal lesions. Such are the cases of the so-called *apoplectic dementia*. Certainly in these cases the dementia is not less marked than in others, and there is in correspondence with it

the diffuse pathological process which is the organic substratum of senile dementia. The focal phenomena, which in youthful subjects would never give rise to a general condition of psychological deterioration, do not amount to more than an incident which is sometimes the most apparent, and thus the first to raise alarm; but they have their source in the same process of cerebral arterio-sclerosis as that which determines the senile dementia.

Special mention must be made of the *precocious forms* of cerebral arterio-sclerosis, which have been designated *pre-senile*. They are so closely allied to senile dementia by intermediate grades and varieties that, though anatomically and clinically slightly different from it, they ought not to be regarded as separate from it. In these pre-senile forms of cerebral arterio-sclerosis the most important symptoms are those indicating a focal lesion. As a rule, they are slowly established, but they may also arise suddenly, with, for example, an apoplectiform attack, hemiparesis, or hemiplegia.

On the mental side there is to be noticed a gradually increasing enfeeblement of memory and reasoning power, with euphoria or hypochondriacal depression, and various delusions. Different classes of pre-senile dementia have been described, but they are not really based on clinical observation, but only upon their pathological anatomy. Thus, Alzheimer has described an *arterio-sclerotic atrophy of the brain*, and Binswanger a *subcortical progressive encephalitis*, which may be distinct from one another, as also from true senile dementia, and even from the precocious forms of senile dementia. In reality, however, apart from the criterion of age and that of the absence or paucity of the physical signs of senility, there are on the clinical side no characteristics sufficiently well defined to justify the subdivision of pre-senile dementia into different varieties.

Course.

Cerebral arterio-sclerosis is always accompanied, even in its incipient stages, by various subjective phenomena, such as headache, often slight, but constant, a feeling of faintness, giddiness, singing in the ears, the irritability of weakness, and insomnia. These are in many cases the prodromal symptoms of senile dementia, which subsequently develop in a slow and progressive manner. Such a commencement is not, however, constant; sometimes, in persons who are very slightly debilitated, an injury, a fall, a psychological trauma, or an infective disease, may be the prelude to a rapid and tumultuous mental deterioration, accompanied by attacks of confusion. In those forms which are specially distinguished by focal symptoms it is not uncommon

for arterio-sclerosis to declare itself with apoplectic phenomena, which are followed later and gradually by the signs of mental decadence.

The course of the disease is always progressive; only the amential symptoms and certain of the focal phenomena are susceptible of improvement. The duration of the disease depends principally on the general health of the patient, and on the occurrence or non-occurrence of intercurrent diseases, which determine the final event. Death sometimes occurs from cerebral hæmorrhage, more rarely as the result of convulsive phenomena. Cardio-renal sclerosis is an extremely common complication, and is a most important factor in the causation of death. In some cases there is severe cystitis and secondary nephritis, but the most common cause of death is a diffuse broncho-pneumonia.

Differential Diagnosis.

The diagnosis of senile dementia does not, as a rule, present any difficulty. It is advisable, however, not to be too ready to diagnose the condition in every person of advanced age who exhibits serious mental disturbances. Aged persons may suffer from other forms of psychosis having a course and prognosis very different from those of senile dementia. The condition may readily be confused with the forms of affective psychosis which sometimes make their appearance even at an advanced age. Melancholia is the most common of the psychoses of old age, but cases of circular insanity and simple mania may also be observed in persons of great age. It is important not to confuse these psychoses with the attacks of excitement or depression which frequently occur in senile dementia. Although the affective psychoses often assume special characteristics in old age, a more or less distinct tinge of mental enfeeblement becoming apparent, in the majority of cases it is quite clear that the affective disturbance plays the principal part in the morbid picture, and that the enfeeblement is a purely secondary matter.

Amentia may also occur late in life, and in consequence of its ordinary causes. In such cases there is a risk of its being mistaken for an amential attack in senile dementia, but as a rule the history of the case is a sufficient guide to a correct diagnosis. At any rate, the course, and especially the final result, will establish a distinct difference.

In the classical form of senile dementia it is easy to avoid confusion with progressive paralysis by consideration especially of the different ages at which the two diseases develop. It may be said that the reign of senile dementia begins where that of progressive paralysis ends. On the other hand, it is easy to

confuse cases of pre-senile cerebral arterio-sclerosis with progressive paralysis. Binswanger and Alzheimer have, indeed, felt obliged to distinguish the clinical conditions of progressive subcortical encephalitis and arterio-sclerotic atrophy of the brain from progressive paralysis, with which they had formerly been confused. Although the pathological conditions are entirely different, the clinical differences are not such as to permit of a clear differential diagnosis in all cases. The presence of focal symptoms developing in a slow and progressive manner, and the absence of any one of the principal signs of paralysis—as, for example, changes in the pupils and dysarthria—may be valuable



FIG. 100.—FLECHSIG'S SECTION OF A SENILE BRAIN.

A, Lacunæ of disintegration in the central nuclei; B, *état criblé*. (J. Ferrand, *L'Hémiplegie des Vieillards*. F. Rousset: Paris, 1902.)

aids to diagnosis, but are not reliable data. Pre-senile arterio-sclerosis runs a more chronic course, and the delusions which accompany it are of a less characteristic nature.

Pathological Anatomy.

Post-mortem examinations in cases of senile dementia yield an abundant harvest of pathological facts. Macroscopically, in addition to all the characteristic senile changes which may be observed during life, there are the following: thinning of the calvarium, even to a transparent condition, with here and there, on the contrary, thickening of the diploë. The dura is strongly adherent to the cranium, so much so that in some cases it cannot

be detached from it. The Pacchionian bodies are markedly hypertrophied, and cause deep excavations of the cranial bones. Hæmatoma of the dura is not uncommon. The pia-arachnoid is thickened and opaque. There is in all cases a certain degree of external hydrocephalus corresponding to the degree of cerebral atrophy. The ventricles are dilated. The weight of the brain is subnormal, in many cases showing a diminution of from 150 to 200 grammes. The convolutions are atrophied and the sulci widened. The cerebral vessels, and especially the large basal vessels, show distinct arterio-sclerotic changes, which frequently also are to be found in the small arteries. The cerebral cortex may show foci of ischæmic softening. In the basal ganglia and

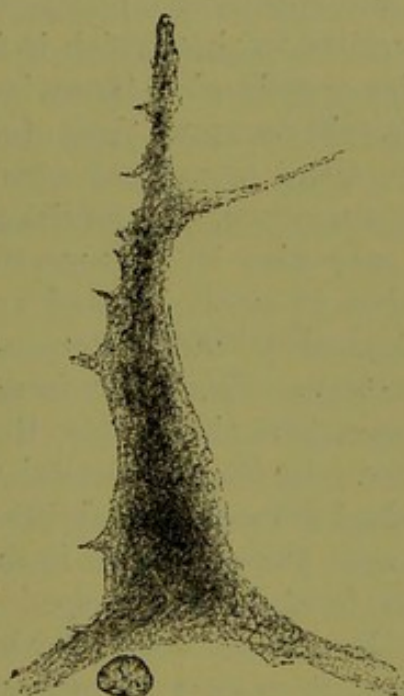


FIG. 101.—CELL OF BETZ IN THE ASCENDING FRONTAL CONVOLUTION IN A CASE OF SENILE DEMENTIA: ADVANCED ATROPHY, DIFFUSION OF CHROMATIC SUBSTANCE, SHRINKING, AND HOMOGENEOUS COLORATION OF THE NUCLEUS.

internal capsule there are commonly lacunæ due to perivascular disintegration (Fig. 100).

Examination of other viscera shows the presence of a process of diffuse arterio-sclerosis, which is of most importance in respect of its implication of the heart and kidneys. The aorta is frequently dilated and atheromatous, and the arteries of the limbs are thickened and rigid.

Microscopically, even in the mildest cases, it is easy to discover a process of diffuse atrophy in the nervous elements, with a corresponding increase of neuroglia. The nerve cells are diminished in size, and more or less atrophied (Fig. 101); adjacent to cells that have a normal, or almost normal, appearance may be others that are shrunken and more uniformly coloured. There is a

remarkable and often enormous increase in the amount of pigment. It forms accumulations, not only in the larger cells, which normally contain small quantities of it, but also in the small cells, which, as a rule, are free from it. The chronic processes of atrophy may also be associated with acute cellular changes, similar to those which are met with in toxic conditions, but to a large extent they are due to terminal or agonal complications.

Proliferation of the neuroglia, specially characterized by an increase in the fibres, may occur diffusely, but it shows a predilection for the sites which normally have a rich supply of neuroglia, such as the sub-pial layer of the cortex and the sub-ependymal layer of the grey matter of the ventricular walls, where there may be a true process of sub-ependymal gliosis (smooth or granular ependymitis), quite similar to that which is found in progressive paralysis. Round the vessels also there is special increase of neuroglia. In the glia cells accumulations of pigment are common (Obersteiner). Where there is a great abundance of neuroglia *corpora amylacea* are numerous. In addition to these forms of diffuse gliosis, there may also be circumscribed forms: *miliary gliosis* (Redlich) consists in small isolated areas in the cortex; *perivascular gliosis* (Alzheimer) may extend all through the area supplied by a large artery. This latter form is characteristic of the pre-senile processes. In the cortex the medullated fibres are reduced in number. In the subcortical white substance the fibres may be diminished diffusely, or exhibit secondary degeneration. In the latter case the condition is due to diffuse lesions in the cortex, or to focal lesions caused by hæmorrhage or ischæmic softening. In the subcortical white substance there may always be noticed a process of primary alteration of the fibres, associated with vascular lesions—a *progressive subcortical encephalitis* (Binswanger), which is followed secondarily by cortical lesions. This form is also characteristic of the pre-senile process.

The spinal cord shows atrophic changes in the nervous elements similar to those which occur in the cortex: there is a diminution of the number of fibres in the white matter, especially below the pia, where a marked increase in the number of neuroglia fibres and abundant *corpora amylacea* are also to be noted. Degenerative conditions due to focal lesions in the brain are also to be found in the cord.

The peripheral nerves frequently show atrophy of the medullated sheath, which is more advanced in the more distal parts of the nerve, and may even become so complete as to cause disappearance of the finest cutaneous branches.

Many of the lesions above described may be observed also in

progressive paralysis, but the two conditions present fairly characteristic differences. Certainly we do not find in senile dementia the acute degenerative changes which take place in the cortical cells in progressive paralysis; the atrophy is diffuse and regular; the nervous elements exhibit constant signs of senility—for example, superabundance of pigment; the vascular changes are more distinct in the large and medium-sized vessels, which show much less change in progressive paralysis; while, on the other hand, there is not that infiltration of lymphocytes and plasma cells round the smallest vessels which constitutes so distinctive and important a feature in the brains of progressive paralytics. The proliferation of neuroglia, which in progressive paralysis shows no regular distribution, in senile dementia assumes the characters of a simple hyperplasia, which involves particularly the areas which are normally well supplied with neuroglia—in other words, it is no more than an isomorphous sclerosis. In marked contrast to what is found in cases of progressive paralysis, areas of softening due to hæmorrhage and thrombosis are common in senile dementia.

Pathogenesis.

There can be no doubt that the essential basis of the atrophic processes that involve the nervous elements, and hence of the consequent dementia, is to be found in the arterio-sclerotic lesions of the cerebral vessels, by reason of which cerebral nutrition is rendered difficult and insufficient. It must, however, be admitted that the same general cause, the same change in metabolism which determines the vascular lesions, acts also as a primary cause of injury to the nervous tissues. This fact specially applies to slow and diffuse atrophies, to senility of the nerve cells.

It is obvious, on the other hand, that all the localized lesions of the nervous tissue from hæmorrhage or ischæmia must be attributed to vascular lesions. The distribution and the degree of the arterio-sclerosis give their special characters to the type and the course of the demential process. When the lesion is slight and diffuse, the result is a typical dementia of the most slowly progressive type; where thrombosis or hæmorrhage has taken place, the condition is complicated by paralysis—apoplectic dementia; and, lastly, where the arterio-sclerosis is circumscribed, there are the aberrant forms (generally pre-senile), with pre-dominance of focal symptoms.

This is not, however, a complete account of the damage to which the brain is exposed through arterio-sclerosis. The brain must necessarily suffer some ill-effects from the injury caused in other organs by the arterio-sclerosis, and especially that done

to the heart and kidneys. The circulatory disturbances due to cardiac arterio-sclerosis and renal insufficiency produced by arterio-sclerotic atrophy of the kidney are certainly of the greatest importance among the causes of the confusional states which complicate senile dementia. The phenomena suggesting focal lesions, which manifest themselves transitorily, which disappear, leaving no trace behind them, and to which there is no corresponding gross lesion, are very probably due exclusively to renal insufficiency; they differ in no way from the paralyses which are to be observed in chronic uræmia.

Arterio-sclerosis is generally determined by a constitutional diathesis. Cases of senile dementia show, in fact, an extensive similar heredity in their ancestry, which, according to some authors, is to be found in as many as 20 per cent. of the cases. There is no doubt, however, that previous diseases are of the greatest importance, especially those of a toxic and infective nature, and more particularly alcoholism and syphilis.

Treatment.

A rational method of treatment would endeavour to attack and overcome the essential affection of the organism, arterio-sclerosis, but it must be confessed that therapeutics possess no weapon against this malady. Only a problematical result is produced by the small doses of iodide which are usually prescribed, and no more certain results can be claimed for the various saline fluids which have more recently been recommended. The energies of the medical man should be directed towards the establishment of a dietetic hygiene, the prevention of excess in the use of alcoholic beverages, and a constant supervision of the renal functions. Alcohol may be employed as a cardiac stimulant and as a hypnotic. Opium and morphia are of service in states of restlessness. It is obvious that the personal supervision of the patient and attention to his cleanliness are matters requiring much care.

CEREBRAL HÆMORRHAGE, EMBOLISM, AND THROMBOSIS.

Cerebral hæmorrhage occurs as a result of senile or pre-senile arterio-sclerosis, but in youthful subjects it may also follow more or less circumscribed changes in the cerebral vessels, especially those of syphilitic origin. Further, even in patients of advanced age, changes in the principal arterial trunks do not always imply a diffuse lesion of their smaller branches of such a nature as to damage extensively the nervous elements of the cortex. Cerebral embolism may occur at any age as the result of morbid processes

altogether external to the brain, generally affections of the left side of the heart. Cerebral thrombosis depends certainly upon local lesions of the vessels—at least, in the majority of cases—but these lesions are not necessarily diffuse and generalized. In short, focal lesions may occur even in healthy brains, so that the clinical picture is dominated by focal symptoms, which are neither obscured nor concealed by the syndrome of diffuse lesions. The opposite of this occurs, on the other hand, when the same focal lesions are produced in brains enfeebled by senile dementia. From the point of view of psychiatry, the cortical lesions are of special interest; they are more commonly the result of embolism or of thrombosis than of hæmorrhage.

In the early stages of the affection the symptoms are not restricted to those of a focal nature; generalized symptoms are the first to appear, being due to stimuli and inhibitory actions which radiate from the affected to the healthy parts. Indeed, it may be said that there is no true apoplexy which is not accompanied by unconsciousness or coma. In the case of every focal lesion the negative symptoms are always more prominent than those that remain as residua. Functional disturbances of a more or less marked nature also occur; in the psychical sphere there are not infrequently various degrees of confusion, with serious disorientation, sometimes also hallucinations, which may last for a few days, at the most for a week. The confusion then gradually decreases, and the permanent picture of the disease becomes apparent as a complex of negative symptoms.

From the psychological point of view, the lesions which injure the associative centres are naturally of more importance, for in the absence of these centres, which are the seat of representational images, symbols, and memories, the functions of mnemonic evocation and of recognition are impossible. According to the site of the lesion, there may be the most different forms of agnosis. As a rule, the agnosis is more or less incomplete and mixed, and the seriousness of its phenomena varies from day to day for better or for worse. Of very great importance are psychical deafness, mental blindness, and astereognosis. Of still greater importance are speech affections in the more or less serious forms of *motor aphasia*, *amnesic aphasia*, *word-deafness*, and *word-blindness*. Although each of these morbid conditions represents only a very partial disturbance of the intelligence, yet they make their pernicious effects felt by the intelligence as a whole; and if they do not affect the reasoning powers, they nevertheless interfere with the current of thought, rendering it difficult and fragmentary. Much more harmful than either motor or amnesic aphasia is word-deafness, in which not only is the understanding of words

that are heard impaired or suppressed, but the spontaneous expression of speech is also constantly disturbed in the form of *paraphasia*. This *paraphasia* may reach such proportions as to give, on superficial examination, the impression of grave mental confusion; and, in fact, patients suffering from word-deafness are much more frequently mistaken for confused lunatics and sent to the asylum than those who suffer from motor aphasia. Careful examination shows, however, that the disturbances of ideation are always less than they appear to be.

Other forms of *asymbolism* may be referred to the representation of past events, and are thus varieties of *apraxia*. Such cases of *apraxia* resemble in their mechanism the varieties of aphasia, since they may be dependent on the loss of sensory images (tactile, visual, auditory), which determine the actions, or on the loss of motor and *cœnesthetic* images.

The amnesic and disassociative phenomena which are caused by all these focal lesions consist in the loss of definite, categorically arranged symbols; and when the symbols involved are those that are thus circumscribed and systematized, the whole psychical functions are affected, and the memory especially suffers. Voluntary retention is the first function to be impaired; a patient suffering from motor aphasia understands well what is said to him, and is able to carry into effect immediately any order that is given to him, but is incapable of accurately doing so if between the order and its execution there has been a certain lapse of time.

The emotional state is also more or less altered. Many patients become depressed; they readily give way to weeping, and passively allow themselves to be agitated. In those who suffer from word-deafness *paraphasic verbosity* is common, and is often associated with a state of mild excitement. The moral feelings are often weakened by the accentuation of hypochondriacal preoccupations, or by the optimistic carelessness that is usual in states of euphoria.

Epileptic fits, in some cases localized, in others general, may arise as the result of focal lesions, which are usually well defined. The fits appear after some time, and are probably due to the irritative action of a cerebral cicatrix. The epileptic attacks are associated with all the ordinary sequelæ and complications, so that there may be states of confusion and post-epileptic excitement, and if the fits are very frequent, the patients fall into a condition of progressive mental enfeeblement, marked by complete blunting of the moral feelings and by the distinctive epileptic character, as in congenital epilepsy.

Proceeding on parallel lines with the pathological development

of the cerebral lesion, there is also a development of symptoms. Some months after the commencement of the illness there is established a *minimum* of functional defect, which thenceforward remains stationary almost indefinitely. Functional compensations, which in early life are possible, and sometimes complete, are effected only with great difficulty in adults ; and re-education in aphasia is both difficult and irksome, and always gives poor results. When the nature of the affections which originally cause the hæmorrhage, embolism, or thrombosis, is considered, it is clear that these morbid conditions, even if they are not progressive, may recur, and through such recurrent attacks lead to a progressively more serious deterioration of the mental powers. Death frequently supervenes on the occurrence of such fresh cerebral lesions.

CEREBRAL SYPHILIS.

Syphilis may act in various ways on the nervous centres, producing different morbid conditions. In the first place, it may, directly after infection, cause primary changes in the blood, which exercise a general effect on the entire organism, and consequently on the nervous centres. In this case it produces a clinical condition which is common to the toxic confusional psychoses, and, notwithstanding the specific nature of the cause, the disease cannot be distinguished symptomatically from the other forms of amentia. It is a *syphilitic amentia*, with hallucinatory and confusional phenomena.

Syphilis also causes mental disturbance in an indirect manner, through changes which it produces in the bodily metabolism long after infection. These changes, which are liable to take place in many syphilitics, have a harmful effect on the nervous system. They constitute the so-called metasyphilitic process, the mental disease arising from which is progressive paralysis.

Syphilis may also, however, produce local affections of the brain, with syphilitic meningitis, changes in the vessels, and gummata, and it is with these manifestations of *cerebral syphilis* in the strict sense that we have here to deal.

Syphilitic or gummatus meningitis is commonly limited to the base of the brain, and is much rarer on the vertex. The basal distribution manifests itself, as is well known, especially in paresis or paralysis of the cranial nerves—*e.g.*, the oculo-motor—in optic neuritis, pareses of the limbs, and dysarthric disturbances of speech, the signs being more or less diffuse or accentuated according to the site of the morbid process in different cases. If the lesion affects the vertex, it gives rise mainly to the phenomena of Jacksonian epilepsy or to generalized fits (epilepsy of cerebral

syphilis), various mono-paretic phenomena, and aphasic disturbances. Isolated and large gummata may be formed in any situation, producing focal symptoms. In some cases, however, localized syphilitic processes are obscured by diffuse changes in the vessels, the walls of which become characteristically thickened, with narrowing of the lumen, even up to the point of complete obliteration. Even in such cases localized symptoms may not be absent, especially when there is hæmorrhage or thrombosis with consequent softenings, which follow lesions of medium-sized vessels; but the principal interest attaches to the mental phenomena, which in these diffuse forms may assume special importance.

Whatever may be the situation and the extent of the cerebral syphilitic process, it is only very rarely that mental disturbances do not develop—at least, in the form of simple deficiencies. This is not due alone to the local action of the syphilitic process upon its area of distribution, but also to general disturbances of the cerebral circulation, and perhaps also to a toxic effect which extends beyond the limits of the apparent anatomical localization.

The manner in which the mental disturbances present themselves varies much from case to case. There may be the slow and progressive appearance of the signs of dementia, with at the same time the motor phenomena of cerebral syphilis. Or the motor symptoms may be the first to make their appearance, being well marked, but lasting only for a certain time, states of dulness or confusion subsequently occurring as complications, which in their turn disappear, leaving behind them a defective mental state. Again, there may be at one period serious signs of paralysis, preceded by only a few prodromal symptoms, such as headache and giddiness, and accompanied by loss of consciousness, as in apoplectic seizures, followed later, on the gradual disappearance of the acute phenomena, by a residual mental defect.

The signs of dementia are by far the most common and the most permanent of all the mental phenomena that occur in cerebral syphilis. As a rule, they are restricted to simple defectiveness of memory and diminished promptness in perception, lessened power of muscular effort, intolerance and incapability of mental application, without the presence of delusional beliefs or doubts. In some cases the psychical defect may show itself in the field of the moral sentiments by indifference, brutal conduct, selfishness, and a tendency to revelry. Exaltation is rare, depression very common. In almost all cases the patients remain conscious of their infirmity.

Confusional states may be observed in immediate association with apoplectic strokes or attacks of general or Jacksonian epi-

lepsy. When the morbid processes are very diffuse and serious, they may lead to the production of protracted confusional and hallucinatory phenomena. Systematized delusions of a chronic character may occur, but they are rare.

The course of the mental disturbances, like that of the motor symptoms, is liable to frequent remissions and exacerbations. Quite independently of any treatment, there may be a conspicuous improvement, and the mental defects should never be regarded as necessarily of the nature of incurable dementia. Many memories which seem to be lost may be regained, and many blanks filled. This proves that in the pathogenesis of the mental disturbances exclusive importance should not be attached to the destructive phenomena which eventually occur in the cortex, but that much is due to irregularities in nutrition, disturbances of the circulation, toxic conditions, simple functional disturbances, and stimulative and inhibitory actions, which lead to disturbances of the mental processes, and cause mental defects to appear much greater than they really are.

The diagnosis of cerebral syphilis, as a rule, presents little difficulty, on account of the presence of the motor symptoms which usually accompany the psychopathic phenomena, among which the most characteristic are those which are related to the cranial nerves, and especially the oculo-motor. Nevertheless, as similar paralytic and paretic phenomena may also be observed in progressive paralysis, the diagnosis is not always certain, especially if the mental symptoms are the most prominent, and make their appearance gradually. As a rule, the paralytic phenomena in progressive paralysis are fugitive, whilst in cerebral syphilis, although they exhibit remissions and exacerbations, they are much more lasting. It is to be noticed that in cerebral syphilis the mental disturbances almost never occur alone; indeed, in the great majority of cases they appear only in sequence to, or associated with, motor phenomena. They consist for the most part, as already indicated, in a simple defect of intelligence, which may undergo remarkable remissions, and they never have the progressive course and imposing character that distinguish the demential and delusional phenomena of general paralysis. The dysarthria of cerebral syphilis is more closely connected with paralysis or serious paresis, as a rule is unequally developed on the two sides, and is associated with paresis of the limbs. It does not exhibit the hesitancy and transpositions, spasmodic repetitions and mispronunciations, which are to be observed in the speech of general paralytics; it is a dysarthria due purely to motor defect.

The date of the syphilitic infection may furnish an important,

though not decisive, indication; as a rule, progressive paralysis is preceded by a preparatory period of much greater length than that which precedes cerebral syphilis, but this distinction cannot be applied to individual cases. The demonstration of tertiary manifestations—gummata and syphilitic iritis—is of much greater importance. If such signs are visible, or if it is known from the history that at one time they were, the diagnosis of cerebral syphilis is practically confirmed. It is well known that the signs of tertiary syphilis are only exceptionally to be found in paralytics. Lastly, the most satisfactory differential test is that of mercurial treatment, for at the present day no one can cherish any illusions as to the action of mercury in general paralysis; it is nil or actually harmful.

The treatment of cerebral syphilis consists mainly in the use of mercury. Its combination with the iodides is widely advocated, but is only of secondary importance. Daily inunction with doses of 4 to 5 grammes of the blue mercury ointment (ung. hydrarg.) has been recommended, but when it is remembered that the treatment must be continued as long as the individual can tolerate it, preference must be given to intramuscular injections of corrosive sublimate in doses of 1 centigramme ($\frac{1}{8}$ grain) for each injection. This method permits the exact administration of the drug in the required quantities, and secures the patient from excessive or unexpected absorption of the drug. Even in cases in which there has been a complete cure it is well to repeat the treatment in a milder form after some time. *A fortiori*, the same procedure should be followed when the recovery has been incomplete.

The results of treatment become apparent, as a rule, after the second or third week, but in some cases much later. It is only when there is evidence of mercurialism and no sign of improvement that there is any reason to despair of success. Treatment in most cases results in a more or less distinct improvement. Complete and permanent recoveries are not obtained in more than 8 per cent. of the cases. It seems that convulsive phenomena indicate a better prognosis than those of a paretic and paralytic nature. For the most part the mental disturbances show improvement, but they leave behind them a permanent, though it may be only very slight, residuum of mental deficiency. In some cases, however, they show no change, or become progressively worse, in spite of treatment. It is always necessary to remember that the signs of cerebral syphilis may be followed by those of progressive paralysis. Old age renders the prognosis more serious; the best results are certainly obtained in young subjects.

CEREBRAL TUMOURS.

Cerebral tumours give rise to psychopathic phenomena, firstly by their local effect on the tissues in which they develop, and secondly by their indirect influence upon the cortex as a whole. The circulatory disturbances associated with tumours, the increase in the intracranial pressure, and the elaboration of toxic substances, which are poured directly into the nervous tissues or into the cerebro-spinal fluid, exercise in some cases a more serious and evident action than the tumour itself.

The focal symptoms vary much with the situation and rapidity of growth of the tumour, and according to whether it invades the nervous tissues or not. Tumours which develop very slowly outside the nervous tissues cause the *minimum* of localizing symptoms. In some cases there may even be no symptoms, and the presence of a tumour may come as a surprise at the post-mortem examination. When, on the other hand, the development of the tumour is rapid and causes an acute disorganization of the surrounding nervous tissue, or is surrounded by a zone into which hæmorrhages take place, the focal symptoms are much more pronounced.

With regard to the situation of the tumour, the symptoms should receive their customary interpretation according to the functional localization of the cortex. From the psychical point of view, the question as to whether tumours of the pre-frontal region are associated with a special complex of psychical symptoms is of considerable importance. The conclusions of Hitzig, Wundt, Bianchi, Ferrier, and Flechsig as to the functions of the pre-frontal regions fully justify the clinical opinion that lesions of this extensive area, more than those of any other, must cause injury to the mental functions. A considerable number of clinical cases have been brought forward in support of this view. Finally, some have sought to prove that a tendency to punning is a pathognomonic sign of a pre-frontal lesion (Witzelsucht).

In most cases of tumour in the pre-frontal region the mental enfeeblement is very distinct, but it is not in itself sufficient to give clear and certain indications as to the site of the lesion. Mental enfeeblement may not be present in some cases of pre-frontal tumour, while, on the other hand, it may be present to a very marked degree in the case of lesions which are altogether external to this region of the brain. The explanation of this fact lies largely in the indirect effects which a tumour is able to exert from a distance upon the whole of the cortex. Further, in lesions of the pre-Rolandic area associated with dementia, the psychical condition must not be entirely attributed to the local

lesion. As has been rightly observed by Eduard Müller, the development of chronic lesions of the entire cerebral cortex is specially apt to occur in consequence of tumours of the frontal lobe, because they run a slow course, and result in death only after a long time. As to the tendency to play upon words, it is to be observed in all varieties of chronic morbid processes that lead to dementia.

The general action that cerebral tumours exercise upon the brain results in retardation of the psychical processes and blunting of affectivity. The patients are slow and obtuse; they grasp with difficulty the significance of sensory impressions; they are incapable of sustained attention, and they forget everything. Nevertheless, sometimes, under the appearance of a profound dementia, there is fairly distinct preservation of the critical faculties; the patients, provided they are persistently interrogated and roused from their torpor by energetic and repeated sensory stimuli, show that they understand their circumstances correctly, and give sensible replies. Beyond a state of simple psychical dulling there are various degrees, going on to somnolence, a true deep sleep (from which only very energetic stimuli serve to arouse the patient for a moment), lethargy, and coma. It is remarkable that the phenomenon of somnolence is specially frequent in cases of tumour of the region of the hypophysis and third ventricle; probably these tumours produce some influence upon the vessels at the base of the brain (Righetti).

This clinical feature of psychical retardation and depression, although very common in these cases, is not the only one that is to be observed. In some instances, probably owing to the action of toxic substances secreted by the tumour or to special disturbances of the circulation, there is presented the clinical picture of hallucinatory confusion.

The tumours that are most harmful as regards psychical disturbances are the *sarcomata*. It would appear that the tolerance of the brain is greater in youth than in adult life. In some instances a cerebral tumour may be associated with one or other of various forms of psychosis such as may occur independently of these new growths. In these cases it is probable that the tumour, which is generally very much circumscribed, acts as a predisposing cause of the mental disorder.

The extirpation of cerebral tumours may be followed by a good result if the growth is easily separable from the nervous tissues, and is of such a nature that it is not liable to recur. The most marked effect is always upon the general and secondary symptoms, not upon the local and primary ones.

Cerebral abscesses give rise to symptoms very similar to those caused by tumours.

SCLÉROSE EN PLAQUE.

In this condition there is almost always more or less marked mental enfeeblement. The patients are stupid and impaired in regard to their power of attention and memory, without, however, manifesting serious disorders of judgment or delusions. By degrees a state of even the most profound dementia may be reached. The state of mind is often one of depression; sometimes it is variable, whilst in some cases it is irritable. The course of the disorder is progressive, though sometimes there are long remissions.

The differential diagnosis between this condition and progressive paralysis, especially of the apathetic form, may present some points of difficulty, as the latter may simulate the psychical symptoms of the former. The most important points in this connection are in all cases the motor symptoms, the spasmodic pareses, the intentional tremor, the nystagmus, and scanned speech.

The morbid process consists in a very intense gliosis, occurring in patches. The selective method of Weigert reveals the new fibres of neuroglia as an extremely fine felt-work. A feature characteristic of these patches of sclerosis is the comparative integrity of the axis-cylinder of the nerve fibres, notwithstanding the complete loss of the myeline sheath. Only later, when the changes are very advanced, is there structural and functional interruption of the axis-cylinder, and consequent secondary degeneration. In the cortex there are also to be observed, even apart from the patches of sclerosis, diffuse degenerative lesions of the nerve cells and fibres.

HEAD TRAUMATISMS.

Head traumatisms may determine the occurrence of psychopathic phenomena in several ways, quite different in their mechanism. In the first place, the traumatism may produce a psychical effect such as may occur when any other part of the body is injured—namely, by giving rise, even simply through fright, to traumatic hysteria. In this case, however, it is not the direct mechanical action that comes into play.

Head traumatisms may also determine symptoms of a focal lesion in cases in which there is fracture of the cranium with depression, a large hæmorrhage, or cerebral contusion. These focal symptoms do not differ from those produced by any other cause. As a later effect, epileptic seizures, either Jacksonian or generalized, may occur, and in such cases there may develop, after a long time, all the accessory phenomena of epilepsy, such as perversions of character, impairment of intelligence, pre- and post-epileptic confusional states, etc.

Even when there are no gross focal lesions, however, head traumatism may produce characteristic phenomena, which follow the injury either immediately or after a more or less lengthy interval. Immediately after the trauma there is generally a longer or shorter period of complete unconsciousness, from which the person recovers fairly rapidly. A characteristic fact is that the patient has complete amnesia with regard to the accident, and often, also, regarding what happened some hours or longer prior thereto. It is as if the traumatic shock cancelled all the more recent mnemonic impressions.

When these symptoms that immediately follow the accident disappear, there is a period of restoration to the normal state, which may last several months; but slowly thereafter a progressive mental enfeeblement insidiously develops. In some cases it is not until after many months that it is distinctly recognizable. The patient is forgetful and easily tired, and he complains of a feeling of oppression in his head, buzzing in his ears, and giddiness. Often he becomes irritable, and the victim of continuous bad spirits; he is concerned about his health, becomes indifferent about others and weakened in ethical feeling, and gives way to alcoholic excess.

Slowly and progressively there may also appear signs of motor weakness in the limbs, tremors of the tongue and hands, exaggeration of reflexes, and, though rarely, dysarthria and pupillary rigidity.

The course of the disorder is for some time progressive, and then it becomes arrested in a state of more or less pronounced dementia. Death almost always occurs from intercurrent diseases.

In certain cases the condition is difficult to distinguish from progressive paralysis, all the more in view of the fact that head traumatism may be an exciting cause of this disease. In traumatic dementia, however, the characteristic states of excitement and the tumultuous delusions are absent, and the organic symptoms are fewer in number. The course of the illness, which in its advanced phases becomes stationary, will clear up the diagnosis in the more doubtful cases.

Traumatic dementia is not to be regarded as an effect of purely functional lesions. Examination of the cortex reveals the presence of minute old hæmorrhagic foci, transformed into areas of gliosis. There may also be observed cicatricial areas still containing blood pigment. There may further be found cystic cavities, small zones of softening and chronic diffuse lesions. It is therefore to be concluded that the traumatism produces small diffuse lesions, which subsequently become the points of radiation of a chronic process of gliosis and of degeneration of the nervous elements.

CHAPTER XVII

THE AFFECTIVE PSYCHOSES

WHILE the two syndromes of depression and exaltation may exhibit themselves as ephemeral, incomplete, and accidental episodes in the course of any mental disease, in *melancholia* and *mania* they are of essential importance. These from first to last are true diseases of the affective faculties, and, even when they become complicated by delusions of thought and conduct, never lose the traces of their affective origin.

Alienists have for long been convinced of the clinical individuality of melancholia and mania, by reason of the obviously antagonistic nature of their symptoms and the characteristic position they occupy among the more distinctly acute psychoses. In 1883 Krafft-Ebing divided mental diseases into two great groups—(1) Acute or accidental forms, or the psycho-neuroses, and (2) chronic, constitutional, or degenerative forms—and at the head of the first group he placed melancholia and mania. The degenerates were anomalous beings, doomed from their birth or early childhood to become incurable lunatics, while melancholics and maniacs, on the other hand, were to be regarded as healthy and normal individuals who became insane through the accident of some external cause. Except for the cases, which at that time seemed rare, in which there was a recognized periodicity, melancholia and mania, while opposed to each other as regards their symptoms, were opposed to the degenerative psychoses as regards their causation and course.

This view of the matter was not affected by the existence of periodic, and hence chronic, forms, in which attacks of melancholia or of mania are frequently repeated, or in which these two forms of mental disorder continue to follow each other in the same patient with regular alternations. Indeed, even if *periodic melancholia* and *periodic mania*, on account of their distinctly constitutional nature, had to be removed from the category of the acute and accidental psychoses, the non-periodic forms of pure melancholia and pure mania might still retain their position among those acute diseases which are due to an

external cause. Similarly, the possibility of a *mixed* psychosis, in which melancholia and mania are associated, was not, and cannot be, a sufficient reason for considering the two psychoses as identical in cases in which they occur separately, whether in the form of a single attack, or as a series of repeated attacks of the same nature, as often happens.

The first attempt to disprove the individuality of melancholia and mania was that of Kahlbaum, who, in 1863, connected the syndrome of depression with that of exaltation, regarding them as always and essentially two simple *states* of the same mental disease, *vesania typica*. In his view, everything was this typical insanity, with the exception of cases of progressive paralysis, paranoia, epilepsy, hysteria, alcoholism, and imbecility; and thus he included in this complex and almost always chronic psychopathy the great majority of insane patients—that is to say, all the demented and all the possible candidates for dementia—even if they recovered and escaped from it. *Vesania typica*, in its classical form, was divided into four phases: melancholia, mania, confusion (*Verwirrtheit*), and terminal dementia. If this order was disturbed, or if its stages were reduced in number, leaving only one, typical insanity still remained, though in an incomplete form. In short, what up to that time had been termed melancholia or mania was for the future to be regarded only as an incomplete variety of the morbid process, whether the attack of depression or exaltation resulted in recovery or terminated in dementia.

The views of Kahlbaum were accepted by Arndt and other German alienists, and to-day they meet with considerable favour. Though indefinite and artificial, they contain germs of truth which have not been altogether sterile. Although his typical insanity is a fiction possessing no practical consistency, Kahlbaum rightly recognized as being included in it two very important varieties of disease. Under the new title of *hebephrenia* he described that form of juvenile dementia which displays all possible combinations of symptoms in its tempestuous course, actually realizing the polymorphous conception of *vesania typica*. Under the name of *katatonia* he described, in 1874, another combination of symptoms which, in addition to resembling those of *hebephrenia* in arising during puberty, exhibit the polymorphic character of typical insanity in respect of their slow and tempestuous course. Kahlbaum erred, however, in attempting to add to the picture of typical insanity the features of melancholia, mania, and amentia, which was then scarcely known, depriving of all their individuality genuine and pure cases of melancholia, mania, and amentia, which have nothing in common with the typical insanity described by him (*vesania*).

Such cases certainly do occur, and may be seen by any observer. They differ distinctly from typical insanity, however blurred and indistinct its form may be, in the simplicity and clearness of their symptoms, the certainty as to the course of the attack, and the invariable termination in recovery.

The school of Kraepelin, by extending the conception of the juvenile psychoses, and including among them not only hebephrenia, but also katatonia and paranoid dementia (rightly distinguished from paranoia), combined into one well-defined group the various forms of dementia præcox. The dementia præcox of Kraepelin is, to a certain extent, the resurrection of Kahlbaum's *vesania typica*, but between these two abstractions there are certain important differences. Kraepelin rightly excluded from dementia præcox all acute forms of amentia (*Verwirrtheit*), which clearly constitute a group of their own. Further, by including the paranoid forms, he was able to delimit, independently of the course of the disease, the constant characteristics of the psychosis described by him in its several varieties. In all other respects the two clinical pictures of *vesania typica* and dementia præcox correspond to each other, and the latter is perhaps not less extensive than the former. The frequency of the occurrence of attacks of depression and exaltation in dementia præcox ought, indeed, to induce us to restrict the number of cases of melancholia and mania, and correspondingly to widen the area covered by this new, comprehensive and multiform type of mental disease, which, if given the full extension desired by Kraepelin, would leave only a small margin for simple melancholia and simple mania.

Kraepelin has, however, advanced another view which would further minimize, or even destroy, the clinical importance of these two diseases. He contends that melancholia and mania, apart from the cases included under dementia præcox, occur in a pure state only in a periodic form, and for the most part promiscuously—in other words, they are not two acute and distinct diseases, but constitute a single, chronic, constitutional disease, with two different aspects. This disease he proposes to call *manic-depressive insanity*. The cases of melancholia and mania which occur as single isolated attacks he looks upon for the most part as mere episodes in the course of dementia præcox. He considers that a separate clinical variety of melancholia of fairly common occurrence can be distinguished only in aged persons; it is non-periodic, rarely curable, and involutional in type. In the case of mania, even such rare exceptions do not exist.

If this point of view is adopted, the result must be that, after a century of recognition, melancholia will shrink into the

obscurity of a poorly defined involutional form, and mania will disappear altogether from the list of independent mental diseases. On the ruins of their syndromes there will be raised on the one hand a too widely extended conception of dementia præcox, and on the other a new disease of doubtful nature and very varied in its manifestations—manic-depressive insanity.

According to Kraepelin, not only the classical cases of *circular insanity*, or *alternating insanity*, are to be included in manic-depressive insanity—an arrangement which no one disputes—but also the following forms of mental disease: (1) Attacks of melancholia and of mania, not strictly alternate; (2) attacks of melancholia or of mania (separate), not strictly periodic; (3) recurrent attacks of a similar nature, taking place at very long intervals, and very few in number, even though reduced to a series consisting of only two; (4) and even a single attack of melancholia (not involutional), or a single attack of mania, inasmuch as we cannot exclude that these cases have a pathogenetic and symptomatic relationship with recurring and mixed cases, or the possibility that the first attack will be followed by another of the same or of different nature at a more or less distant date.

Though early psychiatry certainly exaggerated the value of the clinical distinction between mania and melancholia, making them the basis of nosographical classification, Kraepelin's endeavour in a diametrically opposite direction is no less forced. His arguments are based upon a connected series of transitions, sometimes evident, sometimes hypothetical, from simple mania to periodic mania, to manic-depressive insanity and circular insanity, and, conversely, from circular insanity to manic-depressive insanity, and thence to periodic melancholia, and from it to simple melancholia. According to this view, it would appear that melancholia and mania are almost the same thing—that is to say, they are two different phases of manic-depressive insanity, which is the fundamental term of the series.

Now, the first transition is natural enough. Cases of simple mania (without recurrence) are so rare, and when they occur are so similar to periodic cases, and it is, moreover, so difficult to trace them to any specific or moral cause apart from the constitutional diathesis which is the undoubted (though mysterious) basis of periodic mania, that any separation of simple mania and recurrent mania would seem artificial.

The second transition, however, inasmuch as it attributes the same value to attacks of excitement as to attacks of depression, involves quite a useless hypothesis. Even if periodic mania and manic-depressive insanity were found to be dependent on the same cause, it would still be necessary and desirable to investigate

why and how they come to occur with so substantially different symptoms. The transition from periodic melancholia to manic-depressive insanity is open to the same objection. Melancholia with recurrences similar in nature (more or less periodic melancholia) is one of the most common of mental diseases; it affects with remarkable frequency persons of serious disposition who have no tendency to maniacal excitement. To place these cases of melancholia, in which the melancholic diathesis is exhibited so persistently without a trace of maniacal excitement, among the incomplete forms of manic-depressive insanity, simply because such a combination of symptoms can sometimes be demonstrated in other individuals, is to argue too much.

The final transition from periodic melancholia to simple melancholia is not very clear. If we must acknowledge that *maniacal* cases are nearly always recurrent, the same cannot be said of all *melancholic* cases. On the contrary, in a large number of cases the attack of depression does not recur. When a slight and solitary attack of melancholia occurs in the course of a long and placid life as the result of some external and exceptional cause, such as a succession of very serious and repeated misfortunes, a trying puerperium, severe anæmia from hæmorrhage, or an exhausting lactation, we must conclude that the personal predisposition is either altogether absent, or is so weak that it may be neglected. In such cases the melancholia should remain in the category of the acute psychoses, and ought not to be gratuitously classified among those cases which arise from an internal cause, or be confused with the periodic and mixed forms.

From all that has been contended in regard to this matter, rather upon dialectic than upon clinical grounds, there emerge only a few well-established facts: (1) Cases of simple mania, in contradistinction to melancholia, are very liable to recurrence, and are perhaps always dependent on an internal diathesis; (2) circular insanity, with the classical alternations of mania and melancholia, may frequently assume incomplete forms or that of manic-depressive insanity; (3) certain cases of mania with numerous *similar* recurrences may, at their height—for example, in the course of the third or fourth attack—be transformed into manic-depressive insanity by the unexpected occurrence of a melancholic attack; (4) a similar transformation may occur, though very rarely, after a series of melancholic attacks.

These clinical facts clearly prove that mania and melancholia have certain relationships, and also serve to weaken the idea of their antagonism, but they are not sufficient to destroy the individuality of two psychoses so different in their syndromes, and so frequently incompatible in the same personality. A statistical

inquiry by Gucci into 1,123 cases of melancholia, mania, and manic-depressive insanity which were admitted into the asylum of Florence from 1844 to 1898 shows that 423 cases relapsed with maniacal symptoms on each occasion, 498 with melancholic, and only 202 with both maniacal and melancholic symptoms. Thus there were 921 cases in which the very same morbid syndrome was always repeated, as against 202 cases in which the two syndromes were mingled.

We are thus led to the conclusion that there is a *melancholic diathesis*, that there is also a *maniacal diathesis*, and that the association of the two diatheses is more or less frequent, but certainly unusual. As regards melancholia, it may occur in an acute form, as a single attack, dependent upon an external cause, and therefore independent of any diathesis. On the other hand, a maniacal attack has a more decisively constitutional character, both on account of the fact that it recurs more readily, and because it is never connected with moral causes. That melancholia and mania may occur as psychoses *per se* in an acute form and as the result of accidental causes is, however, proved by the very large number of melancholic and maniacal patients who, having been admitted once into an asylum, and afterwards discharged as cured, have not, after a long period, required readmission on account of another attack. From the researches of Gucci, already quoted, it appears that while in a period of fifty-five years 1,123 cases of melancholia and mania, after their first recovery, required to return once or oftener to the asylum (and in this number how many may not have been cases of dementia præcox?), there were 2,419 cases which, having recovered from a single attack of melancholia or mania, did not return. In some cases, perhaps, the reason was death or emigration, but in a much larger number it was their fortunate escape from any relapse.

While recognizing the affinity existing between the affective psychoses, but also the desirability of maintaining the distinctions between the various clinical groups, I shall adopt the following classification :

- | | | |
|--|---|---|
| A. Affective psychoses of <i>acute</i> type,
due to causes which are prin-
cipally <i>external</i> . | { | <i>Melancholia</i> (with one attack or a few isolated attacks ; fairly common).
<i>Mania</i> (with one attack or a few isolated attacks ; rare). |
| B. Affective psychoses of <i>chronic</i> type,
due to a purely <i>internal</i> cause. | { | <i>Periodic melancholia</i> (with numerous attacks, similar in nature, and recurring at fairly regular intervals).
<i>Periodic mania</i> (ditto).
<i>Circular insanity</i> (with more or less regular alternations of melancholia and mania). |

From the above scheme it is plain that, in order to understand clearly the nature of an affective psychosis in relation to its *exciting* cause—that is to say, in order to decide whether the case is one consisting in a solitary attack or is of a periodic form—we are obliged to wait in each case its development, its recurrences, and its transformations, it may be, during the rest of the patient's life. A diagnostic opinion, which is of such great importance for prognosis, cannot be pronounced *a priori* from an examination of the symptoms, which are the same in every case, but only *a posteriori*, when such a period has elapsed that either an actual reproduction of the first attack has been witnessed, or all probability of recurrence can be excluded.

The sole criterion which authorizes us to classify a case of melancholia or mania among the constitutional psychoses is, accordingly, that of its *ascertained periodicity*. Another, but inferior and untrustworthy criterion is to be found in the existence of a disproportion between the presumed exciting cause and the seriousness of the affective reaction. Each of these criteria, as has been pointed out, is of value only in reference to a particular case, and even when applied within such moderate limits cannot be the ground of an absolute decision. How, indeed, is it possible to compare the degree of the affective disturbance with the moral or material cause which seems to have produced it? Further, granted the criterion of periodicity, how can we distinguish two recurrences due to the repetition of the same exciting causes from a short succession of attacks due to an internal and inherent cause? As a matter of fact, the existence of a constitutional cause is practically certain in all cases of psychoses presenting two forms, however few the attacks may be. But in cases of melancholia and mania with only a small number of similar attacks, occurring at intervals of twenty or thirty years, it is always possible that in a succeeding attack a repetition of an external cause has resulted in a repetition of an effect.

Further, the question of the identity of pathogenesis in all the affective psychoses, which are combined by Kraepelin in one clinical form as “manic-depressive insanity,” is only of theoretical interest. Practically, so far as concerns the happiness of the patient, the treatment that has to be adopted, and the precautions that must be taken for the future, much more importance is to be attached to the frequency or rarity of the attacks, and to whether these are melancholic or maniacal in character, than to the question of their being capable of fusion in the melting-pot of “manic-depressive insanity.” Between a person who suffers from an attack of melancholia which will perhaps recur

after forty years or so, and one who is afflicted almost continuously by similar attacks of melancholia or of mania, the difference is too great to be destroyed by an hypothesis of analogy of causes.

I. MELANCHOLIA.

The term *melancholia* or *lypemia* (Esquirol) is applied to a complex of symptoms exclusively or principally affective, which run an acute or subacute course, and the essential characteristic of which is a morbid and persistent depression of spirits. On the one hand, in its milder forms, melancholia may differ but little from a normal state of mind. This is all the more evident when some misfortune which has actually occurred is the decisive agent in the causation of the melancholia. On the other hand, inasmuch as it may be complicated by serious disturbances of the reasoning power and consciousness, it may simulate the symptoms of paranoia, amentia, and other diseases in which the intelligence is profoundly involved. In all these circumstances, however, it never loses its special characteristics, which are very typical, and permit of no doubt as to the diagnosis. Abnormality of ideation and conduct in melancholia, if it does occur, is always of sentimental origin.

Symptoms.

Sense of Mental Pain.—The distress from which the melancholic patient suffers is due in all cases to a special *sense of mental pain*. Every impression that reaches his consciousness causes—or, rather, accentuates—a state of mind which is more or less unhappy, and which may range from simple depression or weariness of life to anguish. This mental pain is increased and rendered persistent by the inevitable and frequent repetition of various stimuli from the outside world. However much the melancholic may seek retirement and isolation, he is incessantly exposed to innumerable causes of mental pain. The most indifferent impressions become distasteful to him, and the most pleasing have lost the power of arousing any corresponding response in his brain. The dismal impressions which besiege him from without find an ally in the inward labour of his associative processes, which always tend towards painful and gloomy representations. His reflections, memories, and forebodings, whether they refer to himself or to others, are coloured by the most hopeless pessimism. By a sort of selective affinity only the most doleful images are evoked and fixed in his consciousness, whilst those of a different nature are repelled or never present themselves.

It is the fate of the melancholic patient, the victim of this

internal selection of his mental images, not only to feel miserable, but also to lose the power of representing clearly to himself the elements which brighten and comfort existence. If he does not throw off his melancholia, not only is his present state most miserable, but, by an error of perspective, he often convinces himself that he has always been miserable. He believes that he is doomed to remain for ever under the incubus of his suffering, and sees in his neighbours other unfortunate beings who, only through an excess of optimistic carelessness, can sometimes enjoy an ephemeral and superficial happiness.

If the disease does not exceed this first degree of intensity, as is very frequently the case, and if, moreover, the patient is

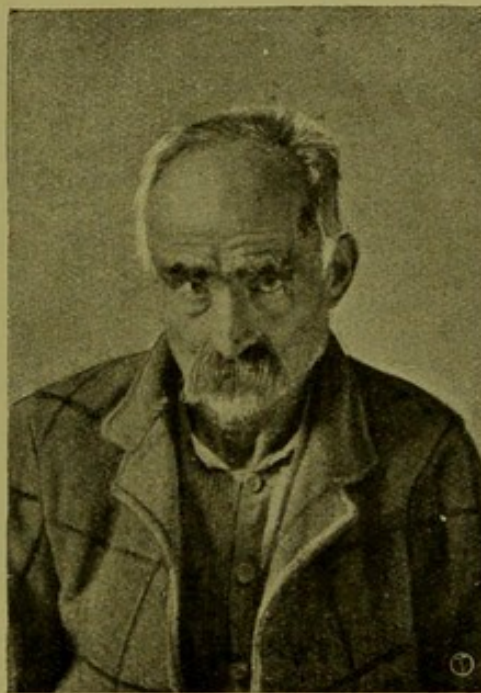


FIG. 102.—MELANCHOLIA WITH KEEN EXPRESSION OF DISTRESS :
HYPOCHONDRIACAL DELUSION.

highly intelligent, it may accentuate habits of introspection, and suggest a fairly coherent pessimism which in exceptional cases may rise to a poetical or philosophical level. The final result is, however, always a loss, because the ideas of a melancholic, however logical they may be, are paradoxical and one-sided, and obstruct all the mental activity which might be developed beyond the limits imposed by the mental pain, and thus end by restricting the intellectual field.

The patient, as his active relations with others become more and more limited, takes no trouble to control himself, fails, or does not attempt, to conceal his feelings, and, indeed, finds relief in communicating his sorrows to the first comer. He may protest that he is out of his mind or about to go mad, and this

becomes the sole subject of conversation on which he is communicative and attentive. In process of time, however, the monotonous consideration of a few painful ideas engenders a subjective feeling of vacuity, which in itself becomes a new incentive to melancholia. The patient frets at having to hear his own voice, and to be the involuntary spectator of his own thoughts. He chafes at the performance of actions that custom requires him to carry out, and he does them unwillingly, as if some stranger had entrusted him with a disagreeable and useless mission.

When this stage is reached, his sufferings even cease to interest



FIG. 103.—SIMPLE MELANCHOLIA.

him ; he speaks no more of them, and does not concern himself about their relief ; his faith is gone, and he will listen to no words of comfort, but shuts himself up in a profound and defiant despair. Just as in neuralgia the painful part becomes immobile, so in melancholia a similar change affects the centres of volition.

A similar aggravation may occur as a second phase of the disease, or as a short crisis which is repeated more or less frequently, either early in the morning or at midday. During the aggravation caused by these crises or phases of the disease, the feelings, which as a rule are affectionate in melancholic patients,

undergo a sudden alteration, and may even become inverted. Whilst a mild degree of melancholia increases the affection of the patient for his family, and renders him fond, forgiving, easily moved to tears, and ready to exert himself for most unselfish reasons, on the other hand, whenever the disease increases in intensity he becomes indifferent to his own people, and is sometimes intolerant, perverse, and even violent.

It depends on the individual temperament of the patient whether the melancholia assumes an *irritable* or emotional character. The irritable melancholic repents suddenly, and sometimes in an exaggerated manner, of his fits of temper, and redoubles his kindness to the person whom he has offended, while, on the other hand, every quiet melancholic is liable to sudden explosions of anger. The irritability of temper may show itself either in serious attacks on the person, or in a less



FIG. 104.—MELANCHOLIA WITH DAZED AND PAINED EXPRESSION.

harmful manner by various acts destructive of fragile and easily destroyed objects.

Even a perfectly healthy person under the influence of a psychological traumatism may feel the memory of his sorrow renewed at every turn. It meets him when he awakens, and is with him when he goes to sleep. He cannot escape from its importunity, and it crosses and obstructs his path, and often succeeds in diverting the logical current of his thoughts and actions. The distress caused by its inexorable insistence spreads itself across his whole mental horizon, and is not without effect on his subconscious processes. Such a state of mind is not, however, produced in a healthy subject, except in definite relation to some serious misfortune, such as the death of a child, a disappointment in love, a personal disgrace, a reverse of fortune, imprisonment, or banishment. It does not continue indefinitely, and it rarely has the relentless continuity of morbid melancholia.

Mental pain, however intense, arising from a physiological cause, and not exceeding physiological limits in its duration, is therefore not of so profound a character. To a certain extent it is reduced to a local disturbance, for, apart from the brain, the organism is concerned only in a very slight degree, and from the virtually unaltered coenesthetic impressions there originate frequent calls to the work and pleasures of ordinary life, which set the processes of repair in action and soon nullify the effects of the moral traumatism.

On the other hand, the mental pain of the melancholic produces a state of feeling which is shared in by the whole body, being partly an irradiation from the cerebral disturbance, and partly, perhaps, an indication of a general disorder, the effects of which are certainly more intense or conspicuous in the brain, but not exclusively localized there. In the same sphere of the psychical reactions, the morbid mental pain of melancholics is distinguished from the physiological pain of normal persons by a marked tendency to overflow from the purely emotional field into that of the reasoning faculties, perverting the judgment, and not infrequently giving rise to hallucinations and delusions, or impelling to morbid actions.

The uncontested predominance of painful ideas gives a new direction to the thoughts and conduct of the patient. He is a changed man; he becomes narrow, miserly, and cowardly, and loses himself in moral quibbles and scruples, confessing youthful errors of small or doubtful importance. He will at least bewail the fancied decay of his muscular power, memory, keenness of perception, professional ability, self-respect, and regard for others. Often such patients go even farther, and maintain that they have never possessed ability or merit of any sort, that they have disgraced their families, and have affection for nobody.

It may be that such patients exaggerate their sufferings knowingly, or that, fearing that a genuine account of them would fall on incredulous ears, they attempt to gain more sympathy, even by falsehood, or that (as is more frequently the case), having conceived a sort of hatred for themselves, they experience a bitter satisfaction in self-calumniation. This phenomenon of *self-accusation* is very common in almost all melancholics. They have passed into a paradoxical emotional state opposed to the natural egoism—an *algophilia psychica*—in which they experience a sort of delight in vilifying themselves.

To analyse, case by case, the deepest degrees of such paradoxical mental states is by no means easy. In most instances these accusers of self exhibit not so much a deep sense of blame-

worthiness as a set purpose of voluntary moral mutilation. The melancholic, by force of the self-imposed torture of his hypercritical scruples, slowly yields to the suggestions of his own words. Believing his own inventions to be true, he persuades himself that he really deserves the disdain he has sought to inspire in others for himself. Thus the transition is effected from a simple emotional pessimism to *paranoid delusions*.

The mental distress of the melancholic patient leads to serious psychical complications in two different ways : on the one hand, as has just been mentioned, it passes through deepening stages of perverted ideation into paranoid delusions ; on the other, by a gradually increasing perversion of conduct, it leads the patient into the so-called *raptus*, which is simply a delusion of action.

Delusions.—The most characteristic of the delusions of melancholia is that of *poverty*. Neither a large income, nor the evidence of his account-books, nor the fact that he has enormous accumulated wealth, suffices to dispel from the mind of the melancholic (who in such instances is often a rich miser) the conviction of extreme poverty. Sometimes it is not only poverty of which he believes he is the victim, but economical and moral ruin as well : bankruptcy, imprisonment, and capital punishment are going to complete the story of his misfortunes ; and in his terror he believes that his property has been confiscated, that the *concierge* is an agent of the police, and that the attendants in the asylum are gaolers and executioners.

An invincible feeling of *unworthiness* inspires also other delusions, such as that of *eternal damnation*, in which the patient believes that he is destined for, or has already been consigned to, the infernal regions, or the delusion of *sitophobia*, in which he refuses all food, saying that he is not worthy to live and to eat. In ancient times *lycanthropy* was frequent, the delusion of having been changed into some beast, from which, as tradition has it, Nebuchadnezzar suffered, and which was much canvassed in arguments on metamorphosis and metempsychosis. The following letter, written to his wife by a melancholic patient, who afterwards recovered, is a sample of despairing mental pain with incipient delusions :

“ S. SALVI,
“ July 2, 1900.

“ DEAR EVELINA,

“ I write with a broken heart, knowing what pain I have caused you. Forgive me, I beseech you, and pray the Lord to let me return to the bosom of my dear family. I will be good ; I will take care of you better than I have ever done before ; I will love you ; I will stay always with you, I promise. Of how many sins have I been guilty !

I married you to make you happy, and instead I have caused you infinite sorrow! You tell me that I have forgotten you; momentarily I believe I have, and this terrifies me. But do not believe it; I have you always in mind; I think continually of you; and if I have not written, it has been because I thought I was too late to obtain God's pardon. I believed I was damned for ever; I believed that I was not in the asylum, but in hell. Deliver me from this cruel doubt. I have pictured my children dying from hunger, thirst, and poverty; is it a dream, or is it real? Unhappy man that I am! The Lord has given me every kind of felicity—an angel of a wife, adorable children who love me and desire only me, and good and kind relatives. It has all been for nothing: I was wicked; I despised God, and He has punished me.

"You, who are so good, pray the most holy Virgin to pardon me, to have compassion upon my family, upon you and my children, upon poor little Camillo, who is distressed because of my misfortune and his. Beseech the Virgin; tell her that I have repented, that I will change my life, that I will reform, that I will even shut myself up in a monastery in order to save my soul and yours.

"I am not worthy to kiss you. Kiss my dear children, and believe me your most unhappy

"ARMANDO.

"P.S.—Do not be grieved when you read this. I have written it in a moment of sorrow. I have the keenest longing to see you again—once, at least. Pardon me if I venture to send you many kisses. Adieu. Adieu."

In other patients the phenomenon of *pantophobia* occurs—a confused terror of any object, with general tremor and all the other motor expressions of fear. Some melancholics have the delusion that they are stinking, or that they infect everything they touch, or that their breath is fatal (it is very often foul), or that they exercise a sort of deadly influence on those whom they love. This is the delusion of active doom, which is a more modern variation of *demonomania*, or the delusion of being possessed. Other melancholics are tormented by the vision of imaginary tortures, to which they see their children being daily exposed. They believe that they are under trial, in prison, or dead. Even when reassured by the supposed victims themselves, the patients imagine that an attempt is being made to deceive them by a charitable falsehood, or that the catastrophe has simply been postponed till the morrow (*delusion of ruin of altruistic form*).

In rare cases the pessimism of the melancholic leads to *hypochondriacal delusion*, which, by suggesting the presence of some disease, might be expected to exclude the idea of disgrace; but even this form of delusion may be the expression of some morbid remorse, and be connected with some error, real or false, such as masturbation, impure sexual intercourse, or evil thoughts. *Delusions of persecution* are the least frequent of all among melan-

cholics, and they are at least of a humble and anxious nature, and very different from the proud delusional convictions of the paranoiac. The melancholic patient, in fact, excuses himself in anticipation of imaginary accusations, which, however, he believes to be inspired by appearances, and not by ill-will. Therefore he exhibits only a mild resentment towards his accusers, and is the exact opposite of the persecuted persecutor, who always acts on the offensive, and whose claim is for justice, not mercy.

All the different delusions of melancholia are referable to a common basis of *micromania*, and the few cases which occur without any depreciation of the personality must be considered as either exceptional or spurious. The humility of the melancholic reveals itself, if not in explicit declarations, at least in an exaggerated ceremoniousness, in an almost servile acquiescence in the opinions and advice of others, and in the habit of not shaking hands or conversing with strangers, or of speaking only when interrogated. This seeming humility does not, however, prevent the patient from showing an obstinate (though mild) persistence in the inactivity, penitences, and delusions that are the fruit of his melancholia, and from paying no heed to the persons to whom he shows himself otherwise so respectful. The origin of such delusions is deeply founded in the sentiments, and consequently they are fixed, refusing even to yield to auto-suggestion of any sort.

The rarity of the occurrence of *hallucinations* in these cases is a further proof that melancholic delusions do not originate in errors of the senses. Complex hallucinations, such as terrifying scenes, visions of massacres, executions, trials, pillages, etc., occur only in states of stupor when consciousness is profoundly disordered, and the patient's mind has little or no correspondence with the real. On the other hand, it is common to find elementary hallucinations present without any delusion, and more particularly the hallucination of a continuous *humming* or *singing*, which the patient is very well able to recognize for what it really is—viz., a subjective acoustic phenomenon. Humming or singing in the ears, or in one ear, is often the physical effect of vaso-motor disturbance or of anæmia. Elementary hallucinations of the other senses in the form of shadows, disagreeable tastes, or indefinite smells, are altogether exceptional.

Abulia and Dysbulia.—Certain distinct abnormalities of conduct occur in all melancholics, excepting those who are malingerers. Specially, as has already been stated, is there strong aversion to all initiative. Sometimes the inaction is due not to absolute abulia, but to indecision, or the conflict of several opposing desires, no one of which is sufficiently intense to overpower the

others. This is the *melancholia perplexa* of Lasègue. The condition is therefore a true form of dysbulia with a basis of *hypobulia*.

Patients who are simply hypobulic neglect their duties, remain indoors, and are able to do the most ordinary actions only with great effort. They speak little and slowly, and in subdued tones ; and in more serious cases they will scarcely give any response to questions, or utter only a few barely intelligible monosyllables. The conduct of persons suffering from dysbulia may be summarized as consisting in indecision. If, for example, they are brought to a point where they have to decide either to continue to carry on their own business, or to arrange for its transference to some trusted friend, they clearly recognize their dilemma, but do not possess sufficient energy to decide either in one way or the other, with the result that, between their resignation and despair, everything is ruined. They experience the same insuperable uncertainty before the unimportant decisions that every moment requires. They cannot make up their minds what clothes to put on, where to sit down, how to hold a spoon, or to shake hands, or to send a card.

Melancholic patients become so deeply absorbed in the contemplation of their own subjective misery that they lose interest in everything else. This lack of interest is partly voluntary, since they repel, *a priori*, any new impression which might interrupt the malignant sway of their dominant idea. In serious cases a categorical and reiterated command is required in order to elicit an answer to a question, or to induce the patient to lift an arm, or to put out his tongue ; and before he can be made to walk a distinct stimulus must be given. Often, with all their passivity, melancholics are anxious to obey, but do not possess energy sufficient to perform what others desire of them. They thus become careless in their habits and appearance, cease to wash themselves, and often refuse their food, quite apart from ideas of personal demerit or suicidal intention, simply because they find the effort of mastication and swallowing too much for them.

In this sad condition the patient passes into the *status attonitus*, which closely resembles the *stuporous* forms of amentia. It is distinguished from these, however, by the fact that consciousness is not entirely suspended, and that the patient, although his mental pain and distress become less acute, continues to suffer from terrifying and unpleasant hallucinations, which he is able to recall accurately at the end of the period of stupor, precisely because of their coherent nature.

The inaction of the melancholic always implies a certain degree of resistiveness, on account of which his passivity is not complete, and may assume the appearance of *katatonia*. Sometimes the

katatonia is of a purely partial nature, and may consist, for example, in an obstinate flexion of the head upon the chest. This attitude is certainly the result of a morbid and permanent volition, and not of an involuntary contracture, as is recognized by the patients themselves when they return to a normal state.

Absence of all initiative, combined with obstinacy of the will in a negative direction, is to be seen to a pronounced degree in that peculiar form of katatonia which has been termed *negativism*. The patient, though unable to accomplish the lightest task by the effort of his own will, becomes the stoutest and most obstinate resister of passive movements and of suggestions on the part of other persons, although he can be persuaded of their utility and harmlessness. He refuses proffered food which he really desires ; he uncovers himself when asked to remain covered, and *vice versa* ; he is able neither to obey nor to command, but only to disobey systematically and constantly, from a sort of paradoxical reaction of the will.

In some cases of melancholia scenes of the most horrible and sanguinary nature, which are represented to the patient's mind as simple possibilities, and repeated as favourite images on account of their hideousness, become transformed into a *motor obsession*. The obsession, meeting with but slight resistance in an exhausted and abulic brain, becomes so imperative as to drive the patient inexorably to the commission of acts corresponding to it, such as purposeless murder, mutilation of the genitals, or suicide in its most horrible forms. When he commits any of these acts, the patient, being wrapped up in an exclusive and dominant idea, loses sight of all else, and falls into a condition very similar to that of unconsciousness. In fact, once the idea has issued in action and the crisis is past, he either cannot recall the event at all, or remembers it in only an inaccurate and incomplete way. The imperative action takes place suddenly, automatically, and violently, like an epileptic discharge, and has been termed the *raptus melancholicus*.

Under the influence of a raptus, patients of the most timid nature have been known, without the impulsion of hatred or anger, to attack unoffending persons with whom they were not acquainted, to fly into a passion at suddenly imagined enemies, to throw themselves from a window with their children in their arms, and to set fire to their bed after lying down on it with their body covered with petroleum. In some cases the patient is driven to commit the evil act in spite of himself, owing to an imperative hallucination, or from the imagined necessity of proving to everybody his own unworthiness, or in the hope of procuring his own condemnation to death.

All melancholic patients, discontented as they are with life, and devoid of hope that things will ever improve, ought to be regarded as *suicidal*. It is important, however, not to confuse the cases of conscious and meditated suicide with the unusual forms of suicide in a state of raptus which sometimes occur in public without any premeditation.

The agitated melancholics who groan and beat their breasts, lacerate themselves, and bite their tongue, and pull out their hair, a prey to a terror which is written in every feature of their faces, may be considered as being in a state of *prolonged raptus*. In such cases, also, the patients are virtually unconscious; they hear, and understand, and recall nothing. Their agitation may continue day and night for weeks and months, and rapidly leads to profound emaciation. Melancholia does not often reach such extreme degrees, however, and the agitated forms of emotional depression are more commonly associated with senile involution.

Other Symptoms.—An important symptom of melancholia is the so-called *precordial anxiety*, which may complicate the clinical picture of agitation and be a prelude to a state of raptus. Agitated melancholia and raptus are, however, by no means common, while precordial anxiety—at least, in its elementary form—is a fairly frequent symptom, and there are few melancholics who escape it entirely. Indeed, in the earliest stages of melancholia, patients often experience a vague feeling of distress in the region of the heart, which becomes more acute and almost painful on any disappointment or worry, however small. The expectation of the arrival of letters, of the daily paper, or of some unimportant visitor, the occurrence of rain, or a sudden rumour, immediately brings on this painful sensation.

An exactly similar sensation often occurs in the *epigastrium* even in healthy persons, but only for a moment—for example, when awaiting a sentence in the antechamber of a court of justice, or in the examination-hall of a school. On the other hand, the unexpected and favourable ending of a painful situation, or of a task undertaken in fear and hesitation, produces an opposite effect—a true *precordial pleasure*. Precordial anxiety, therefore, is merely an exaggeration of a physiological reflex.

In some cases it is so constant and so serious that for whole months together the patient gives vent to his sufferings in more or less loud groans with every breath, which cease only during sleep, or else there are attacks similar to those of *angina pectoris*. The patient has the painful illusion of a lump in the middle of his chest, or in the left mammary region, increasing in hardness and imperilling his existence. Sometimes he imagines he has been seized by some fatal form of heart disease, but auscultation

reveals no irregularity beyond a slight degree of tachycardia with shallow respiration.

Next to mental pain, *insomnia* is the most characteristic symptom of melancholia. No melancholic is exempt from it, and by some patients it is considered the greatest of their sufferings. The accustomed distress of the patient becomes overpoweringly great in the interminable solitude of the night; the church bells sound to his mind like a funereal peal; the night passes, and the sounds of early morning and the cold light of dawn come to him as an unwelcome recall to the social life that crushes him between its cruel wheels.

In spite, however, of the dreaded approach of another sleepless night and the increased sense of fatigue, almost all melancholics experience towards evening some relief of their symptoms. Then are their most supportable hours, and the moment of going to bed is almost peaceful. They look forward to the sweet oblivion, however brief, of unconsciousness; sometimes they imagine they can sleep for ever, and in certain cases they fall at once into a light and peaceful slumber. Unfortunately, however, this sleep lasts only an hour or two, and gives place to the most bitter awakenings. The insomnia is most serious at the commencement of the disease, and is often one of its prodromata; in the later stages (in some cases, by the use of hypnotics) it diminishes, and four or five hours of repose may be obtained. It may disappear before the melancholia has been completely dissipated—an event which constitutes a very hopeful omen of recovery.

Loss of appetite is not so constant a symptom as insomnia; it rarely leads to sitophobia, which is rather the expression of a delusion, or of simple abulia. Most commonly the anorexia disappears in the course of the first few weeks, and may be followed by a certain degree of *bulimia*.

It is at least common for melancholics to feel faint if, like neurasthenics, they do not have something to eat several times a day; and at night they are obliged to keep a little food at their bedside.

The immediate satisfaction they thus experience is slight, and the digestion of the food slow; the melancholic patient is always bradytrophic. Sometimes the patients force themselves to take food, and also alcoholic beverages, with the idea of easing their pain, but they do not succeed in doing so, and may even aggravate it. It is always wiser to advise or even compel the patient to abstain entirely from wine and alcoholic liquors.

A more constant and obstinate symptom than anorexia is *constipation*. There are very few melancholics who do not suffer

from it, and some are so much preoccupied by it as to make it become the subject of hypochondriacal delusions. They imagine their intestines are blocked, their food never gets beyond their stomach, and they are going to die immediately of suffocation. Thus the constipated and delusional melancholic patient becomes sitophobic. His tongue certainly is foul, his breath bad, and costiveness is not infrequent. The atony of the intestines, though it does not in the great majority of cases possess any direct effect on the mechanism of the mental processes, increases the discomfort of the melancholic patient, and perhaps adds to it a new factor in auto-intoxication, which requires daily treatment by myokinetic purgatives.

The genetic sense is not diminished in all melancholic patients; in some cases, indeed, it is increased. Nevertheless, even though the tendency to coitus, masturbation, and perverted sexual instincts is morbidly increased, it cannot be denied that desire is greatly diminished. Sexual excesses not associated with keen desire, and followed by mental and physical prostration without any compensating satisfaction, certainly aggravate the objective and subjective condition of the patient. Melancholia in women may give rise to scruples and obsessions of a sexual character which it is unwise to attempt to remove. Such, for example, are a dread of coitus, and morbid impulses to illicit erotic actions, which cause acute feelings of remorse, and are allied to *negativism*.

Melancholia, being an affective syndrome, exhibits the exact degree of its development in the *physiognomy* of the patient. The brow is furrowed; the eyebrows are approximated and oblique, their medial ends being elevated; the angles of the mouth are drawn downwards by the contraction of the triangular muscles, and the two naso-labial folds appear to be deeper on account of the arching of the mouth (Figs. 102, 104). This facial expression of mental pain, which cannot be concealed by the patient, increases or diminishes very distinctly with the changing states of the disease, and entirely disappears only when complete recovery has been established.

The look of the patient is extremely expressive; it may be confused, grave, surly, or indicative of concentration in different cases, and from time to time. Gestures are feeble, and gait is irresolute. The patient's whole bearing is dejected or embarrassed.

Among women it is common to find menstruation absent or diminished. The secretion of sweat, even independently of the inactivity of the patient, is almost nil. Large doses of pilocarpin have failed to produce diaphoresis (Stoddart).

It appears that melancholics, especially in the *status attonitus*, often exhibit an increased resistance to electrical currents (Roubinowitch and Toulouse).

Course and Clinical Varieties.

The commencement of an attack of melancholia is characterized by the presence of insomnia and mental pain, the two essential and inseparable symptoms of the disease, which progressively and slowly increase. For several weeks the disease does not pass beyond the limits of a purely affective disturbance, even though later it becomes more serious, and the patients retain complete lucidity of mind. In at least 60 per cent. of cases they retain it all through the attack. At the end of two or three months, however, the melancholia attains its height, and during this stormy phase of the disease certain complications may appear, such as delusions, stupor, precordial anxiety, and raptus. The stage of defervescence is as slow and gradual as that of the invasion.

In the majority of cases melancholia ends in recovery, and the return to a state of mental equilibrium is reached by intermissions which announce that convalescence is established. The intermissions become steadily more frequent, more lasting, and more lucid, and, finally, little by little, the patient perceives and acknowledges that his illness has been conquered, finding that his feelings are again responsive to the normal influence of external events. The re-establishment of sleep is an almost certain sign of improvement.

Taken as a whole, the morbid process in melancholia covers a period of not less than five months and not more than twenty, but the average duration of the disease is from eight to fourteen months. If the duration is less than five months, it is probable that the case is one with a hysterical basis, or represents a melancholic attack which is part of a periodic psychosis. If the disease lasts more than two years, the melancholia assumes a *chronic* character, in which case it also changes its features. The mental pain, having become habitual, gets less acute or vanishes altogether, to give place to some hypochondriacal delusion or some form of mental enfeeblement.

When the melancholic patient has passed through convalescence, and has been able to assure himself that his terrible infirmity is really ended, there are no bounds to his joy. After having experienced every bitterness, he finds himself able to enjoy all the great and small pleasures which offer themselves, not so much to the man who has wealth as to him who has health, courage, and a strong will. The removal of all obstacles to the

most common activities of his physical, nervous, and intellectual life is quite sufficient to fill him for weeks and months with inexhaustible delight. To go to bed without the dread of a sleepless night or the torment of mad dreams ; to waken in the morning with body refreshed and mind cheerful ; to face with light-hearted confidence the worries and uncertainties of the day ; to eat well and digest better ; to take an active part in interesting and facetious conversation ; to enjoy a walk, a mouthful of fresh air, some country view or masterpiece of art ; to revisit without renewal of pain the scenes of former sufferings, and even to find in them ground for happy comparison with present circumstances ; to feel free from morbid oppression, susceptible to every pleasure, and for long immune to every sorrow, indeed constitute a happiness that has no equal. If melancholia is the most painful of all diseases, its disappearance is the most delightful of all recoveries.

Not even the reasonable dread of a recurrence can cloud the joy of a situation which depends much more on the actual present condition of matters than on speculations regarding the future.

The mental serenity which succeeds the agitation of acute melancholia has all the appearance of a natural reaction to the former conditions of mental pain, and bears no resemblance to the morbid exaltation which, in cases of circular insanity, follows with more or less marked regularity the periodic attacks of melancholia. If, however, the transition from mental pain to pleasure is too rapid, and if the mental pleasure is exhibited in an exaggerated and restless manner, there is ground for the fear that the disorder is assuming the form of a circular insanity.

The physio-pathological condition standing in closest relationship to melancholia is retardation of the cerebral processes. This retardation is most probably due to inhibitory influences, which in some cases produce absolute inertia from psychical impotency.

Differential Diagnosis.—Melancholia is readily distinguished from the depressive phases which accompany other psychoses abundantly supplied with characteristic symptoms of their own, such as epilepsy, hysteria, progressive paralysis, paranoia, imbecility, and dementia præcox. The symptoms extraneous to the clinical picture above described, such as convulsions, hysterical stigmata, mental enfeeblement, chronic delusion antecedent to a depressive state, congenital limitation of the intelligence, insane conduct, etc., which are invariably found in each of the above-mentioned diseases, are much too characteristic not to suggest at once the true diagnosis. In addition to this, however, it is to be noticed that the depressive phases in epilepsy, hysteria, progressive paralysis, paranoia, imbecility, and de-

mentia præcox are never so protracted, so serious, so slowly progressive, or so typical as those of true melancholia ; for example, they are often unaccompanied by insomnia.

In epilepsy and hysteria the attacks of mental pain occur suddenly and disappear rapidly. In progressive paralysis they have a cœnesthetic origin without any ideational content ; if there is a delusion, it quickly reveals the vacuity or intellectual enfeeblement of the patient, and his despair never assumes that altruistic form which not infrequently is to be seen in melancholics. The melancholic attempts to take his own life as a means of expiation, sacrifices himself to an ideal, thinks more of others than of himself, or, at least, of honour, of the welfare of his family, and of his own moral future. The paralytic, on the other hand, abandons himself to a wild fury directed against himself ; one portion of his brain which still remains lucid rises in rebellion against all the rest of his body, which is invaded by some cruel and monstrous disorder beyond his power of imagination, but merely material, by a blind, huge, supernatural fear, and by a despair which is instinctive and terrible, because inaccessible to any correcting idea. Guy de Maupassant, at the beginning of the paralytic process, was a sufferer from this terrible anguish, and tried to kill himself.

In certain imbeciles and paranoiacs attacks of melancholia may also be observed, and by their frequency they show that they are strictly connected with the psychical constitution of these anomalous beings. Such attacks are, however, of short duration, lasting only four or five days, a week, or a month. The attacks of depression which occur in dementia præcox are interrupted, belied, and minimized by acts of hilarity, anger, or ostentation, which obviously transgress the bounds of melancholia, and, indeed, contravene the strict and inflexible rule that the melancholic is logical. When a patient, who from his mental suffering seems to be a melancholic, laughs or smiles, or commits some puerile, impudent, or inconsiderate action, even though only of momentary duration, it means that he is a hebephrenic.

Treatment.—The restoration of sleep should be the main object in the treatment of melancholia. Chloral, sulphonal, trional, bromidia, hedonal, or other hypnotics, which may be changed one for another from time to time, should be employed every evening. Opium is also a very valuable remedy, and may be given as the tincture in small and progressive doses during the day, beginning with 10 drops and proceeding to 100. This method of treatment, if employed gradually and carefully, diminishes the mental suffering, renders it tolerable and at times scarcely noticeable, and perhaps helps to shorten the course of the disease. The use

of opium should be combined with myokinetic purgatives such as cascara and podophyllin, since melancholics are nearly always constipated, from the nature of their psychosis and the habits they contract during the course of the disease. The opium aggravates the inertia of the intestine, and this tendency has to be met by increasing the doses of purgative medicines. The danger of increasing the constipation should not act as a deterrent to the use of opium, which is undoubtedly of great value. Further, apart from any supplementary cause of constipation, the occurrence of this disorder itself should always be combated, since it often aggravates states of depression, either subjectively by the unpleasant impressions it produces, or objectively by the stoppages and intoxications that it causes in the intestinal canal, the final result of which in all cases is to increase the melancholic depression.

The methodical and frequent administration of drugs, as also a certain regime scrupulously observed, convince the patient with the eloquence of facts that he is actually and carefully being treated as an invalid. This belief, in his dejection and hopelessness, is a source of comfort to the melancholic. Every melancholic would rather believe himself to be the victim of some disease, however grave and mysterious, than the sport of a malign and incomprehensible fate. *Rest in bed*, with which at the present time many acute cases of mental disease are treated, is also of use in the treatment of melancholics, if it were only for the reason that it emphasizes the view that they are invalids.

In 1889 Brown-Séquard proposed the injection of testicular extract into melancholics, but the results of his experiments were not encouraging. There was a temporary excitement, followed by prolonged signs of intoxication. In the irritable forms of melancholia, and when there are signs of physical over-excitement, bromide of potassium in large doses is useful—for example, 100 or 120 grains per diem; but while the stimulating treatment by means of opium requires the employment of that drug in moderate and continued doses, the sedative treatment with bromide should be applied energetically and for short periods. Hot baths are also an excellent sedative, and in the period of convalescence, short cold baths, the douche, and the wet pack in moderation.

Melancholic patients should abstain from wine, alcoholic liquors, and coffee. It is not prudent, or rational, to subject them to alimentary *gavage*. Iron is useful, since it diminishes the effects of anæmia, which, though slight, always favours melancholic depression in any predisposed subject.

In every case of melancholia, no matter how mild it may be,

there is always another question that presents itself—namely, that of removal of the patient to a sanatorium or asylum. The problem has two aspects—namely, that of the supervision of the patient, and that of the treatment, especially the moral treatment, of his disease. It is often indispensable, in order to prevent attempts at suicide, to have trained attendants continually beside the patient, sufficient in number, ceaseless in their vigilance, but not importunate or indiscreet, and responsible for anything that may happen, who never leave the patient entirely to himself, but who do not obtrude their presence, who can encourage without annoying him, and keep careful watch without making it evident to him that they are doing so. This ideal supervision cannot always be obtained at home. Further, apart from a consideration of the personal safety of the patient, the psychical treatment of melancholia is much helped by the conditions which obtain in asylums and similar institutions. The fixed routine of his surroundings, contact with other similar patients, subjection to a carefully arranged and impersonal regime, and the separation from his family, and the desire to return to it, all have a favourable influence on the mind of the patient. The regularity of his habits guards him from emotional disturbances, simplifies the disposal of his day, and provides a sort of *psychical dietary*. His relations with other patients, especially with other melancholics, remind the melancholic, who, among sane persons, is solitary and misunderstood, that there are other patients, some suffering more than he does, others less, and the fact recalls him to the sad but not hopeless reality of his own situation. The temporary loss of his independence frees him from the dread of having to labour, to blunder, and to compromise himself, and lulls him in a passive repose. The separation from relatives is a cause of sincere and reasonable grief, but it diverts him from the contemplation of a fantastic and morbid sorrow. And, lastly, the possibility of returning to his home is a comforting prospect, the fascination of which grows steadily with the prolongation of the privation, and ultimately provides him with something definite to set his hopes upon, and an objective for effort. The restoration of the melancholic patient to his own home should be permitted very soon after convalescence has begun.

II. MANIA.

Mania is *par excellence* the psychosis of mental exaltation. Its tumultuous syndrome has often been coupled and contrasted with that of melancholia. In maniacal patients, as in melan-

cholics, it is the affective functions that are specially involved, but instead of a painful self-absorption there is an expansive cheerfulness and activity. The conduct of the maniacal patient is heedless and violent, but not absurd ; his ideation is rapid and abundant, and his perception accurate and prompt. Such a clinical picture is exhibited clearly only in the mildest forms of mania, which go by the various names of *hypomania*, *maniacal excitement*, *simple mania* (Schüle), and *mania without delusion*. The more serious cases, even though some prominent features, such as pride or flashes of distinct lucidity, recall the impetuosity and vivacity of hypomania, are very different from it (and seem closely related to confusional amentia) in respect of a disorder of conduct and speech in which it is not always easy to detect any directive thread.

The phenomenon which is common to all forms of mania, mild and serious alike, and which to a certain degree is the physiological key to the disease, is the hyper-excitability of the cerebral cortex. Inasmuch as it is moderate and diffuse, this hyper-excitability manifests itself in an extraordinary nimbleness of the mental processes, which inspires a sense of well-being that contrasts with the ill-being of the melancholic ; inasmuch as it is uniform and uninterrupted, it makes no profound change in the relations of functional solidarity which exist between the various areas of the cortex, and accordingly shows itself in a psychical hyper-activity which is fairly orderly, and quite different from the chaotic and lacunal confusion of amentia.

Symptoms.

The clinical picture presented by hypomania cannot be mistaken for any other. In the early stages of the disease the most commonplace and ordinarily colourless ideas become abnormally vivid. Associative processes, which as a rule are latent or inhibited, become active and easy, and the patients display an unwonted degree of fluency and subtlety ; they play upon words, rashly attempt to converse in languages or dialects of which they have only a very slight knowledge, sing songs before company, develop a tendency to philosophize, and may suddenly devote themselves to politics, or to the pursuit of pleasure. Cerebral activity, in thought, speech, and action, becomes more intense and more ample.

The maniacal patient, by thus wandering into many by-paths, often deserts the main thoroughfare, and squanders a large amount of mental labour without any adequate compensation in pleasurable association of ideas. This exuberance of thought, speech, and action, which resembles that of the first degree of drunken-

ness, ends by overcrowding and narrowing the field of useful activity or of logical thought. In the normal state, logical associations are formed by means of a subtle process of elimination and selection, which is the very antithesis of the *ideorrhœa maniaca*. The rational man ought to eliminate all the internal images that are extraneous to the line of reasoning. The moment the subject is begun he should repel all the new stimuli which reach him from the external world. The maniacal patient, whose mind is open to any fortuitous impression, is, on the contrary, never capable of following attentively a definite current of ideas. In mania, passive attention is stronger than active attention, and the patient very readily allows his thoughts to be



FIG. 105.—HYPOMANIA.

turned aside (Kraepelin). His talk is prolix; his few witty observations are spoiled by a large number of *commonplaces* and foolish remarks sententiously expressed. Associations by verbal sound are stronger than those by logical affinity. Except for occasional fugitive moments of shrewdness, the conversation of a maniac is disconnected, and soon becomes insupportable. The patient has, however, no leisure to take stock of himself; the absence of any sense of fatigue after exertion fills him with delight, and gives rise to the delusion that his strength has increased, and from this delusion he derives new ground for satisfaction and pride.

The excitement of the maniacal patient is complicated by

the presence of *insomnia*, but the sleeplessness in this case is very different from the painful insomnia which besets the nights of the melancholic. The condition of maniacal hyper-activity brings the nervous elements of the patient into a state of functional tension which prohibits repose, as happens to the student after a night of intense study, and accordingly the insomnia of mania is almost pleasant, and the patients congratulate themselves as if they possessed some superior quality. In some cases, in order to appear more *intellectual*, they even exaggerate their power of resistance to sleep, and boast that they never sleep at all.

In order to occupy the long hours of wakefulness, they concoct schemes, undertakings, and amusements, into which they try to draw their friends or acquaintances without realizing their indiscretion. The necessity they feel of doing something and their self-confidence cause them to be even deliberately importunate, and to show little consideration for others. The maniacal patient is often petulant; he makes no effort to avoid being insolent, he joins in discussions for which he is incompetent, pries into other people's affairs, flies into a temper for no just cause, and affects great sensitiveness on the subject of his honour, which he declares himself ready to defend with sword or pistol.

So far the disorder has not gone beyond the limits of hypomania. If, however, the psychical hyper-activity becomes very intense, the condition becomes changed into that of *mania*. The harmonious working of the associative processes comes to an end, and the patients pass from simple prolixity to incoherence, from extreme laxity to actual disorder of conduct and to *impulsiveness*. The condition is not one of a chaotic dissociation, such as exists in confusional states and particularly in amentia. Associative activity still manifests itself energetically, but in a partial and fragmentary manner, in short spells, which follow one another incessantly without giving speech or action time for completion. On account of this relative dissociation, the patient suffering from a serious degree of mania continues to be prompt and lucid in regard to stimuli which chance to be focal in consciousness, but appears slow in his reaction to, or even unconscious of, those which, though much more numerous, are only marginal.

On account of the absence of any designedly malicious intentions, and from their ready response to any sort of distraction, such patients are more easily managed than might be thought, and their supervision is not difficult. At times the maniac may be imperious and exacting, but as a rule he is easily pleased. It is sufficient to have him constantly under observation, and to be careful to avoid offending him by open or ill-advised opposi-

tion. If difficulty should arise, he may often be disarmed by some facetious remark, or kind but firm appeal to his loyalty. Though violent, he is voluble and chivalrous, and readily passes from vituperation to an effusive friendliness which is as sudden as his anger.

His actions are as bold, fickle, and disordered as his speech. The maniacal patient shows no respect for punctuality, or conventionality, or routine; he will take his dinner at midnight, speak to people with whom he has no acquaintance, present himself to the authorities without showing the respect due to them, push himself forward inconsiderately, or attempt to enter a theatre without any ticket. He dresses untidily, will leave his house without a tie or hat, or harangues a crowd from his window. Sometimes, at the height of his confusion, he fails to recognize people, or mistakes the members of his own family for enemies, reproaches, ill-treats, and strikes them; or he imagines that he recognizes old acquaintances in total strangers, and talks confidentially with them (*palingnostic illusion*). Such a patient forms the classical example of insanity, as conceived by the public mind.

The explanation of the *illusions*, which in some cases are so paradoxical as to resemble true hallucinations, is to be found in the rapidity and precipitancy with which the patients associate external impressions with pre-existing representations. This frequently leads them into errors of judgment and inconsistency of conduct. *Visual illusions* are frequent. A certain degree of *hyperacusis* may also exist, but instead of enriching the consciousness of the patient, it helps to confuse it, since it multiplies occasions for erroneous judgments. It is in this manner that verbal illusions arise, on account of which the patient believes himself to be slandered, made sport of, or threatened, and he does not hesitate to retaliate. Only rarely, however, does the same illusion repeat itself, and still more rarely does it become perpetuated as a systematized delusion. True hallucinations, which are so characteristic of *amentia*, are absent in *mania*.

When the *mania* has reached its height, the associative processes become affected by a prolonged and marked limitation of their complexity and variety, and ultimately fall into the condition of *oligoideism*. As, however, they at the same time maintain their morbid vividness, and, indeed, reach their extreme degree of energy, they lead to serious acts, which, as they are the result of incomplete reasoning, appear irrational and even unconscious. The patients suddenly, and without any motive, fly at people. They heap abuse on the landlord or the superintendent of the asylum; they sing and shout at the top of their

voice, and disregard every human tie, prejudice, or observance. Women, through a sort of recoil from their ordinary timidity, make themselves more conspicuous than men. They will take off their clothes in public, or tear them into pieces to adorn their head and breast in ridiculous fashion, or to ornament the walls of their room; they wink at passers-by, loosen their hair, smear their bodies with urine, and behave in an erotic fashion towards any stranger. The relations to the environment are so profoundly altered that there is a degree of disorientation not inferior to that shown by amants—at least, in its external effects.

Apart from the affective and motor disorders, the symptomatic picture of mania is distinctly poor. The processes of innervation that are not transcortical present changes of only slight importance, which may partly be considered as an indirect repercussion of the psychical hyper-activity.

The interrupted quality of *attention* exercises a very distinct influence on sensibility, especially to pain. The patients, on account of their inattentiveness, appear to be affected by *analgesia*. If, however, by chance or design they are exposed to some stimulus while in a state of *expectant attention* (as may happen during a clinical examination), they display a surprising promptness, intensity, and precision of reaction. The maniacal patient resembles the combatant who, when wounded in a quarrel or in a battle, feels neither pain nor blow. He despises all dangers as if he were invulnerable. His anæsthesia to cold leads him to the extravagant use of cold baths, which increase his exaltation, and permits him to go unclad and to sleep in the open air. The irregularity of his cœnesthetic sensations makes him capricious in his eating and drinking, and equally disposed, according to circumstance, to abstention or excess.

One very apparent consequence of the psychical hyper-activity is *hypermimia*. The physiognomy of the maniacal patient is mobile, his cheeks are flushed, his gestures resolute, and his glance penetrating. In some cases the *levator palpebræ superioris* is abnormally tense, and exposes the white rim of the sclerotic above the iris, and the eye thus acquires in different cases an erotic or angry expression. The faces of some maniacs are terrifying, but a mild degree of hypomania may even transform and improve the features of a youth who may be animated by a mild degree of hilarity and by benevolent sentiments.

The voice may exhibit extreme degrees of transition from soft to loud, and from one tone to another. It is common, however, for the patients soon to become hoarse. Either because they talk much and are continually shouting and singing, or because of a direct cerebral irritation of the salivary glands, the patients spit

promiscuously. Their saliva is more abundant and more fluid than it normally is (*sialorrhœa*). The patients frequently use it for offensive or abusive purposes.

Maniacal patients, who on their recovery try to recall their few and confused memories, sometimes assert that they have suffered from an intense *headache*—a statement which appears to be belied by their general conduct during the illness. It is probable that we have here to do with a retrospective illusion, or that the patient has mistaken some transitory pain for a continuous headache, or that the idea of physical compression of the head remains as a vague memory of the moral coercion to which his maniacal confusion had exposed him.

Course and Varieties.

Mania in nearly all cases begins, and in some terminates, with transitory phenomena of *depression*. Even at the height of the disease, however, the clinical picture of mania, even in its most severe forms, is not wholly of a happy and violent aspect. It is interrupted by moments of complete *lucidity* in which the patient has a clear idea of his own condition, and is distressed by it. Periods of discouragement and weariness, which suddenly vanish, may be noticed, and occasional outbursts of weeping, which seem to coincide with a natural line of thought, but may perhaps be due to central stimuli of an organic nature. During such attacks the patient loses his volubility, and differs in no respect from a typical melancholic, but the return to maniacal hilarity is constant, rapid, and pronounced. In the course of a few days a case of mania may present a most striking approximation to melancholia, and finally pass into a form of *maniacal stupor* (Weygandt). This apparent contradiction arises from the super-excitation of inhibitory processes, and only serves to confirm the essential character of mania, which consists not so much in exaltation or anger as in variability of emotions and ideas.

Mania runs a more rapid course than melancholia. A prodromal stage of depression is generally followed by the symptoms of hypomania. The period of hypomania may be very brief. A sudden explosion of great excitement, without hypomaniacal prodromata, may occur in alcoholism, epilepsy, and imbecility, but not in cases of genuine mania, which are ushered in by at least several days of depression or by a hilarious but not disordered exaltation. When the disease does not exceed the limits of a mild exaltation throughout its course, recovery occurs in a few weeks. A remittent character is more frequently assumed by mania than by any other psychosis.

Nearly every case of mania has already suffered, or will in

future suffer, from other similar attacks—a fact which indicates the existence of a personal predisposition. As many as sixty attacks, though, of course, very brief, have been known to occur in the life of the same individual. On account of the sudden manner in which these attacks arise, without prodromal symptoms, the absence of serious mental disturbance, and the frequency with which they assume the mild form of hypomania (Pilez), they may up to a certain point be distinguished from those of a more typical nature, which supervene gradually as acute and accidental illnesses in healthy and well-balanced individuals. From my personal experience I may add that it is not uncommon in attacks of periodic mania to find distinct tendencies to querulent delusion—a symptom which is not met with in simple mania.

It is not uncommon to find periodic attacks of mania occurring in strict alternation with attacks of melancholia—a condition which constitutes *circular insanity*. It is necessary, however, independently of the circular forms and of the periodic attacks of mania alone, with frequent and regular recurrences, to bear in mind those cases in which a maniacal attack is repeated twice or thrice during a lifetime at very long intervals. Such cases are intermediate between acute mania with a single attack and periodic mania with recurrence after definite intervals.

Most cases of mania end in recovery, if recurrences are not taken into account. It is a curious fact that the maniacal patient who has recovered—in this matter resembling the drunkard—scarcely ever realizes the gravity of the mental disturbance through which he has passed. Although he can recall acts he has committed and words he has spoken, he is making no pretence when he excuses himself for them or minimizes their importance. Protracted and painful impressions having been absent during the course of his disease, the recollection of his feelings is in marked contrast with the recorded facts, and it becomes difficult for him to understand fully what has happened in the past.

Cases of *chronic mania* are not uncommon. It may also be stated that mania has a greater tendency to become chronic than melancholia, and that, when it has become chronic, it preserves more clearly its own characteristic features—namely, loquacity and agitation without disorientation.

Death is rare, and is generally due to intercurrent diseases, such as pneumonia and enteritis, or may be caused indirectly by collapse, or injury, or fat embolism of the lungs due to extensive contusion of the cellular subcutaneous tissue (Jolly).

The probable and immediate cause of the maniacal seizure is

the presence of a morbid agent, which irritates the cortical centres, awakening latent activities, and exaggerating those that are habitual. When the morbid agent is still more intense, it may be assumed that, while preserving its exciting influence on certain processes, it acquires a paralyzing effect upon others, and that this may be the explanation of the scarcity of ideas and of the mental disturbances that characterize the severest forms of mania. The attacks of weeping, anger, and passive stupor, which are rarely entirely absent during the course of mania, however ephemeral they may be, indicate in their turn a partial exhaustion. This tendency to exhaustion, generally localized and very temporary, only serves to confirm the view that a general super-excitation is the essential basis of mania.

As yet there is insufficient proof in support of the theory that behind the super-excitation of the cerebral cortex there must be some constant and characteristic lesion—for example, hyperæmia of the brain or meninges. The post-mortem observation of hyperæmia, though it is frequently described in the literature of psychiatry, is, for the most part, but the expression of a preconception. A similar preconception is responsible for the appearance of cerebral anæmia in autopsies on melancholic subjects. More accurate and recent investigations have revealed the fact that not infrequently there is an increase in the number of red blood cells in the course of melancholia (Loveland), and it is well known that many cases of mania suffer from anæmia.

The antagonism of the symptoms in these two diseases does not correspond to any demonstrated antagonism in their causation. It is even probable that there is but one cause for both, and that it consists in some disturbance of the bodily metabolism. The degree of such chemical changes, combined with the personal diathesis of the patient, may determine the degree of the mental disturbance and the character of its clinical reaction, either in the direction of mania or of melancholia. The endogenous factor is nearly always predominant in mania, while in melancholia the action of an exogenous factor is often visible and most pronounced. At any rate, one of the two factors may be reduced to a minimum. The intensity of the toxic agent may also vary during the course of the disease, producing the well-known episodes of depression in the case of mania and of agitation in melancholia. Further, the personal diathesis is not necessarily unchangeable, but is often subject to oscillations in its degree, and may undergo, as regards its quality or character, a total inversion. This explains how an event or disturbance of slight importance may become intolerable to a person who has endured with ease some other much more serious but similar occurrence,

and also how, by an analogous pathological condition, there may be produced in the same individual at one time a maniacal reaction and at another a depressive reaction.

Differential Diagnosis.

Doubt has been thrown on the clinical individuality of mania upon various grounds. Squeezed between dementia præcox, which appropriates all isolated attacks of mania, and the manic-depressive or mixed psychosis, which takes in all recurrent attacks, mania as a form of disease by itself ceases to exist. But even worse has happened. Mania has even become merged in amentia, and there are alienists who—in practice, at least—regard it as only a form of *violent amentia*.

This view is erroneous. It is sufficient to recall the syndrome of hypomania, and the early occurrence of hypomaniacal symptoms in every case of serious mania, to recognize the importance of the clinical distinction between mania and amentia. Mania, at its commencement and sometimes throughout its course, is marked by a lucidity which is the direct opposite of the confusion of amentia. As we have seen, the confusion in amentia is the result of unsystematized hallucinations and sudden mental lacunæ, which are due to internal and incongruous stimuli; the ament therefore manifests disorientation. On the other hand, in a case of excited mania, the disturbance is the product of too vivid, rapid, numerous, and conflicting but fairly exact impressions, and the patient exhibits no disorientation. In amentia, internal activity, erroneous sensations, blind impulses, and disconnected thoughts are in excess, while there is great poverty of external perceptions, and the patient is thus cut off from his surroundings and completely self-absorbed. In mania there is an unlimited accessibility to external impressions, and contact with reality is far from lost, but the rapid and crowded sequence of stimuli renders their utilization difficult. The antithesis of the two diseases is evident. The sensations produced by central stimuli (hallucinations) and those of cœnesthetic origin (especially if false), which predominate in amentia, are elements which make for disorder, either by themselves alone, or because they obstruct the processes of normal activity or disarrange their sequence. On the contrary, the specific images of sight, hearing, and the other senses, which are not impeded, but rather facilitated, by the morbid process of mania, are elements of order, since they correspond to the objective realities, and their utility never ceases completely, even if it happens that, on account of their superfluous number or inadequate selection, a large number of them make no lasting impression or disturb the cerebral activities.

Periods of exaltation are also frequent in progressive paralysis, of which they in some cases constitute the noisy and characteristic initial symptoms. The exaltation of progressive paralysis, however, in addition to revealing its true origin by the presence of motor complications, is not distinguished either by wealth of ideas or coherence of action; indeed, it is marked by a fatuity which is the very negation of true mania.

It is equally easy to distinguish mania from the periods of exaltation which occur in epileptics, either as epileptic equivalents or as prodromata or consequences of convulsive seizures. Epileptic exaltation is characterized sometimes by an extreme degree of impetuosity and incoherence, but it is devoid of spirit and gaiety. There is a greater resemblance to attacks of mania in certain hysterical attacks, and it is sometimes impossible to detect any difference. Moreover, hysterical patients are not exempt from acute and isolated attacks of true hypomania or mania. Such attacks, inasmuch as their occurrence is favoured by hysteria, arise suddenly, and, inasmuch as they are—at least, in part—unrelated to the common causes of mania, they disappear more rapidly than is usual. The maniacal exaltation which may be present in some particular case of hysteria is, of course, not to be confused with the emotional crises which follow an hysterical seizure, and which are part of the characteristic succession of hysterical phenomena.

Imbeciles and paranoiacs are also liable to somewhat ephemeral attacks of exaltation, which do not, however, conceal the fundamental limitation or perversion of intellect. Such attacks, therefore, may readily be diagnosed as what they really are—namely, simple complications either of a distinct psychosis or of a constitutional anomaly.

The patients most liable to attacks of excitement resembling those of mania are, however, those who suffer from dementia præcox. If such attacks appear late, when the disease is already in progress, the diagnosis is evident from the history. If, however, they constitute the opening stages of the disease, the distinction is not always easy. Nevertheless, the absence of rational conduct, an appearance of ostentation, shortness of the attack, and lack of *amour propre*, which characterize dementia præcox and accompany all its manifestations, even the earliest, may serve to indicate that the attack of excitement is not one of pure mania. Hypomania, in which the exaltation is lively, frivolous, and fertile, is never met with in dementia præcox.

If account is taken of these spurious cases, which are not true mania, and if it is remembered that under the old regime the maniacal syndrome was too often the artificial product of unwise

restraint, the scarcity of cases of true mania in modern asylums ceases to be so remarkable. Their number is so small that among a thousand patients I have had difficulty in discovering more than ten; and sometimes, in order to demonstrate the clinical picture of maniacal exaltation to a clinique, I have found it necessary to make use of periodic cases, pure cases of probable acute mania not being available. It cannot be doubted that there has been much misuse of the diagnosis of mania in the past; it has been applied to cases of amentia, progressive paralysis, circular and periodic forms of insanity, without due importance being attached either to the difference in the symptoms or in the causes. At the present day mania is more justly regarded as a rare disease.

The *treatment* of mania is purely symptomatic. If the excitement is very intense, warm baths are of service, with the application of ice to the head, or frontal douching. The bath should be prolonged for three-quarters of an hour at least, or even for two or three hours, and the temperature maintained between 39° and 37° C. This hydrotherapeutic method is both expensive and troublesome, since the patients require supervision during the time they are in the bath by at least two attendants. In public asylums it is not possible to be so liberal in the attendance on a patient, and all the more so because the prolonged warm bath is recommended not only for maniacal patients, but also for paralytics in an excited condition, and for patients suffering from other varieties of psychosis accompanied by over-excitement. As a substitute for the sedative action of warm baths, hyosciamine may be employed, especially in the form of its hydrobromide; also duboisine, and, best of all, hyoscine. These substances act rapidly and powerfully when administered by hypodermic injection, but are ineffectual or uncertain when given by the mouth, even in double or triple doses. The effect of each of these drugs, which are all powerful mydriatics, may be measured by the condition of the pupil. Maniacal patients derive much benefit from isolation and the absence of useless forms of coercion. The presence of many people, multiplicity of impressions, injudicious reproof and forcible repression, irritate them and aggravate their mental disorder.

III. PERIODIC MELANCHOLIA.

Under the above title should be included the classical and often hereditary cases in which an attack of mental depression, always identical in nature, is repeated many times at short intervals, unquestionably revealing the existence of a constitu-

tional predisposition. To such classical cases others, of ambiguous nature, but much more numerous, may with advantage be added. These are cases in which the rare occurrence of the attacks, the almost indefinite length of the lucid interval, and the obvious action of serious external causes, render the presence of the melancholic diathesis questionable, if not even improbable, as may also some circumstance of a much simpler nature, such as the immediate onset of the melancholia after some painful experience. Support is thus given to the view that there has been co-operation of some extra-constitutional factor, which may accidentally recur once or oftener, but which at any rate allows of a fairly good prognosis being made.

These indefinite cases, which form the majority of all cases of melancholia, and among which all the initial melancholias have been provisionally included, are closely related to the acute forms. They may be regarded as a collection of indefinite shadows of the disease hidden behind the two monumental figures of acute melancholia and constitutional melancholia. It will depend upon events and upon the power of an invisible and inconstant diathesis whether these shadows will come into line with the figure of acute melancholia or with that of periodic melancholia. We may thus regard a case of recurrent melancholia, and one in which the disease has only just begun, either from the point of view of acute melancholia or constitutional melancholia, the decision depending on the solution which time may bring. This solution is no more than a conjecture, which by the older school of psychiatry was generally turned in the direction of optimism, but now by Kraepelin in that of pessimism and of the existence of an unchangeable inherent predisposition.

The distinction between periodic melancholia and acute melancholia cannot, indeed, be easily established *a priori*. The most important difference is the duration of the attack, which in the periodic forms is very brief, and often does not exceed two months. Another difference lies in the rapidity with which the attacks disappear. Beyond these slight shades of difference, however, the two forms of melancholia present the same complex of actual symptoms, and differ only in their course.

In certain cases there may be recurrent attacks of periodic melancholia with, for example, every pregnancy or puerperium or lactation, or each bereavement which happens to distress the family of the patient. More often, however, there is no indication of an exciting cause. Certain individuals periodically become melancholic every winter, but it is exceptional for the chronological succession of the attacks not to alter in course of time. In certain cases the disease ends in recovery. Some-

times increasing age brings to the organism new conditions which destroy or neutralize its melancholic predisposition, or may change an intermittent melancholia into a continuous one. In this event, the emotional depression is diminished, and delusions of a hypochondriacal, persecutory or micromaniacal character take the upper hand. This is specially the case in the forms of pre-senile dementia, which Kraepelin distinguishes from arterio-sclerosis under the term *involutional melancholia* (the only form, according to him, of genuine melancholia). I dealt with these depressive delusions when describing the cerebropathies of adults, for it does not seem to me that their separation from the forms of premature senility is based on sufficient grounds.

Not only does the interval between the recurrences change, but also in course of time the character of the affective disturbance itself. The melancholia is transformed, giving place to one or a few maniacal attacks, after which there may be a return to attacks of a melancholic nature. In other cases, after a succession of attacks of a purely melancholic nature, a classical type of circular insanity may appear with regular alternating phases.

Periodic melancholia is not always a serious disease. Some patients, though they suffer much, are able to conceal the psychopathic nature of their sufferings, and lay the blame on disturbances of a different nature, which they know very well do not exist, such as heart disease, digestive disorder or headache; they continue to occupy themselves with their business, though with lessened energy, accommodating themselves successfully to these variations in their activity. In women periodic attacks of melancholia are nearly always accompanied by amenorrhœa.

Treatment is similar to that employed in cases of acute melancholia. Burkhard injected strychnine as soon as he found that the pulse had become weak, inferring from this symptom that an attack was imminent.

IV. PERIODIC MANIA.

Periodic mania is a more common, more characteristic, and more serious disease than periodic melancholia. Generally speaking, it may be said that mania is a more constitutional disease than melancholia. It cannot be accounted for by the occurrence of unmerited misfortune, or a delicacy of emotional nature which up to a certain point might be regarded as a mark of perfection. The maniacal patient, even in the euphoria of hypomania, is always much less rational than the melancholic, and his morbid conduct does not possess that strictly logical relation to events which is to be observed in cases of simple

melancholia. According to Pilez, there are periodic psychoses, and specially periodic forms of mania, which are dependent on cerebral cicatrices, and which appear in advanced age; but, naturally, among these late forms the post-apoplectic predominate. When periodic mania, occurring in old age, follows a cerebral apoplexy, the paralytic limbs are affected by involuntary movements which unite with the psychopathic attack to form the clinical picture (Neisser). Periodic attacks of post-apoplectic mania are considered to be due to a congested condition of a brain irritated by the presence of a cicatrix.

Cases of periodic mania with attacks which are renewed throughout a whole lifetime are not uncommon. There are records in the asylum at Florence of a patient who was admitted eighteen times for mania, and of another whose admissions numbered sixty-two. In these two patients the intervals of sanity were naturally very short, but all of them, even to the last, were distinguished by the most complete lucidity. A female patient who is at present in the asylum has lucid intervals of the very briefest duration. These intervals barely extend to a week, but leave nothing to be desired so far as emotional equilibrium, clearness of judgment, and correctness of behaviour are concerned.

The clinical pictures of periodic mania exhibit greater variations than those of periodic melancholia. Sometimes they assume the character of wild excitement. Frequently they appear in the form of *moral perversion*, as attacks of *dipso-mania*, *nymphomania*, *kleptomania*, and *querelomania*. In some patients the disturbance caused by periodic mania, instead of upsetting the affective faculties or the moral sentiments, may cause transitory intellectual perversion. Thus there may be *paranoid delusions* in an intermittent form, fantastic ideas, acts of political proselytism, and religious mysticism. From time to time, with the occurrence of the maniacal attack, there is awakened a predisposition to paranoia, which was latent during the intervals. The patient suffering from periodic mania thus loses the cheerfulness and intellectual keenness of perception which so often characterize the acute maniac, in spite of his agitation.

Certain restless and quarrelsome spirits, who lack constancy of purpose, and are prone to sudden misgivings, to solemn expiations and noisy and repeated apostasies, are really patients suffering from periodic mania in a mild degree. It is probable that the Italian jurist, Pietro Sbarbaro, belonged to this class of psychopaths, being more famous for his libellous sayings and retractations of them than for work in his proper professional sphere.

Mention may be made of cases of periodic mania in which the attacks are ushered in by a sort of aura, which may consist, for example, in vaso-motor disturbances, palpitation of the heart, dizziness, insomnia, headache, irritability, or loss of appetite. The termination of the attack is not followed by the prostration which results in the case of acute mania. Periodic mania is not absolutely incurable or incapable of improvement, but as a rule the seriousness and duration of the attacks increase with the progress of time. Like periodic melancholia, it is a psychosis of adult age, and begins after thirty.

Periodic mania has nothing in common with epilepsy. It may degenerate, after a series of similar attacks, into a mixed form of the manic-depressive psychosis, or even into circular insanity of the classical type. This change is, however, not common, and as a rule periodic mania preserves its own characteristics indefinitely, save for the fact that it gets slowly worse as regards the intensity and persistence of the symptoms.

Preventive treatment is not of much avail for this disease, and it is not easy to judge of its effects. In former times recourse was had to bleeding. During the course of the attack the methods of treatment which have been indicated as useful for acute mania may be employed with advantage.

V. CIRCULAR INSANITY.

This mental disease has been well known since the middle of last century through the work of Baillarger, who distinguished it in 1854 under the name *folie à double forme*. It was described at the same time by Falret, who called it *folie circulaire*, and by Legrand du Saulle, who gave it the title *alternating insanity*. The transition of melancholia into mania had, however, been recognized and clearly described many years previously by Morgagni in the following words: "Melancholiæ autem mania in tantum affinis est, ut si affectus sæpe vices commutant et alter-
unter in alterum transeat; quin sæpius dubitantes medicos videas hinc taciturnitate et metu, hinc loquacitate et audacia in eodem ægro, subinde alternatis, melancholicum an maniacum pronunciant."

If cases which run an irregular and indistinct course are excluded, the number of true cases of circular insanity is not large; but there is no alienist who has not had some cases of this kind under his observation, and who has not recognized in them abundant and incontrovertible proofs of the existence of one of the most typical and interesting diseases. The unerring rhythm of the alternation of exaltation with depression, the striking and

sudden antithesis of these two phases of the disease, and the constancy of their duration, combine to make circular insanity the most unique of all mental diseases. Those who suffer from it possess two personalities, two characters, two modes of living, and two views of life, which stand in perfect contrast to each other. Even the appearance of the patient is transformed so as to be almost unrecognizable. The profound and periodic *volte-face* in temperament, disposition, and conduct is too much protracted, too independent of external events, and too inevitable to be confused with the emotional oscillations of a mercurial and passionate nature. It is impossible to deny the morbid origin of these alternating phases, even in cases where they fail to reach a high degree of maniacal furor and melancholic despair; nor is there any difficulty in recognizing the constitutional character of the disease, even in mild cases which scarcely depart from the normal, and which are the most common. Sometimes the two-faced Janus of circular insanity is deeply sculptured on one of his two aspects and scarcely outlined on the other, but the spontaneousness of the transition and the constancy of the depressive or the exalted symptoms, however slight they may be during the entire period of the depression or exaltation, leave no doubt as to the true nature of the disease.

Circular insanity may follow one of three different courses :

1. In certain cases the two phases of melancholia and mania follow each other without interruption, and the patients are always insane.

2. In others, at the end of a complete cycle of the two phases, a lucid interval intervenes of variable duration and constancy, during which the disease remains in suspense—at least, it may be said that all its symptoms from first to last are rendered latent.

3. Lastly—and it is the rarest condition of the three—the lucid interval may occur, not at the end of a complete cycle, but at the termination of each distinct phase.

The rhythmic succession of the two opposed phases is in many cases hurried; brief periods of melancholia alternate with brief periods of mania, and the duration of the twofold attack may not be more than four or five months. In some cases the two attacks develop in two or three weeks, and it is very rare to find them lasting for a year or more, as happens in the case of acute mania, and more particularly in melancholia. The melancholic period tends to last longer than the maniacal.

The regular sequence of the two phases may become remarkably precise. A female idiot, aged twenty-nine, has been subject for more than six years to attacks of depression and excitement, which complete their cycle in the short space of forty-eight hours,

each phase lasting one day. During the phase of exaltation the patient jumps, runs, gesticulates, shouts, sings, and tries to remove her clothing, being a prey to a continuous, intense, and irresistible agitation, though not in any respect aggressive. When depressed, she remains crouching at the same spot, in a drowsy condition, looking sad and refusing food. It occasionally happens that each of the two periods is doubled in length and lasts for two days, but no change occurs in the character of their reciprocal relations.

Circular insanity is a disease so manifestly constitutional in character that the fact scarcely requires statement, but it may not be superfluous to remark that it is frequently hereditary, and in some cases occurs in members of the same family; I know of one instance in which two twins were similarly affected. As regards its pathogenesis, the attempt has been made by Meynert to connect this with the innervation of the cerebral vessels on the theory that, from a spastic condition with anæmia in melancholia, they pass to a paretic condition with hyperæmia in mania. Now, it is doubtful if there is any actual and constant correspondence between this conception and the circulatory conditions which obtain in melancholia and mania. Even granting that the correspondence does exist, there is still nothing to prove that it is an essential or primary condition. The evidence is all in favour of the belief that phenomena of so material a character as distinguish those of the cerebral circulation are not the cause, but are rather the effect, of melancholic inertia and maniacal excitement. Granted the wide difference existing between the condition of the melancholic patient and that of the maniacal, it is only natural that all the bodily functions, and especially those which are more directly under the control of the nervous system, should exhibit their activity in totally different directions, according to the particular phase of circular insanity in which the patient happens to be for the time being. The investigation of the respiration and circulation, of the number of red corpuscles, the condition of reflex movements, the degree of intra-ocular tension, the latent reaction-time—of all that is capable of accurate enumeration and measurement—only serves to confirm the essential connection of the bodily state with the mental and cerebral state.

It is common to find complete oblivion of the illness in cases of circular insanity, and patients who have passed tens of times through the Caudine Forks of melancholia and mania may have no recollection of their experience when it has issued in cure. Only in the early stages of the disease are those prudent patients met with who enter asylums on their own initiative. At the end of an attack the sense of the melancholic phase is faithfully

preserved, but not that of the maniacal, however violent, frequent, and specially characteristic it has been. I am personally acquainted with a patient who after an attack of depression remains in a state of equilibrium for three or four months, and who does not consider the lucid interval as normal, but looks upon the period of exaltation alone as such. When he is in the state of equilibrium, he admits his own improvement, but believes it is not yet complete, and postpones all amusements and more serious matters to the submaniacal phase, which he looks forward to as the end of his illness. As even in this condition he never exceeds certain limits, the results have not been harmful.

The *diagnosis* of circular insanity, it cannot be denied, is made *a posteriori*. There is no indication from the symptoms whether an attack of melancholia or of mania, presenting itself for the first time, will be followed or not by attacks of an opposite nature.

The *prognosis* is not altogether unfavourable. As a rule, however, the relapses in circular insanity are continuous, and the succession of attacks is only terminated by death. In some cases the duration of the attacks tends to grow less, and the complete cycle becomes shorter. In other cases one of the two phases becomes shorter and less distinct, while the complementary phase preserves its characteristic features and predominates. It is also not impossible for the rhythm to be interrupted by long periods, or even to disappear. Such inequalities and interruptions and recoveries, which perhaps correspond to an exceptionally prolonged interval, have given origin to the conception of a manic-depressive psychosis, in which the regular alternation of two antagonistic states is replaced by an uneven and casual succession.

The *treatment* of such a disease consists essentially in preventive measures specially adapted to protect the patient in its different phases. In spite of the peculiarly constitutional origin of their affective disturbances, the patients are distinctly responsive to the action of stimulants during the depressed phase, and of sedatives during that of exaltation. The treatment, therefore, which is applicable to cases of melancholia and mania is also indicated in circular insanity.

CHAPTER XVIII

NEURASTHENIA

NEURASTHENIA is a state of habitual valetudinarianism with no corresponding characteristic organic lesion. It manifests itself in a series of phenomena which are objectively of little importance, since they do not endanger the life or affect the general health of the individual, but which are subjectively monotonous, pertinacious, and wearisome. Among these symptoms the principal is a sense of profound lassitude, which finds no relief in bodily rest. In certain cases there are obsessions, doubts, and hesitations, which, however, do not obscure the intelligence, but rather refine it, inclining it to introspection.

Sometimes cases of tuberculosis, heart disease, influenza, tabes, progressive paralysis, dementia præcox, and many other chronic diseases are preceded or accompanied by long attacks of a neurasthenic nature. True neurasthenia, however, occurs by itself, and persists as an entity with a limited number of symptoms, which are repeated from day to day. There is an *acute neurasthenia* which passes away, but which gives reason to suspect the presence of a latent predisposition; and there is a *constitutional neurasthenia* which is liable to remissions which seem to be recoveries. The distinction between these two forms of neurasthenia is not always easy. There is also an associated form of *hystero-neurasthenia* (Charcot), and varieties of *traumatic neurasthenia* and *hemi-neurasthenia* have been described. All these varieties with their distinctive names, which require no explanation, point to the affinity which exists between neurasthenia and hysteria.

Constitutional neurasthenia, like acute (and traumatic) neurasthenia, may be divided into two clinical types, according to the presence or absence of imperative ideas. But even if imperative ideas are present, the neurasthenic is never a sufferer from true mental disease, because his consciousness remains unclouded and his personality is intact. There is no danger that he will fail to recognize disturbances, if they exist, in his associative processes,

and to appreciate rightly the inopportune, frivolous, and annoying ideas which constitute their invariable symptoms. At the same time, not only these forms of obsessional neurasthenia, but also the milder varieties in the course of which there is no evidence of obsessions, seem to originate, like hysteria, from psychical activity. This psychical, or at least central, origin is even more evident in neurasthenia than in hysteria, for the phenomena of hysteria are, it is supposed, an involuntary reaction to a forgotten auto-suggestion which is sometimes undemonstrable, while the majority of neurasthenic symptoms, on account of their subjective character, belong to the sphere of pathological psychology, even although they leave the reason intact.

Symptoms.

Lassitude.—The neurasthenic is always tired, whether his work is hard and dangerous, involving emotional and intellectual expenditure, or whether he devotes himself to some quiet and moderate task, or does no work at all, passing his time in the contemplation or perhaps in the cultivation of his own fancies. In the morning he feels more weary than at night. He is tired if he has slept, and he is tired if sleep has not closed his eyelids. It is his continual lament that he has too much to do. The sense of tiredness only begins to diminish late at night, precisely when the accumulated fatigue from the labour of the day should begin to be felt. There is not one bodily function among those which are capable of being represented to consciousness which does not seem to contribute its share to this hyperæsthesia of fatigue. Walking, standing erect, bending the head, and the exercise of vision, hearing, speech, and thought, all intensify the feeling of weariness. Sexual intercourse brings no pleasure, and is followed by great lassitude. If an attempt is made to analyse the subjective sensations into which the distress of the neurasthenic may be subdivided, it is seen that they are related principally to the muscular system, both smooth and striped. There is, indeed, one symptom frequent among such patients which is considered characteristic in *Erb's disease*—namely, the *myasthenic reaction* (Flora). The curve of faradic contraction rises to a considerable height, but falls suddenly and rapidly, and thus the exhaustion of muscular force, without any antecedent adequate expenditure of physiological energy, is provided with an objective demonstration.

The patients complain of a great heaviness in their legs, arms, neck, back, and eyelids. They suffer from headache or dizziness at the sight of moving and changing objects, and even from sudden variations in the light, but not so much on account of a

greater sensitiveness of the retina, as they believe, as on account of the slight efforts of accommodation which are imposed upon the intrinsic muscles of the eye. The same may be said regarding the exhaustion of hearing and thought. Dominated by his pessimistic illusion that he cannot grasp matters quickly or clearly enough, the neurasthenic turns his head, wrinkles his brow, fixes his gaze, holds his breath, and works himself into a paroxysm—in short, he exaggerates all the signs of attention, the result of which is a slight degree of muscular tension, which leads to the sense of tiredness.

Proof that the involuntary muscles as well as the striped muscles are affected by this exhaustion is presented by the visceral sensations that so frequently accompany neurasthenia. The neurasthenic complains to his doctor of *a weight*, a gnawing, or a tumultuous palpitation in the region of the heart. As a rule these sensations do not pass beyond the sphere of subjective phenomena, and auscultation reveals nothing, but occasionally *tachycardia* or *bradycardia* (sixty pulsations to the minute, for example) may be present; or *pseudo-angina pectoris*, with painful sensations radiating to the left arm; or *pseudo-collapse*, with slow pulse, cold sweat, and a tendency to fainting.

In the alimentary canal a sense of weight, functional disturbances, or an illusion of repletion or emptiness, changing from time to time, may arise from very slight oscillations in the muscular tone of its walls, and give rise to transient states of nausea, false appetite, voracity, eructations, and intestinal meteorism. Even conditions such as atony of the stomach, dilatation, hyperchlorhydria, hypochlorhydria, constipation, and diarrhœa may occur—well-marked and definite disturbances that cannot be ascribed to the imagination. These disorders may perhaps be only the indirect consequences of the changes to which, either directly or indirectly (that is to say, through the nervous paths), the muscular walls of the alimentary tract are exposed; they may also depend upon localized paresis and spasm of the vessels.

Paræsthesias.—Vaso-motor disturbances, which are known to occur, and may often be seen in cases of hysteria, may be presumed, and are also sometimes observable in neurasthenics, in whom they would serve to explain many slight disturbances of function, and particularly the paræsthesias, such as coldness of the extremities, a sense of formication (which is often unilateral, and so clearly circumscribed as to lead to suspicion of an impending hemiplegia), flushing of the face, giddiness, headache, tabetiform pains, and neuralgias. All the above are characteristic of neurasthenia, but headache is the most common. It is generally continuous, not specially painful, and occipital; it sometimes

extends in the shape of a helmet. Not uncommonly also there is frontal headache, which may accompany or alternate with the occipital form in the same individual. The vaso-motor origin of neurasthenic paræsthesias may be inferred from the readiness with which they diminish or disappear after a full meal or the drinking of a simple glass of water.

Localized Pains.—According to Beard, pain on pressure upon the vertebral spines is a symptom of much importance, but it is not often present. Spontaneous pains in the testicles and a burning sensation in the prostatic urethra characterize a clinical variety of the disease to which the same authority gives the name of *sexual neurasthenia*, and which may be the consequence of sexual excess, masturbation, or nocturnal emissions, or may indicate a special nervous instability in the reproductive organs and functions. In sexual neurasthenia other disturbances also occur, such as palpitation of the heart, asthenopia, and tremor, especially after an excess, even though slight. Women are not exempt from sexual neurasthenia.

The stomach is another site of localized pains, which may be due to hyperchlorhydria or to gastralgia. Beard claims to have distinguished a clinical variety of neurasthenia concerned with the digestive functions, which is, according to the case, the result or the cause of dietetic disorders.

Objective Symptoms.—Among these abundant symptoms, which have led Beard to subdivide neurasthenia into special varieties, which in my opinion are negligible, there are only a few objective ones that are of value for diagnosis and as medico-legal tests. In addition to the myasthenic reaction, there are two symptoms which may be considered as objective proofs of neurasthenia; these are *exaggeration of the patellar reflex* and *tremor of the eyelids* when the eyes are closed. These two signs are almost constant, and their presence settles the diagnosis in cases in which there is a suspicion of intentional multiplication or simulation of symptoms. It must always be remembered that any slight objective disturbance occurring in the course of a neurasthenic attack is keenly felt by the invalid, and may be exalted to the level of a neurasthenic symptom. On the other hand, serious diseases so overshadow the neurasthenia as to suspend or abolish all manifestations of it. Hysteria is subject to similar eclipses during the course of any grave pathological process.

General State.—As the result of the sufferings, worries, and paræsthesias which accompany his waking hours, with the exception of the moments of diversion, drowsiness, or cheerfulness that always occur in the course of the day, the neurasthenic is incessantly driven to the contemplation of himself. He is conscious

of his breathing, digesting, walking, and thinking. His organic sensations, which should occupy the last place in his consciousness, spring at once to the front. By a sort of unfortunate clairvoyance, visceral functions, the work of which should be done with indifference, if not actually unconsciously, become painfully conspicuous. The patients are so wearied by these disturbances that they condemn themselves to all sorts of troublesome treatment, to useless abstinence, or to a regimen of absolute rest, in order to be cured. They are most assiduous visitors of the doctors, spend much of their time in hospitals, and are thoroughly acquainted with the methods of clinical examination and anti-neurasthenic treatment. A rational hypochondria without delusions is thus actually a pathognomonic symptom of neurasthenia.

If we exclude the subjective sense of tiredness and the hypochondriacal pessimism, we must, however, acknowledge that many neurasthenics are able to endure study and a sedentary occupation even better than normal individuals. Neurasthenia is very common among authors, and it is perhaps for this reason that it is the only psychopathy faithfully described in novels and plays. In some cases the patient abstains from all intellectual effort, and may even avoid reading the newspapers for weeks or months, but such conduct is always the result of some preconceived idea. Cases are not uncommon of neurasthenics who show little spirit at the beginning of some material or mental work, but who exhibit an unlooked-for perseverance as the task is protracted, or becomes more severe. It is undoubtedly the fact that among the ranks of neurasthenics are to be found distinguished travellers, swordsmen, and athletes. The probability, therefore, is that the sense of tiredness is not caused by the abundance of the waste products which are formed physiologically in the course of muscular effort, but by other substances which produce false sensations of fatigue, either in the nervous centres, or by acting upon the sensory end-organs in the muscles. The normal work of the muscles, on the contrary, provided it does not exceed certain limits, not only does not give rise to genuine tiredness, but actually diminishes the morbid and pre-existing sensations of false tiredness, and perhaps aids in the elimination or destruction of abnormal substances.

A general function that is rarely disturbed in neurasthenia is that of sleep. The patients as a rule sleep normally. If they suffer from *insomnia*, it is as a transitory phenomenon in periods of exacerbation, or at the commencement of the disease. The opposite phenomenon of drowsiness is, however, fairly common, and many neurasthenics are heavy sleepers, through inveterate

habit or imperative need, as if they were under the action of some hypnotic. Thus the paradox is complete ; to unjustifiable tiredness there is added disproportionate sleep.

Psychical Symptoms.

Charcot, in his lectures upon hysteria, introduced the clinical term, *diathesis of contracture*. It was intended to indicate the readiness with which in many hysterical patients a muscle which has been physiologically *contracted* remains pathologically in a state of *contracture*. Something analogous occurs in the sphere of the psychical phenomena among the neurasthenics who suffer from *fixed* or *imperative ideas*. An idea physiologically derived from the current association of thought, and not requiring to be repeated, tends to present itself inopportunistically and pathologically as an ideational *tic*. The process of elimination which we carry out, not only when we are engaged in study and reflection, but also when we give the rein to our imagination, and which shuts out from the field of consciousness all extraneous, futile, and disturbing ideas, is weakened in the neurasthenic. This is particularly the case in regard to obsessive ideas which have previously violated the veto. This condition constitutes the diathesis of *psychical incoercibility*. Attention is momentarily but frequently mastered by an idea which has been rendered formidable and powerful by many victories. It is, however, uncommon to find a single imperative idea predominating in a neurasthenic who suffers from obsessions. As a rule, the imperative ideas change from time to time, though at long intervals, or several may coexist, and dominate and disturb the attention of the patient simultaneously. It is never the case, however, in true neurasthenia that an obsession becomes converted into a conviction, idea, dogma, or delusion ; at most it may assume for a moment the form of a doubt.

X. Y., of healthy family, thirty years of age, an artisan, married, and the father of healthy children, intelligent, well developed, with good large head, had been subject to obsessions for more than eight years. The obsessive idea acquired over him a temporary supremacy, which was maintained for some months. Sometimes an obsession would be brief, lasting for not more than a week, when it would give place to another. At other times the predominance was shared by two or three different ideas, which alternated at short intervals, or occurred together. During conversation, when at work, and at times of strong emotion, the patient obtained temporary relief ; on this account he became a frequenter of theatres, preferring dramas in which there was bloodshed. For many years, however, the remissions had not lasted longer than a day. The severity of the obsessions was not always the same, and often it was so slight as to allow the patient to pass quiet and almost happy hours. His mental lucidity was always

perfect, and there was no sign of enfeeblement, either of intelligence, or of memory, or of his affection for his family.

In the paroxysm of psychical incoercibility—that is to say, when the morbid representation was specially insistent, tormenting, and difficult to drive away—the patient was the victim of a convulsive tic, also uncontrollable, devoid of any choreic character. This tic was constantly limited to the right side of the forehead, right orbit, and right cheek, although some other muscles, including those of the shoulder of the same side, participated in it. The following were the obsessive ideas that subjectively accompanied the manifestation of this motor tic :

1. The patient was afflicted daily for almost a year by the tormenting suggestion, which presented itself to his consciousness from two hundred to three hundred times in twelve hours, to ask himself such questions as the following : “ What am I ? ” “ Why have the bones that particular form ? ” “ Why have they not another form ? ” “ What will they become after my death ? ” “ How will they become transformed ? ” “ Where will they go ? ” “ Will mine be like those of other people ? ” “ And what will have become of the skeleton of my father ? ” The inanity of the questions and the morbidity of their origin are apparent.

2. Every little annoyance, such as the interruption of the traffic by a cart, being jostled by someone, seeing an unpleasant face, hearing a shrill voice or a rude word, impressed itself upon his mind with the strength of an obsession. He remained preoccupied by it during the rest of the day ; he thought about it again and again, even when he tried not to do so ; he imagined endless consequences that the occurrence might have ; the idea oppressed and tormented him, and he endeavoured, almost always in vain, to combat, or to replace by pleasant thoughts, the representation that dominated him.

3. The fear of becoming insane, although natural in his condition, assumed the character of a fixed idea without adequate emotional consequences, for the patient would muse thus : “ Can the fact of having once gone to an asylum to visit a friend influence his mental state ? ” “ Can having seen, named, or thought of a lunatic be the means of causing an outburst of his insanity ? ” “ Can the fact of having touched or gone near the relative of a lunatic injure him in the same way ? ” “ If any of his friends touch or go near a lunatic—after he has been sent to an asylum—is the insanity conveyed by him to his family ? And if this does happen, would the person himself become insane ? ” and so on. To all of these questions, the absurdity of which was very clearly recognized by the patient himself, the reason invariably replied “ No,” but the neurasthenia caused the questions to be repeated like a chorus without regard to the negative reply.

4. Everything—persons, objects, and occurrences—was either pleasing or disagreeable to the patient in the highest degree ; but the mere hearing of a syllable of the name of a person for whom he felt an antipathy was sufficient to cause him to suffer anguish, to throw him into the abyss of incoercible associations, to start his convulsive tic, and to cause him torment for many hours. The bitter thought of being obliged to recognize that his disease was not overcome was especially galling to him, and would spoil a day that had begun happily. To the idea or syllable for which he had a dislike he was obliged to oppose with equal force a pleasing idea or syllable. Then, like a passive spectator, the patient witnessed the duel between the two opposing

representations, and it not unfrequently happened that the pleasing one overcame the other, till by force of repetition it became oppressive in its turn.

5. The patient was unable to endure certain contacts. He abandoned the use of linen shirts, collars, and drawers, and of woollen garments in all seasons; merely seeing anything that had been starched made him tremble. A blue shirt was to him as intolerable as the shirt of Nessus; but if by gazing intently at a rose or at the western sky during sunset he succeeded in forgetting blue, he became able to tolerate that shirt, and was able to touch it and to wear it for a day without suffering. This victory pleased him greatly, and he talked about it as if he had overcome a very great obstacle or escaped a great danger; yet he was the first to recognize its extreme futility, and to show disgust and surprise at the occurrence.

6. If in any place, restaurant, or theatre the patient happened to speak to, look at, or fix his thoughts upon some person for whom he had an antipathy, the place became in its turn distasteful, and even intolerable, to him for weeks and months afterwards. The imagination of it came upon him like a seizure, repeatedly and terribly, and passed away gradually, to return later. Other places, restaurants, and theatres had a pleasing and beneficial influence upon him.

7. An amusing occurrence, a happy recollection, an impulse to laugh or to joke, were often converted into uncontrollable representations, causing—at least, at first—a state of hilarity, which after some days gave place to a feeling of distress. Ordinarily the patient was of a serious and kind nature, and he was sufficiently shrewd not to allow strangers to perceive his peculiar states of mind.

8. If the patient, while reading, had his attention diverted for a moment from the subject under his notice, it would often happen that a particular word—either an abstract or indifferent one, or one of indistinct and incomplete meaning, such as an adverb or a preposition—would become firmly fixed in his thoughts, and give rise to ideas and states of mind which, though not always painful, were insistent and uncontrollable.

9. The fixed ideas sometimes related to certain acts to be carried out, to impulses, which, however, the patient was able to justify and render tolerable by ingenious excuses.

10. Not only such spontaneous ideas, but even imported thoughts—as, for example, the suggestions of the doctor—if they recurred to him at certain moments, would acquire that temporary supremacy which, when it becomes morbid, loses all value and disturbs logical thought. The obsession of the disease having passed away, one arising out of the means of cure took its place.

Notwithstanding all this, the patient continued his work, was content to live, and looked forward to reaching a good age.

This diathesis of psychical incoercibility is the source of the monophobias and isolated obsessions which constitute the clinical picture of *psychasthenia*. In most cases it is associated with sensory and motor signs of neurasthenia, but even in their absence the neurasthenic nature of the obsessions and of the psychical incoercibility is generally sufficiently obvious to warrant the unification of psychasthenia and neurasthenia. Psychasthenic patients yield to an obsession, because they are afraid of its over-

powering them, and this fear is the consequence of the intensity with which they feel, and the preoccupation with which they analyse all the subjective phenomena which occur in their consciousness, from the lower bodily sensations to the highest processes of thought. If, notwithstanding the continuance of this preoccupation, neurasthenics almost invariably limit themselves to one or a few obsessions, and do not become victims of any casual representation which may cross their mental horizon, it is because the repetition of a peremptory representation so increases its morbid force as to preclude the entrance, not only of normal ideas, but also of other obsessions of a different nature.

However futile may be the character of the fixed idea, it is important not to infer therefrom that it was altogether accidental in its origin. The tendency to be transformed into an obsession is not a property of every idea, and in fact there are ten, or at most twenty, favourite themes that serve for the neurasthenics of the civilized world. They have their source in a fanciful but profound fear, which on account of its power constitutes an individual peculiarity of character. If a person who is predisposed to such imperative ideas suffers from neurasthenia, this partial and insignificant defect, which is often concealed and yet typical, and which constitutes the essential peculiarity of his character, will be the point of least resistance at which the obsessional idea will break forth. And if the themes do not number more than ten or twenty, it is because the psychological varieties of character are fundamentally very few.

Agoraphobia —The fear of not being able to cross an open space, such as a square (*Platzangst*), a road, or a room, has nothing in common with *astasia-abasia*. The condition is always one of simple abasia without astasia, and in confirmation of the distinction there is the further fact of the facility with which, in spite of their fear, the patients succeed in moving if they are compelled to do so. Agoraphobia condemns its subjects to a life which is sedentary, but often intellectually active, and not unproductive. It occurs more frequently in attacks of acute neurasthenia than in the chronic forms. Historically it is the variety of obsession which first attracted the attention of Westphal, and served him as an illustration of imperative ideas, which he distinguished from delusional convictions.

N. N., an intelligent business man, married, but without children, had been a fast liver, and suffered from syphilis in his youth. He is now aged forty, and presents all the signs of agoraphobia. He directs his business affairs from his own house, consulting his partner every morning; new ventures and projects are suggested by him, and the most important letters and communications are referred to him. His partner is satisfied with this arrangement, congratulating himself on

the astuteness shown by the patient. The mere presence or vicinity of a child or some acquaintance is sufficient encouragement for the patient to venture into the streets ; but, though he has thus succeeded in making a start, he is constantly dominated by the fear that the companionship will, by some accidental circumstance, suddenly be interrupted. The agoraphobia is accompanied by other neurasthenic disturbances, including exaggeration of the knee-jerks, very marked tremor of the eyelids when the eyes are closed, tremor of the hands, persistent formication, and intolerance of light. There are no symptoms of progressive paralysis or of tabes dorsalis. The Argyll-Robertson phenomenon is absent, there is no myosis, and at no time have there been girdle pains. The neurasthenic disturbances have lasted for three or four years. The possibility of the case being one of incipient tabes or metasyphilitic neurasthenia was considered, but specific treatment by injection of the perchloride of mercury has been without effect.

Misophobia (Hammond) or *Rupophobia* (Verga).—It may be that the fear of not being able to endure a long walk, or agoraphobia, has its roots in the mingled feelings of desire and dread which beset the child in its first attempts to walk, and which, just because of their early occurrence, remain engraved in the brain of the adult, although lost sight of. The horror of dirt is a product of education, but it has an origin no less ancient and no less deep. "Look, but do not touch," is one of the precepts most constantly impressed on the child mind, but also one of the most difficult to enforce. In order to emphasize its importance, recourse is had to stratagems, imaginary dangers to health and personal safety being attributed to the handling of certain objects. Educational tradition has preceded and surpassed bacteriology, creating hundreds and thousands of tactile incompatibilities which may be regarded as special forms of repugnance, or as trivial fears. The fact remains that misophobia is the most common form of obsession.

A lady, aged thirty-eight, married, wealthy, cultured, tall, strong, and handsome, has suffered for as long as she can remember from *misophobia*. She cannot understand (and it must be allowed that theoretically she is right) why the dust and dirt of the street should be allowed to enter her apartments on the boots of visitors. Accordingly, in spite of her intellectual gifts, every morning, with her own hands, she washes the floor of the room in which she has slept, even though she may be in an hotel. She frequently changes her place of residence and house ; she prefers Spain, because in Madrid she has discovered an hotel which conforms with her requirements in the matter of cleanliness, and she insists upon the residents putting on shoes of a certain kind, which are placed at the entrance, before they climb the common staircase. The result of this Draconian regime has been the emigration of all the guests and the idleness of the servants, to whom the duties of watching had been entrusted, and the house has accordingly been emptied. The patient will not shake hands with anyone ; immediately a guest has left her room she causes the floor to be

washed, and she frequently changes her chambermaid. Acquaintances who are ignorant of her infirmity see nothing strange in her general conduct, for she is able to conceal her weakness with rare ability, and there is absolutely nothing abnormal about her conversation.

A lady, aged twenty-nine, healthy, agreeable, and modest in behaviour, is affected by hystero-neurasthenia. One day, on the stair of the house, just opposite the door of her own room, she saw the dejecta of a dog. The feeling of disgust that she experienced was so intense that from that day she has been unable to think of anything else. The possibility of contact with some particle of canine filth is a continual nightmare to her, and causes her unhappiness. She has changed her house and city, has separated from her husband for a time, returning to her father's house, and also shutting herself up in various sanatoria, and has tried many methods of treatment. There is, however, no spot upon earth which, being inhabited by man, is not infested by dogs. This fear of dogs and of their excreta gives no peace to this patient, who, of the many disturbances of a neurasthenic and hysterical nature to which she is subject, is intolerant of and deplores this one alone.

A lady, aged thirty-six, mother of a family, is the subject of a generic misophobia. She wears linen gloves, but does not feel herself sufficiently protected by them. If she has to take into her hand any object, however clean it may be—for example, her hat, which has been carefully wrapped up and placed in her wardrobe—a struggle begins in the depths of her consciousness. Her hat has been exposed to the dust of the streets; the brush with which it has been cleaned is itself full of dust: how can she touch it? If she touches it with her gloves on, will she not require later to touch the gloves when she takes them off and puts them on again? Then her hesitation becomes anguish; she becomes pale and exhausted, begins to cry and to despair, accuses herself of being mad, of being a wicked wife and a capricious and frivolous mother. She has often confessed herself and wished for death. Her psychasthenia is associated with occipital headache, has lasted for three years, and is susceptible of only temporary improvement from treatment in sanatoria or in the country.

Pathophobia.—The condition of pathophobia has intimate and logical affinities with misophobia. Miasmata, dust, and all the other vehicles of disease, are indeed causes of repugnance, no less than of danger to health. Among all diseases, those which are most dreaded in the sphere of obsessions are rabies, tuberculosis, and syphilis, on account of the unforeseen and treacherous manner in which they may attack the most careful of men.

L. R. is a stout countryman, who has never been bitten by a dog, but who knows that in his district there have been some deaths through hydrophobia. He is afraid of vagrant dogs, and believes that hydrophobia can be transmitted without any bite by means of the foam which dogs let fall from their mouths on to the ground. The wind may raise and distribute particles of contaminated dust, and so on. His pathophobia has been long-standing, and is accompanied by distinct symptoms of neurasthenia, tingling sensations in the limbs, occipital headache, exaggeration of the knee-jerks, constipation, etc.

N. N., a retired high functionary of State, sixty years old, who died of heart disease, had suffered for many years from neurasthenia. Pathophobia had induced him to cover the walls of his house with cloth,

though he cared little for luxury, in order to protect himself against cold. Through fear of earthquakes he had strengthened the walls of his house in an elaborate and costly manner. His anxiety to empty his bowels regularly every day had led him to construct an emergency water-closet off his dining-room. His desire for warmth, or, rather, his fear of cold, had inspired him with the architectural idea of raising to the level of the first floor of his villa a large veranda covered in with glass, so as to shut off from direct light all the windows and rooms which opened upon it. The result was to transform a handsome villa into an uncomfortable and ugly habitation. This same patient, when he was still on active service, travelled to England in the service of the Italian Government. He invariably made use of express trains, not only that he might sooner accomplish his mission, but also to lessen the time spent in tunnels. It is clear that neurasthenia had given rise to a number of simultaneous obsessions of a permanent character.

M. L., thirty years of age, unmarried, a music teacher, suffered from neurasthenia and *syphilophobia*. The latter was present only for some months at the height of a neurasthenic attack, but was exceptionally intense in character. On one occasion, when in Paris, in spite of his special fear, impelled by an irrepressible impulse, he visited a *cocotte* of high rank. With her he had fastidious and scarcely more than telepathic contact. Indeed, his syphilophobia blazed up like a great fire, not so much owing to the recollection of the carnal contact as at the thought of having touched with his bare hand the shining handle of a door which had a short while ago been opened by the hospitable mistress of the house! It was useless to point out to him the baselessness of his suspicions and the objections that might be urged against them, such as that several months had elapsed and no initial signs of syphilis had appeared; that, *a fortiori*, symptoms of secondary syphilis were absent; that it had not been proved, and was unlikely, that the other person involved was syphilitic; and that, even if she was syphilitic, there was no reason for believing that the virus had been deposited on the door-handle, or that it could pass from there to the perfectly intact hand of the patient. The patient was so overcome by fear, so anxious and inattentive, that the strongest arguments made no real impression on his mind. He would grasp at a single word or sentence, burdening it with all the weight of his preconceptions, but he could not bring his mind to attend to all the argument, his fear being greater than his power of attention. Nevertheless, he did not labour under a delusion; his obsession never exceeded the degree of a doubt, though it was a tormenting and cruel doubt. He entered an asylum, and recovered, and now laughs at neurasthenics who suffer from obsessions; indeed, he does not believe in either psychasthenia or neurasthenia, and says that it is possible to be cured of them by an effort of the will, which, however, we do not in the least believe, in spite of the weight of his opinion.

Dysmorphophobia.—This condition was first described by Morselli, who gave it its name; it is the teratological chapter of pathophobia, since it consists in the dread of being, or becoming, deformed. Here also the *phobia* is not concerned with any actual monstrosity, but with a localized and specific anomaly which, even if actually present, would constitute only a very slight departure from æsthetic canons.

A girl of seventeen, good-looking, but anæmic, was afraid that some unforeseen redness or pathological discoloration might destroy the elegance of her very shapely nose. A hundred times in the day she would consult the glass, and anxiously seek for reassurances from her sisters; then she would laugh and cry at her own fears. At night, when the lights were put out, the dysmorphophobia would return to knock at the door of her drowsy consciousness, and keep her awake. She would be obliged to light the lamp, run hurriedly to the looking-glass, and then return to bed, with the danger of suffering from a second attack of this nocturnal fear. Sleep was, however, less disturbed by these energetic and hurried movements than by the internal struggle with a fear that would not listen to reason. Careful attention to her general health resulted in improvement, but not in complete cure.

Fear of Responsibility.—Under this title, for which there is no convenient Greek equivalent, it is possible to group together various cases of obsession in which the timidity that affects the patient is transferred from organic life and functional capacity to public life and social capacity. Concern is shown, not in regard to serious and grave responsibilities, which reveal a high sense of duty, but in regard to trivial matters of detail, by which the patient, with more selfishness than honesty, fears he may be compromised.

N. N., a graduate in natural science, thirty-eight years of age, married, but with no children, was seized by the fear of responsibility every time that he sat down to write. To write a card or receipt, a letter to friends, or even an address, was to him a perilous undertaking, because he might involuntarily make some mistake in a date or word which would damage his reputation. He was specially afraid of numbers representing prices and values; he would go over a sum ten times, and when he had at last despatched some letter, he suffered anguish at the thought that he could not again see it for revision. Having been removed by surprise to an asylum (against my advice), he protested, and begged for his liberty, and wished his family to be informed, but rather than take the risk of writing he waited on in silence. His scruples disappeared before experimental work in the laboratory, to which he gave himself up for professional reasons, and he taught and worked like any other physicist. The psychasthenic tendency manifested itself, however, in another form—that of conjugal jealousy. Through his fear of figures and documents, the patient condemned himself to inactivity, and neglected the administration of his estate; while his fear of his wife's unfaithfulness subjected him to a domestic tyranny, and rendered his wife's life as well as his own most unhappy. This condition of fear was associated with occipital headache, constipation, and humming in the ears.

Ereutophobia.—Fear of blushing in the presence of others constantly arises in adolescence, during which period it is a common manifestation; but it is temporary, and associated with the feeling of modesty. As development proceeds, this feeling becomes a quiet and automatic habit; adults never blush, or only very rarely, and they have therefore no reason to be apprehensive

of it. Neurasthenia may, however, cause the continuance or revival of the apprehension of the adolescent with the characters of a true phobia. The patients dread making an exhibition of their infirmity; they are afraid lest they betray by their blushes hidden feelings by which they are sometimes assailed, but which, being irrepressible obsessions, they cannot prevent arising, and thus they are constantly on the point of blushing. Often, indeed, they do blush, because blushing is the involuntary outward expression of shame, and as such it follows obsessive shame as it follows physiological shame.

Like most other obsessions, ereutophobia is a timidity related to a functional incapacity, which consists in being unable to control blushing. A similar condition occurs momentarily even in normal persons, who with a slight effort almost always succeed in diverting the current of thought from the imagination that induces the feeling of shame, and thus preserve an unaltered countenance. They succeed because they have no great fear of failure. In neurasthenics the fear is continuous, strong, and increasing, because it is fed by each fresh failure; internal efforts, superstitious appeals, and stratagems to stop or to conceal the blushing, are proportionate to the fear, but not always unsuccessful. Some patients avoid company, will not go near persons of inferior rank or young people of the opposite sex, and do not dare to fix their gaze upon a group of school-girls or of soldiers, because of their well-founded fear of cutting a ridiculous figure; they tremble at the approach of an ereutogenic thought or word. Others consult physicians and surgeons, declaring themselves ready to undergo dangerous forms of treatment or disfiguring operations. To such patients the iron mask of romantic memory would not be a torture, but a liberation, and there are some who seriously think of adopting some sort of similar contrivance.

A young man, aged twenty-two, a graduate in law, very intelligent, cultured, and rich, made a pilgrimage to almost all the alienists in the city, to which he was on a visit of pleasure. During his conversation with me he never once blushed, not even at the most trying part of his narration. This, however, was natural enough, for, as he was opening his mind freely to a doctor in whom he had confidence, he was not afraid of being misunderstood, or of appearing embarrassed or ridiculous. He spoke easily, correctly, and elegantly, and his manner was free from constraint. This was not the case of a youth suffering from his first experience of amorous feeling; the patient was a man accustomed to society, and much in request at meetings, where he often succeeded, either in controlling by force of will the blush that tended to rise to his cheeks, or in concealing it by ingenious artifices. He suffers, however, not only from *ereutophobia*, but also from *misophobia*; he also has a mandibular tic. Apart from these obsessions, he has no symptom of neurasthenia; no one knows of his phobias, excepting a few of his most intimate friends.

Obsession of How? and Why?—This obsession, the so-called metaphysical delusion, or *Grübelnsucht*, is the generic expression of psychical incoercibility; it consists simply in *feeling oneself think*, in studying oneself whilst thinking, in dividing oneself into an I who thinks and an I who observes. It is therefore an extreme, pedantic, uncontrollable, and hence fruitless, form of introspection. Indeed, this minute and artificial introspection is worse than fruitless, for it becomes an actual obstacle to thought. In the course of a sustained conversation the obsessive introspection is absent from consciousness only for an instant; it quickly returns and develops independently, now parallel with the legitimate thought, like its shadow, disturbing it and depriving it of spontaneity, now installed in its place, interrupting it and completely destroying its connection.

S. C., a young music-master, well educated, subject to occipital and frontal headaches, often sleepless, costive, easily tired, subject to nocturnal pollutions, intolerant of light, noises, crowds, of his own family and of himself, was in a state of continual enforced introspection. This introspection was not systematic, deliberate, and coherent, and therefore it did not lead to any psychological result; it referred to words and their etymology rather than to ideas, and in the course of conversations it analysed only single terms. The patient compared himself to an employé in a library who has incessantly to arrange books which are always in disorder, and who, therefore, never has time either to read them or to rest. Indeed, the obsession of *How?* and *Why?* allows him no respite. While he was giving a music lesson, the patient analysed the sounds made by his pupil, the impressions they made upon him, and the indirect comments excited by his introspection; and thus he was able to listen only with great difficulty, his efforts resulted in nothing, and he suffered acutely. Residence in a sanatorium and the adoption of various hygienic measures failed to effect any improvement in his mental condition. For a period the psychical incoercibility was systematized upon a favourite theme. One of these themes was suicide, in the form, however, of only a simple imperative representation, without impulse, and without desire to commit the act. The patient suffered from the obsession of a funereal picture in which his own figure appeared: he saw himself in the act of preparing the poison or the cord, then on his death-bed, then dead in his coffin, and at the cemetery, but he had no intention of killing himself, as he himself positively declared.

Obsessive Ideas of Action.—As a rule, the imperative ideas are of a frivolous and indifferent character; they become troublesome only on account of the persistence with which they are repeated. In some instances, however, they are repugnant also on account of their nature. I knew a married woman whose father suffered from a cutaneous disease. She had heard that this disease might possibly be syphilis, and owing to this report, it entered her mind that her father had had an unclean disease, and she came to have an involuntary physical aversion to him—

a true obsessive repugnance, which prevented her eating in his presence (although she preserved her esteem and filial affection for him), even after the doctors—whether from conviction of the fact or from expediency I do not know—had declared that their patient had never had syphilis. Equally distressing, on account of their nature, are the obsessions that relate to a supposed functional incapacity, and especially the obsession of *sexual impotence*. It is, indeed, well known that the preconception of such impotence almost always resolves itself into a sad reality, disturbing that unconcernedness and simplicity of mind that are indispensable for the normal exercise of the sexual functions.

Those obsessions which involve a course of action are, however, not only repugnant and distressing, but actually dramatic. Although this course of action appears in consciousness only as a simple representation, or as a theoretical possibility, it quickly excites the *phobia* of not being able to resist the suggestion contained in the abstract idea of the act. Moreover, if the obsession concerns futile or supplicative actions, the patient would find himself compelled, in the event of his committing them, to make his infirmity public, and so to make them emerge from the sphere of subjective phenomena. But in some cases the act that is represented in obsessive form in the mind of the neurasthenic is a crime or an obscenity of the most horrible nature.

It is important to understand that such obsessions concerning a course of conduct, besides being very rare, are almost never acted upon. They assume an obsessive character just for the reason that they are repugnant to the moral feeling, taste, or good sense of the patient. This repugnance causes all the healthy forces of the patient to be leagued against them, and to be victorious. If the person were driven to commit the foolish, criminal, or obscene action by puerility of character, criminal passions, or sexual perversion, the representation of the act to be accomplished would not be morbid, but natural, and it could not acquire the representational incoercibility that arises from its opposition to the whole personality of the patient. There can be no defeat where there is no battle, and there is no imperative idea, in the pathological sense of the term, apart from a strong and special opposition. The opposition between the imperative idea and the personality of the patient is manifested not only against the content of the idea, but also against its presence. To the moral, æsthetic, and logical disapproval of the obsessive imagination there is added the psychological intolerance of its occurrence. A normal person can represent to himself a foolish act, a crime, or an obscenity, just like anything else; a fool or a criminal can think about them with complacency;

but only a neurasthenic in a state of obsession feels disgust or terror when invaded by them.

An old doctor, who lived on his income and did not practise his profession, confided to me that he had for over thirty years been the victim of obscene imaginations, which assailed him especially in church and in company, and of an impulse to utter obscene words and stereotyped oaths. Notwithstanding the very prolonged persistence of these impulses, always of the same nature, the patient never translated them into action. Victorious as imaginations, his obsessions always remained defeated as impulses. The psychasthenia of this old gentleman was unknown to everybody, and passed for simple neurasthenia. There was a psychopathic heredity in the case.

Another doctor, a younger man, whose mother died insane, and whose case has already been mentioned on p. 229, suffered from very occasional, and fortunately brief, recurrent attacks of neurasthenia. In his last attack, the fear of becoming insane had added to it the still more horrible one of being compelled by a sudden mental aberration to strangle his own little girl, the dearest thing to him in the world. From the phobia arose the impulse, which was renewed several times a day, but which was never carried so far as to express itself in an actual attempt. This psychasthenic was able, even at the height of his attack, which lasted some months, to practise his profession and to live at home without doing harm to anyone. The wife of the patient was aware of his pathophobia, but she never knew that he suffered from impulses, including that terrible impulse which threatened the existence of their only child. Three years have passed, and the happiness of this little family—at least, in its external aspect—has never been broken.

It is not to be thought that crimes of obsessive origin present diagnostic difficulties from the medico-legal point of view. Before he obeys the criminal impulse, the patient is deeply grieved about it; he upbraids himself, and does his best to restrain himself. He is ready to suffer the most painful forms of treatment—isolation, preventive correction, etc. If, in spite of all efforts, he succumbs to the obsession (a very rare and almost impossible eventuality), he can show a hundred facts that testify to the morbid origin of the offence and prove its fatal determinism, excluding every possibility of criminal responsibility. As it is superfluous to prove, the ordinary inciting cause of a crime is absent. On the other hand, it is evident that there is a psychopathic cause which is capable of becoming a paradoxical incentive; the offence is committed because it has become an obsession, and it is an obsession because it is repugnant to the honest, gentle, and sensitive character of the alleged criminal.

Differential Diagnosis.

True neurasthenia would be easy to diagnose were it not that several diseases, including progressive paralysis and dementia præcox, are marked by the same symptoms during their

earliest phase. When a neurasthenic crisis is associated with tuberculosis, cancer, calculus, or chronic prostatitis, the presence of the fundamental disease cannot pass unobserved. In such cases the neurasthenic symptoms take a secondary place, being prominent phenomena only in the initial phase of the illness, because in the later phases the special phenomena of the fundamental disease become the most conspicuous.

The distinction is more difficult, and sometimes impossible, in cases of tabes, progressive paralysis, and dementia præcox, and often it is necessary to postpone making a definite diagnosis until the first certain signs of these diseases have made their appearance. In cases of general paralysis the neurasthenia is of rather an apathetic character; it is often contradictory and illogical. In some instances the hypochondriacal ideas that occur are gross, almost amounting to delusions. There is a certain disproportion between the importance of the disorders of which the patient complains and the emotional reaction, as manifested in the facial expression, behaviour, and speech. There is almost always apparent a degree of mental enfeeblement that cannot escape the notice either of the alienist or of the intimate friends of the patient, if they are acute observers. I remember a paralytic at the beginning of his disease who felt depressed and tired, had rigid pupils, and appeared neurasthenic. One evening at a ball, not being able to find the water-closet, he micturated secretly in a glass, and committed other unconventional acts with calm and clearly paralytic simplicity. Neurasthenics, on the contrary, are intelligent, keen observers, and excellent narrators. The mental enfeeblement of paralytics is not, however, always discernible, and therefore the differential diagnosis is made virtually only *a posteriori*.

G. C., aged thirty-five, father of a family, who had suffered from syphilis at seventeen, had an attack of periostitis of the jaw. An abscess formed in the wall of the buccal cavity, and there was very great external tumefaction. The abscess having been incised and the periostitis cured, the patient lamented that he had become gross, deformed, grotesque, and very tall. His *dysmorphophobia* was not, however, a doubt, but a conviction, and this conviction was extended from his own person to all living things. Men were enormous; they almost touched the ceiling, and their clothes increased in size proportionately. His wife (beautiful and young) was an object of his commiseration, so much was she changed in his eyes; the lower animals had suffered a similar metamorphosis. Plants and inanimate objects, however, preserved their natural appearance. With this dysmorphophobia there were associated phenomena of mental enfeeblement (passivity, indifference, forgetfulness, childishness of behaviour, etc.) and the somatic signs of progressive paralysis, such as rigidity of the pupils, anisocoria, and an apoplectiform attack.

Dementia præcox almost always begins, especially in the young, with hypochondriacal ideas that are usually ascribed to neurasthenia. Often, however, the patient seems to exaggerate his paræsthesias and pains; sometimes it is difficult to understand whether the patient is joking or speaking seriously; in other instances the sensations complained of are so odd that they do not correspond to the rather simple and precise picture of neurasthenia. The behaviour in a case of dementia præcox is hilarious, petulant, or indifferent, or voluble; in fact, it does not at all correspond to the state of mind of a simple neurasthenic. If there are obsessions, they present themselves in groups, or they follow each other quickly in kaleidoscopic fashion. In describing them to the doctor the patient is not lucid, moderate, and precise, like the neurasthenic, but confused, bombastic, hesitating, and often contradictory in his statements. It would almost seem that these patients have *arrière-pensées*; but they express themselves badly, either because their sensations are not distinct, or because their confessions are not sincere.

A young doctor, who graduated with honours, of robust and well-made figure and bright disposition, was in the earliest stage of dementia præcox. This diagnosis was established by a bad psychopathic heredity and the fatuity that had already begun to manifest itself in his conduct. The patient ceased to trouble himself about medicine; he fancied he could learn without either studying or observing, by mere speculation; at the same time, he obeyed my injunctions literally, without the least criticism and with indifference, even to delivering himself up to the superintendent of a sanatorium, though he did not believe himself to be ill. The inconsistency between what this patient did and what he thought became still more inexplicable (excepting on the view that he was suffering from dementia præcox), when he suddenly left the sanatorium and entered an ordinary asylum on his own initiative, without having consulted me.

Now, this patient was affected by dysmorphophobia, but his fear, instead of being dismissed from consciousness as absurd, immediately acquired the character of a conviction. He was sure he was deformed, and the object of the antipathy of passers-by, and the horror of those who knew him. He had, in fact, scarcely been placed upon the list of neurasthenics when he was transferred to that of the paranoids. The case was evidently one in which a psychastheniform crisis with ambiguous characters accompanied the onset of dementia præcox.

The association of obsessive neurasthenia with paranoia is a much more rare occurrence. As paranoia is an anomaly of the mind that does not imply any confusion, it is compatible with neurasthenia, and permits the patient to appreciate that his obsessions are morbid; but the paranoiacal constitution favours the transformation of the obsessions into doubts, and sometimes into psychopathic reactions, which a normal mind would be more easily able to restrain.

A gentleman, fifty years of age, corpulent, subject to cyclical albuminuria, of uræmic constitution, very rich, father of a family of normal children, a good business man, intelligent and amiable, was afflicted by an idea of a nature intermediate between an obsession and a scruple. He believed that the will of his paternal grandfather, to which he owed his considerable fortune, and of which his father, still living, was in possession, might become void owing to illegality of form. The name of the testator, a Tunisian Jew, instead of being written in the Arabic language, was translated into Italian. Now, neither the triviality of this material error—if, indeed, it was an error—nor the number of years that had elapsed (they exceeded the period of prescription), nor the effective and undisturbed enjoyment of the inherited wealth, nor the lack of other legitimate heirs, nor the assurances of a hundred lawyers, were able to remove this obsession from the mind of the patient. Months and years would pass without his speaking of the matter, but at each recrudescence of neurasthenia the obsession—or, rather, the doubt—would arise to torment him. This gentleman, owing to his uncertainty as to whether his doubt was well founded or morbid, hovered between paranoia, which declared it to be true, and neurasthenia, which encouraged him to believe that it was false, and, indeed, absurd. This uncertainty drove him to exasperation. There must in this case have been a paranoiacal constitution, or the doubt could not, even for an instant, have appeared well founded; but it was also evident that upon this latent paranoia there flourished a state of neurasthenia. Indeed, the patient suffered from headache, sleeplessness, restlessness, diffidence, pathophobia, and obsessions prompting him to suicide. He desired to be treated; he confided completely in his doctor; he questioned him about every trifle; and he obeyed in certain particulars like a child. If he was a genuine paranoiac, he could not be regarded as insane. When placed in a sanatorium, he was violent, owing to fear that he would lose his reason; he was rebellious, and then asked pardon. He was always lucid, even at the height of an attack of neurasthenia.

One day, under the influence of his obsession, eluding the vigilance of the members of his family, he poisoned himself, and died in the water-closet of his country house, burning 800,000 lire in paper, which he had purposely selected as the irrecoverable titles of his fortune. This unforeseen and wasteful suicide was attributed to insanity. The determining cause must, however, be regarded as extremely mysterious. Was it obedience to a neurasthenic obsession recognized as such? or was it inability to endure a paranoiacal fear mistaken for a real danger? Perhaps the patient thought that, by destroying as much as he could of the movable wealth, he would save the family from ruinous litigation; or, on the contrary, was he, whilst aware that he was making an absurd and useless holocaust, the conscious victim of an imperative representation, even to its ultimate consequences?

Etiology and Pathogenesis.

The causes of neurasthenia are physical exhaustion, depressing emotions, and in some cases traumatism, but in addition to these occasional causes there is a more constant factor—namely, similar heredity. In this respect also neurasthenia resembles hysteria; occasional causes merely awaken a latent predisposi-

tion. Therefore the occurrence of neurasthenia as a definite attack, whether single or recurrent, does not suffice to exclude the constitutional nature of the disease, even when it is recovered from rapidly, without leaving any visible residuum.

With regard to its pathogenesis, the interpretations advanced by clinicians, notwithstanding their great variety, only reflect the physiological theories of fatigue, with their various modifications. Fatigue, like neurasthenia, is certainly felt by the cells of the nervous centres, but what is its origin? All are naturally agreed in attributing it to the excessive exercise of the organic functions, and to the increased accumulation of katabolic products that are formed as the result of expenditure of functional energy. The difference of opinion begins when it is endeavoured to fix the place of origin of the regressive products that enter the blood-stream and poison the brain. It is supposed, *a priori*, that those functions which, through discontinuity and inequality of distribution or of intensity of their activities, are subject to great oscillations in their metabolism are specially capable of contributing to the production of fatigue. These are especially the muscular and nervous functions. Experience and physiology teach, however, that metabolism attains its maximum in the muscles and its minimum in the brain (pp. 43-49).

We must therefore regard as inadequate those theories that pretend to explain the intoxication and exhaustion of the brain as immediately dependent upon chemical changes occurring in its tissues, either from insufficient elimination of regressive products or insufficient assimilation of anabolic substances. Such are the theories of Beard, Kaan, and Féré, and in part also of De Fleury, all of which are inspired by the conviction that neurasthenia is a consequence of psychical stress, and that the overwork and also the ordinary work of the cerebral cortex are of great importance in the chemical economy of the organism.

The great majority of clinicians are now inclined to regard neurasthenia as the expression of a distant reaction. The brain (in some instances only the spinal cord) is irritated by toxic products poured into the blood-stream, which are formed as a consequence of general morbid alterations. These products of metabolism exercise an action very similar to that which is produced physiologically when muscular katabolism reaches a high degree. In this way an illusory sensation of fatigue is determined, and often also a true asthenia. Hayem thinks that neurasthenia depends upon alterations of the digestive processes, which result in the formation of products that are unsuitable and insufficient for nutrition, and so cause physiological repair to

be less than the consumption. According to Bouchard, dilatation of the stomach, stasis, and hypochlorhydria provoke putrid fermentations, or a sort of chronic indigestion. Many cases of neurasthenia are undoubtedly to be explained in this way, but not all of them. According to Glénard, neurasthenics are always the subjects of a complicated condition of enteroptosis, with gastric atony and a certain disturbance of hepatic metabolism, which is dependent upon these anatomical derangements, and which constitutes the toxic cause of the disease. This theory is hypothetical, inconclusive, and badly constructed, and it is probably never true, even in exceptional cases.

Much more probable, and capable of including a much larger number of cases, though perhaps not all of them, are the theories according to which the source of the toxic agent is not a single functional apparatus, but the entire organism. Thus Axenfeld, Huchard, Lemoine, and Bordaries liken neurasthenia to arthritism. They regard it as a perversion of general metabolism, characterized specially by constitutional insufficiency of the processes of oxidation.

According to Biernacki, arthritism, diabetes, gout, and obesity are clinical expressions of a perversion of this nature, and neurasthenia represents the nervous variety of the same nosological group. The *neurasthenic diathesis* is closely allied to the *arteriosclerotic diathesis* (Régis), and both are allied, either as collateral anomalies, or as causes, or as effects, to the group of diseases indicated by Biernacki. It is necessary, however, to take specially into account, besides aberrations of general metabolism, those intoxications that result exclusively from muscular and chemical inertia of the intestine (Bechterew).

A slight anomaly of general metabolism and defective elimination of regressive products, whether normal or abnormal, are insufficient to produce either fever, lethargy, or delirium; but, like fatigue and physiological drowsiness, they are sufficient to determine the subjective effects of exhaustion, such as tiredness, paræsthesias, and imperative ideas. This result is not dependent upon the constitutional or accidental defect of metabolism alone; it is contributed to also by the intolerance (always constitutional) of the nerve cell to physiological poisons in general and to certain of these poisons in particular. If the intolerance is very great and general, there is chronic neurasthenia, because the system is never entirely free from regressive products; if the intolerance is very slight and specific, the neurasthenia occurs only as isolated attacks. This intensification of the nervous sensibility is, at any rate, constitutional, and subject to the law of similar heredity. General metabolism exercises only a complementary

influence in the pathogenesis of neurasthenia. The autochthonous metabolism of the nervous centres can contribute to the toxic action only to an insignificant extent.

Treatment.

If the case is one in which the neurasthenia is determined by an absolute and widespread intolerance of some physiological poison, treatment can have as its object only the regulation, in the most perfect manner possible, of the general metabolism, in order to diminish the risks of chemical disequilibrium, and hence the sufferings of the patient. A remote object might also be to improve the condition of the nerve cells by gradually changing the type of their functional reactivities, and causing it to keep within normal limits; but the methods for the achievement of this difficult task are still empirical. If, on the contrary, the neurasthenic constitution is only slightly marked, and there is reason to believe that it manifests itself only in the presence of certain poisons, it will be necessary to search carefully for the source of the intoxication or exhaustion that plays the part of complementary cause. Having removed this proximal cause, one can reasonably hope to have silenced, if not to have eradicated, the fundamental cause.

According to the literature of the subject, the methods of treatment most used (and of little utility) are those that aim at repairing a hypothetical nervous weakness by means of alimentary *gavage*, absolute rest, or remedies supposed to have reconstitutive virtues. *Gavage* is applied according to minute directions, which have been followed also in the treatment of hysteria; it is efficacious in some cases, but is not generally applicable (see Chapter XIX.). Complete rest is not of any utility, and as it compels the patient to be idle, it favours the development of hypochondriacal ideas, obsessions, and mental depression. As for tonic remedies, many of them (and especially the compounds of phosphorus) are not deserving of the mystic faith that is reposed in them, in large part due to the preconceptions of a superseded physiology.

The treatment that is best suited for the great majority of neurasthenics is rather hygienic than curative, consisting in moderate alimentation (Vigouroux) of a mixed kind, and subdivided into four daily meals, a progressive course of physical exercises, indoor gymnastics, massage, hydrotherapy, residence among the mountains, avoidance of alcoholic excesses and of sexual indulgence. If there is hyperchlorhydria, it is easily overcome by attention to diet and by the use of alkaline waters. During the periods of extreme neurasthenic depression and of low arterial tension

recourse should be had to strychnine. In many instances the feeling of general well-being returns on the re-establishment of the normal vascular tone, which may be procured, temporarily at least, by very simple means, such as residence among high mountains at an altitude above 3,000 feet, a simple change of air, a hot bath of brief duration, a cool or tepid bath, a brief period of rest away from bright light and noise, or by the taking of a little food, a cup of not too strong tea, a glass of sweetened water, or a drink of pure water, which may serve to interrupt a long afternoon fast and to re-establish the normal blood-pressure.

These measures are efficacious if they are applied methodically and perseveringly. They should be supplemented by psychical treatment. Neurasthenics are apt to pester their doctor with inquiries—to ask him innumerable subtle but rational questions regarding their illness, such as are not mentioned in the text-books. In order to reply to such questions, intelligence, calmness of mind, and clearness of statement are necessary. The doctor who is endowed with these qualities is in a position to satisfy the keen curiosity of the patients, and to alleviate their discouragement. In this way he acquires a certain power over them, without which it would be impossible to induce them to submit to a hygienic discipline.

Psychical therapy is a necessary coefficient of this hygienic discipline, because it renders its precepts rational and co-ordinate, and thus imperative. To the verbal suggestions of the doctor there are added the silent suggestions of the environment. The mountain, with its grand solitude, draws the mind away from the contemplation of individual miseries, simplifies the mode of living, and corrects the way of thinking. In some instances psychical therapy clears the mind of imperative ideas better than travel and noisy diversions.

In psychical therapy there must be included a certain amount of mental exercise, which ought to be associated with physical exercise. The programme of mental and physical activity should be graduated in such a way as to produce diversion, and not satiation, fatigue, or preoccupation. It is necessary to divert the thoughts of the neurasthenic from himself, and to fix them upon general, important, and objective questions. Hysteria may be cured by systematically neglecting it; neurasthenia may be cured by inducing the patients to neglect themselves, to overcome their scruples, their special fears, and the suggestions of their egoism. The carrying out of such a plan requires, however, time, ability, and competence. Alas if the doctor, as sometimes happens, knows less about it than the patient!

CHAPTER XIX

HYSTERIA

HYSTERIA is a constitutional, and generally hereditary, disposition of the nervous centres to react anomalously under the influence of stimuli which in normal persons escape notice or are insignificant. These anomalous reactions by which hysteria manifests itself from adolescence onwards, and sometimes from childhood, in all the spheres of innervation, may be positive or negative, permanent or transient, frequent or rare, partial or general, trivial or important, in different cases and at different times, but they are not without limits and laws. Among the stimuli that are capable of provoking them, the most important are the emotions, which are powerful and uncertain in their effects even in healthy and well-constituted persons. In its relation to physiological laws hysteria is thus an illegality, not anarchy. It is less a disease than an anomaly of the nervous equilibrium, to which there may perhaps correspond an anomaly (not very marked) of the chemical equilibrium. For this reason hysteria is neither the cause nor the effect of anatomical changes. It never leads to dementia, and its manifestations, even though localized and prolonged, are never irreparable.

It is maintained by some that all the symptoms of hysteria are psychical in origin—that is to say, that they are due to a highly delicate mental suggestibility. It is certainly the case that there is not one of the phenomena of hysteria that cannot be reproduced to perfection by means of hypnotism. Before they become *reactions*, these morbid phenomena are present as mental images—it may be only momentarily. Issuing from the focus of consciousness, they acquire, on account of a special irritability of the reactive centres, the value of impulses. It may be that the image retrocedes by centrifugal paths to the lower centres of unconscious innervation through a physio-pathological process analogous to that of hallucination. But are these morbid phenomena always mental images converted into action? It is said that the subjects of hysteria tend to perform involuntarily

all that they think, and this is true ; but they also perform actions that they are not thinking of, that they cannot remember having ever thought of, and which, as a matter of fact, they never have thought of. Their power of performing such actions (or of omitting to perform them) invades the sphere of unconscious innervation. This is not the case with hypnotized subjects, who always obey a suggestion—whether explicit or silent, present or forgotten, does not signify. There is in the nervous centres of those who suffer from hysteria a constitutional capability of exhibiting their activities in independent, inverted, exaggerated, or incongruous ways, with associations and dissociations of which normal individuals are incapable. Hypnotic subjects could not react in the same manner except to a formal suggestion. This *functional plasticity*, which extends to all the processes of innervation, has a wider range and significance than can be assigned to simple suggestibility. The suggestibility of hysterical subjects is, therefore, an aspect or part (and a large part) of a more general fact—namely, the facility with which the nervous centres act to a certain extent out of accord with the ordinary rules, inhibitions, and proportions. Hysteria and suggestibility are not, however, the same thing, and it is a pure hypothesis that behind every hysterical phenomenon there must be the inspiration of some suggestion.

With the above reservation, it may be granted that suggestion, auto-suggestion, imperative imitation, fear or some other emotion, physical illness, a slight disturbance of general sensibility, and even a traumatism, acting upon hysterical subjects or those predisposed to hysteria, may provoke either exacerbation or the appearance *ex novo* and in adult age of an hysteria which till then had been latent. *Delayed hysteria*, the so-called *traumatic neurosis*, or *railway spine*, is simply hysteria. The injury which is the occasion of it, though not the cause, is nearly always slight, and sometimes imaginary. In other words, it does not become operative unless first transformed into a psychical injury, into an auto-suggestion. It is, in fact, the case that between the occurrence of the injury and the appearance of the hysteria there is always a period of preparation, which Charcot termed the *period of meditation*.

If auto-suggestion or suggestion by others co-operates in the production of hysterical phenomena as an exciting cause, it does not follow that the symptomatology of hysteria is either entirely or partly a simple effect of caprice or simulation, as was believed before Charcot wrote about the subject. Sometimes in hysterical subjects the will is quite capable of suppressing an hysterical attack, or some symptom of it, but it is not always able to originate

the same in its entirety. In order to acquire hysterogenetic power, it is necessary for the nervous system to reduce itself against the will, at least to the unintelligent mono-ideism of auto-suggestion. This almost subconscious mental state is more potent than the will, because it modifies processes and functions over which the will has no power.

Hysteria, as also that species of artificial hysteria which is termed hypnotism, extends, much more than true insanity, into the confines of the nervous system. Wherever the influence, conscious or unconscious, of the nervous system penetrates, there hysteria may manifest itself. Indeed, the most characteristic of its symptoms are developed in the lower forms of nervous activity, such as those concerned in muscular tone, vaso-motor functions, and trophic conditions. While, therefore, the source of the stimuli can be localized in the psychical centres, and in some cases definitely assumes the character of a conscious representation and almost of a volition, the effects of the morbid reaction only very rarely have a psychical character, and are not related to the state of mind, or to the moral character of the subjects, or to hysterogenetic suggestion, except by a morbid and sometimes suddenly formed connection. In short, hysteria is an anomaly which normal persons could not simulate, even if they tried. If they were able to do so, it would not be for long. On the other hand, hysterical subjects are widely different from the subjects of true mental disease. Though their abnormal nervous activities are of psychical origin, though suggestion is to a certain extent the key to all the enigmas of hysteria, and though the condition has with good reason been defined as a psychosis, it is a fact that these neuropaths are lucid and intelligent persons, to a very slight extent liable to grave disorders of mind. Their moral character, also, is often very far from being marked by that fatuity and by those perversions that tradition has ascribed to it.

Symptoms.

Among the symptoms of hysteria, it is necessary to distinguish the paroxysms from the interparoxysmal states. The paroxysms include not only the major and minor attacks, but also the more or less prolonged episodes of paralysis, contracture, and acute disturbance in the spheres of vaso-motor, trophic, and visceral innervation. The interparoxysmal states are characterized by somatic and psychical stigmata—that is to say, by permanent anomalies of general and specific sensibility, muscular tone, emotional activity, and bodily metabolism.

Major Hysterical Attack.—This is the symptom pathognomonic of the so-called hystero-epilepsy, but, as taught by Charcot, it

has nothing to do with epilepsy. Hysteria and epilepsy may coexist in the same patient, and it is possible for an hysterical patient to become epileptic; but the attacks of hysteria are always distinct from those of epilepsy, and there is no crisis or symptom in which the two diseases mingle or are confused.

The emotional origin of the symptoms of the hysterical attack is always very clear. The sound of bells or of a barrel-organ, the arrival of the doctor, the sudden illumination of dark surroundings, a storm, the banging of a door, bad news, an insult, a threat, the occurrence of menstruation, etc., are sufficient to cause a convulsive crisis or some equivalent of it.

These crises are preceded by a state of *aura*, which has characteristic and constant forms in each subject. It is not instantaneous, like the epileptic aura, and in some cases may occur alone, without being followed by any attack. The patients have "the nerves"; they are distressed, worried, impatient, and irritated; they cry for nothing, give way to unrestrained mirth, suffer from distressing dreams, or busy themselves in a purposeless manner. Such symptoms constitute the *psychical aura*. The *sensory aura* consists especially in accentuation of all the hyperæsthetic and hysterogenetic areas, which become painful and the seat of neuralgias and spasms. The *clavus hystericus*, or intense headache in the vertex of the head, the *globus hystericus*, pain in the ovaries, and sudden flushings, are frequently warnings of an attack. A special form of *sensorial aura* is one that consists in *hallucinations*.

After the aura, all will-power being lost, and in some cases also every trace of consciousness, the patient passes into the attack properly so called. Charcot and his pupils divide the attack into four periods. The first is the *epileptoid period*, with tonico-clonic convulsions, and a final stage of resolution, accompanied by stertorous breathing. During this phase the neck is swollen, and the pupils, after having contracted, become rigid (Féré). There is next a period of clownism, in which the patients assume clownish attitudes, and throw themselves into demoniacal, sudden, varied, and violent contortions in defiance of all the laws of propriety and modesty, and sometimes even of gravity. Among these attitudes there are to be noted the *arc de cercle*, in which the body of the patient rises from the bed like a bridge, while the head and the heels are approximated and form the only points of support; the *claw-like* condition of the hand, in which it is strongly flexed, with the last two fingers closed, and the thumb and first and second fingers extended, rigid, and separated; movements of ceremonious salutation; to-and-fro movements of the pelvis, in imitation of those of coitus; and all the theatrical

flexibility of the possessed. The third period is that of *emotional attitudes*. These may express mysticism, eroticism, beatitude, misery, etc., and may be associated with hallucinations and dreams which recall the somnambulistic states of hypnotized subjects. The patients remain immobile, and appear to be lost in prayer or adoration, enraptured by some ecstasy of love, listening to some far-off voice, threatening with closed fists and angry looks, or closely examining the ground, which they think is swarming with insects (zoopsia). During this period hysterical subjects are able to speak, and sometimes they do so in prophetic tones. It was thus that the Pythoness and the Sibyl spoke to the crowds of pilgrims. The movements gradually cease, the plastic attitudes disappear, and consciousness returns. The patient is distressed, weeps, despairs, or is low-spirited, taciturn, and suspicious, or falls into a more or less protracted state of delirium, which ends the attack.

Bernheim holds that this regular succession of different phases is an artificial product, a scholastic suggestion of the Salpêtrière, and I think he is right. Innumerable patients suffering from hysteria meet together at the Salpêtrière, drawn thither by the name of a great master. They are minutely examined, are exhibited in public, and are liable to mutual imitation, and even directly to emulation. It is easy for them gradually to acquire an hysteria of manner. The grand convulsion is their graduation examination. By this I do not mean to say that the hysteria of the Salpêtrière, and in particular the hystero-epileptic convulsion, are simply the effects of an involuntary suggestion; but the suggestion to which the patients are exposed in the hospital completes, rearranges, and crystallizes the irregular manifestations of ordinary hysteria.

The school of Charcot, notwithstanding its merits, has given evidence of being guided by preconceptions also in its study of hypnotism. Though it has endeavoured to observe the strictest empiricism, it has elevated to the dignity of a rule and a law (but actually a preconception), and regarded as a specific cause, every chance combination of manœuvre (such as compression of the head, opening of the eyes, the application of magnets) followed by reactions, and these it has interpreted as specific effects (such as somnambulistic and cataleptic states, and the polarization of anæsthesias and paralyses in the opposite side of the body, and even in other persons). Such was the origin of the illusions of metallothrapy, of transfer by means of magnets and remedies acting at a distance; and in this way there was formed a code of hypnotism, according to which the varied manifestations of hypnotic sleep can be divided into three quite distinct stages, to each

of which a special determinism can be assigned. If hypnotism manifests itself in regular reactions in an orderly series, this result is due to education and individual habits, or to the influence of environment.

Changes in the Urine during the Paroxysms.—The major hysterical attack, and to a less degree all the paroxysmal disorders of hysteria, bring about a condition of *polyuria* (nervous urine) lasting for a few hours, with infrequent but very copious micturitions, the urine being colourless and odourless. As much as 700 c.c. (25 ounces) may be passed at a time. The quantity of urine passed in twenty-four hours is, however, about normal. While in healthy persons, and also in hysterical subjects apart from their attacks, the urine yields a considerable solid residuum, the amount of this residuum diminishes suddenly after an attack from the normal of from 40 to 52 grammes (per 1,000 c.c. of urine) to below 35 grammes. This diminution is largely at the expense of the urea. According to the researches of Cathelineau and Gilles de la Tourette, the urine, after a convulsive attack, exhibits another peculiarity even more characteristic—it is very deficient in phosphates. Phosphoric acid falls from quantities of 2 or $2\frac{1}{2}$ grammes in the twenty-four hours to less than 1 gramme. Further and more detailed analysis shows that this oligo-phosphaturia is almost entirely on the part of the alkaline phosphates, while the earthy phosphates are increased. In normal urine, phosphoric acid occurs combined with the alkalies (sodium and potassium) in an amount that is three times greater than that in which it occurs combined with the earthy bases (calcium and magnesium), but in the hysterical paroxysmal urine *the formula of the phosphates is altered*. The proportion of the earthy phosphates to the alkaline phosphates is no longer as 1 to 3, but becomes as 1 to 1. To this phenomenon a name has been applied that is not quite accurate. It is spoken of as *inversion* of the formula of the phosphates, but this term would be correct only if the relation 1 to 3 was turned into 3 to 1.

According to the same authorities, no similar change occurs during an epileptic convulsion—in fact, the opposite takes place. The hysterical seizure, even if it manifests itself in mild forms, always causes a more or less noticeable diminution of the alkaline phosphates, with an increase in the earthy, and the total quantity of phosphates is reduced by about one-third. This antagonism of the effects produced upon the urine by the hysterical convulsion and by the epileptic (which increases the elimination of phosphates and urea) is of value as a test in the differential diagnosis of the two diseases, and the two different results are independently of service in the direct diagnosis. Immediately

after the hysterical convulsion all the solid constituents of the urine are distinctly diminished—not only urea and phosphates, but also chlorides and sulphates. Urates and uric acid are also decreased in amount.

It has been shown that the paroxysmal urine in hysteria loses a very large part of its toxic properties (Bosc), and that 200 c.c. of it are required for each kilogramme of weight of the animal to produce fatal results by injection into the dog or rabbit. Mairct holds that this is due to scarcity of colouring matter, and that the convulsion plays the useful part of hastening the elimination of toxic substances.

Be this as it may, of all the facts known regarding the urine, the most important, the most conspicuous, and the most clearly established is that of polyuria. This is a temporary polyuria, due to spasm of the vessels, which occurs very readily even in those who are not the subjects of hysteria when they are under the influence of strong emotions or exposed to cold. The poverty of solid constituents is relative, and only the consequence of the polyuria, and the change in the proportion of the phosphates is one feature, not very easily explained, of this paucity. As regards the differences between hysterical and epileptic urine immediately after a convulsion, their significance is plain. The epileptic convulsion causes an unusual and very rapid consumption of muscular energy, which leads to an increase of the solid constituents of the urine. The hysterical convulsion, on the other hand, in spite of its seeming extraneousness, is a psychical crisis of slight importance, which leaves the general metabolism almost unaltered, and produces no internal result except that of excessive excretion of urine from vascular spasm.

Status Hystericus.—It has been observed by Charcot, Bourneville, Gilles de la Tourette, and Richer that there is an hysterical state analogous to the so-called status epilepticus. It is a condition in which convulsive seizures continue in series for a period of weeks or months, in some cases occurring a hundred times or more in the day. There are even patients who have seizures some thousands of times in the course of a few days, but naturally in such cases the attacks are rudimentary and very brief. These attacks in series show a close resemblance to epilepsy, but differ from it in that they are unaccompanied by fever, and are not dangerous to life, and also in respect of the fact that in the midst of the convulsions the hysteria declares itself in some emotional attitude or in a rapid return of consciousness. It is in these cases that the examination of the urine and of its phosphoric constituents is of most value, and this differential test may be applied not only in regard to cases of general epilepsy, but also

to those of Jacksonian epilepsy, which may be more easily confused with hysteria. Even in partial epilepsy the solid constituents of the urine excreted during twenty-four hours are distinctly increased (Cathelineau and Gilles de la Tourette).

Epidemics of hysteria are usually in the form of the *status hystericus*, or *état de mal*, on account of the fact that, occurring in limited and confined communities, the patients are exposed to a continuous interchange of suggestive, emotional, and imitative influences.

Minor Paroxysms.—The major attack may occur in incomplete or masked forms, or as hysterical equivalents. In these cases consciousness, which in the classical attacks is clouded, suffers no eclipse. These are the minor attacks, or the condition of *petit mal*.

A characteristic feature of hysteria minor is the occurrence of *tics*. Although these may also manifest themselves in persons who are almost normal, or who are neurasthenics or simply neuropathics, as the morbid vestiges of some habit contracted in youth, they are essentially hysterical phenomena whenever they have the forms that characterize the so-called *tic malady* (Gilles de la Tourette). In this condition the discharge is rhythmical and regular, is not painful, and is occasioned by an emotion; it is accompanied by other signs or stigmata of hysteria, which enable it to be distinguished from common tics, and, among others, often from *coprolalia*. The tics represent a complex system of defensive gestures, repellent expressions, or professional movements. Some patients are constantly prostrating themselves; others turn their heads to one side, and twist their mouths; others shrug their shoulders repeatedly and regularly, or they beat their breasts noisily as if reciting the *Confiteor*, or beat with their hands on the bed as if striking an anvil, or swim in the air, or move their legs as if pedalling while seated in a chair; others leap and dance (*chorea saltatoria*).

Each of these forms of tic may constitute a crisis of hysteria minor. Their circumscribed extent, and the fact that the patient is aware of their occurrence, do not render them any the less imperious or vigorous. Some patients, before they are attacked by one of these crises, are able to give warning to bystanders, so that they may guard themselves against injury. By a gradual increase of motor phenomena, the conditions of *rhythmic spasms* and *rhythmic chorea* are reached. The former term is applied to movements of a coarser and more extensive nature than those exhibited in the tics, though always partial. Rhythmic chorea is a generalized spasm which flits from one group of muscles to another, and which, as a rule, recurs only after pauses of equal

length. From rhythmic chorea, when it is very serious and accompanied by loss of consciousness, the transition to the major convulsion is very easy, for in such cases the choreic movements assume the appearance and character of the clonic convulsions or of the emotional attitudes of the latter, with which, indeed, they become identical. Rhythmic chorea is, however, distinctly different from common or Sydenham's chorea, which is in no way rhythmic. On the other hand, it is true that hysteria, which is of so protean a character, may manifest itself in a condition having the appearance of true chorea—that is to say, in an arrhythmic form. In such a case, however, the hysterical element becomes apparent in other stigmata, or in the emotional origin of the symptoms.

Other members of the same symptomatic group are the so-called *electrical chorea*, or *electrolepsia* (Bergeron), and *paramyoclonus multiplex*. Electrical chorea is only an infantile variety (Pitres) of rhythmic chorea, and it is only necessary to bear in mind the enormous difference that there is between it and Dubini's chorea, notwithstanding the partial coincidence of name. Dubini's chorea is a painful, fatal, very rare, and probably infective disease, and, further, like every other form of chorea, except the hysterical, it does not occur in isolated attacks, but in a continuous manner. As regards paramyoclonus multiplex, it is only one variety of myoclonus among others, and if, as rarely happens, it is systematic and rhythmical, it may acquire a significance equal to that of rhythmic chorea. According to Möbius and Strümpell, paramyoclonus multiplex is always a symptom of hysteria.

Morbid Episodes.—The morbid episodes of hysteria differ from the convulsions in being less violent and often chronic; they differ also from the stigmata in that, though they are chronic, they do not last throughout life. Their duration may vary from a few hours to several years, and frequently they do not amount to more than the exaggeration of a permanent stigma, or the manifestation of a diathesis, which in itself constitutes a stigma. Certain vaso-motor and trophic reactions belong to this group of symptoms, and also paralyses, contractures, paræsthesias, and anæsthesias. All these combine to form the most common and important clinical picture of hysteria, apart from the convulsive seizures, for it is natural that the permanent stigmata which are brought into notice only during medical examination should be in almost all cases ignored by the patients, and regarded by others as some peculiarity not of a morbid nature, or as a sign of very delicate sensibility, or even as a distinction.

Some of the vaso-motor disturbances are of a very remarkable nature. Hysterical patients are subject to *subcutaneous ecchy-*

moses, *œdematous swellings*, and *hæmorrhages*, which are related to a diathesis. This vaso-motor diathesis perhaps constitutes one of the foundations of hysteria, for to the congestive and asphyxial reactions that are visible must be added those that are invisible, to which, occurring within the viscera and the brain, may in all probability be attributed the cœnesthetic sufferings and emotional changes that afflict and characterize the lives of hysterical subjects. In other words, all the visceral riddles and psychological anomalies, which by their extraordinary rapidity, superficiality, and definiteness are a constant wonder to the laity, and which are not capable of being explained even by medical men who make a special study of hysteria, may perhaps have, as a mechanical substratum, these vaso-motor disturbances which suddenly appear in definite sites, and then vanish. The vivid impression of some slight, but painful or dreaded, injury may, for example, produce a localized *angio-spasm*, and this in some cases occurs so quickly and is so powerful as to prevent hæmorrhage. Pricking the skin of an hysterical or hypnotized subject with a pin may sometimes cause the formation of an areola of pallor having a diameter of 1 or 2 millimetres. *Dermography* is the opposite phenomenon—namely, a condition of angio-paralysis caused by a painless stimulus of the nature of slight tickling of the skin.

Reactions analogous to those of dermography may be obtained by the application of metals or pieces of paper, or by a magnet, by the touch of a finger, or even with nothing—that is to say, by simple *suggestion*. I was able to obtain it to command on the back of the hand in a female hysterical patient hypnotized in the Ospedale Mauriziano of Turin. I gradually trained the patient to produce subcutaneous ecchymoses, first by means of a coin, then a piece of paper of the same size, then the touch of a finger, and, lastly, a simple command; and I was able, in the presence of witnesses, to produce in a few moments genuine marks, which assumed roughly the shape of a cross. The so-called stigmata in the strict sense of the term, such as have occurred spontaneously in the shape of letters, or of a transfixed heart on the hands of saints during their ascetic raptures, are merely subcutaneous ecchymoses, of representational origin, which the vaso-motor diathesis renders possible in hysterical subjects. Just as the dread of appearing absurd, or the feeling of shame, causes a blush on the cheeks of normal persons, so any mental representation which is well defined and accompanied by a special emotion produces a momentary angio-paralysis in that part of the body which enters into the representation, if, owing to hysterical plasticity, the central representation has opened for it the abnormal outlet of the corresponding branches of the peripheral innervation.

Not only ecchymoses, but also various hæmorrhages, occur not infrequently, either by themselves or as vicarious phenomena of menstruation, in a by no means negligible number of hysterical patients. *Epistaxis*, *hæmoptysis*, *gastrorrhagia*, and even *enterorrhagia*, presenting all the appearances of very serious disease, may be only manifestations of hysteria. Gradenigo has published a case of *periodic hæmorrhage* from the ear in a female hysteric with an imperforate tympanic membrane. If, instead of external hæmorrhages, there occur simple internal congestions, or the opposite condition of localized asphyxia, it may readily be understood how many phenomena concerned with the secretory, trophic, and psychical functions which up to the present have had no satisfactory explanation may be due to such changes. For example, it becomes apparent how polyuria and oliguria may have the same pathogenesis as loss of consciousness.

The hysterical nature of these phenomena, taken individually, is proved by the special manner in which they present themselves. Thus, in the *pseudo-phthisis* of hysteria, the blood-stained sputum, though it may amount to several spoonfuls, is always deficient in blood elements and pus, though rich in squamous epithelium, filaments of *leptothrix*, and particles of food substances. Another vaso-motor phenomenon consists in œdema, of which three varieties are described by the authorities on hysteria. The most common is the so-called *blue œdema*, which is congestive and inelastic in character; the others are *red œdema*, in which the skin is warmer, and which is also congestive in origin, and *white œdema*, which is due to a local anæmia. The seat of election of blue œdema is the hands and parts that are paralyzed, or in a state of contracture, injured, or implicated in any other way, as, for example, joints affected by *arthralgia hysterica*. The condition described as *hysterical breast* is simply an hysterical œdema of the mammæ (sometimes unilateral) accompanied by pain; it is, in short, an œdematous mastodynia, and may frequently be observed by itself, either as the expression of a monosymptomatic hysteria, or associated with other symptoms of hysteria. This hysterical mastodynia may readily lead to errors of diagnosis, for sometimes not only is the skin raised by the examiner into folds which are found to be tender, but pressure causes pain in the mammary gland.

It is probable that conditions of vaso-constriction and localized angio-paralysis are the causes of *pseudo-angina pectoris*, *Ménière's pseudo-vertigo*, and some cases of slightly marked hysterical fever which may be recorded only locally—for example, in the axilla, and not in the rectum, or *vice versa*. Obviously, it is not possible to explain in this manner either true fever or general

lowering of temperature. That hysteria gives rise to such disturbances of the thermogenetic functions is at present a matter of keen dispute. Strümpell does not believe in hysterical fever, whilst Sciamanna and many others have recorded rare instances of it, with the temperature reaching 43° and 44° C.; and Mierzejewski has reported cases of lowering of the temperature to 35° , 34° , and 32° C. without collapse, which he attributes to hysteria.

Second in importance to the vaso-motor phenomena, though more obvious, are the motor symptoms. There is in hysteria a *diathesis of amyosthenia* which leads to paralyses, and a *diathesis of contracture* which leads to contractures. Of the paralyses, monoplegia is very rare in a leg, less rare in an arm, especially the left. On the other hand, *paraplegia* is very common, and hemiplegias are still more so. Anæsthesia is frequently associated with the different forms of paralysis; thus hysterical hemiplegia is almost inseparable from hemianæsthesia, and the hemianæsthesia is often accompanied by deafness, amaurosis, ageusia, or anosmia, either of the same side, of the opposite side, or bilateral, which, as a rule, makes the differential diagnosis from capsular hemiplegia by no means difficult.

Hysterical forms of paralysis are often accompanied or followed by rigidity, but some cases are of the flaccid type. Contracture is not, at any rate, a condition which follows the paralysis slowly and inevitably, accompanied by exaggeration of the reflexes, as occurs in cases of paralyses of capsular and cortical origin, for the contracture of hysterical patients is itself an hysterical feature which may develop unexpectedly, and often independently—that is to say, without either having been preceded or being followed by any paralysis. Further, there is no group of voluntary muscles which is not liable to hysterical paralysis. Paralysis of the facial nerve, the occurrence of which in hysteria has been denied by Brissaud and Marie, and which very few neurologists have observed, is not simply an appearance due, as has been thought, to unilateral contracture of the lips, but is an hysterical phenomenon, and not one of the rarest. Ballet, among others, has described a female patient who, when speaking, appeared as if in the act of smoking a pipe on the paralyzed side.

A symptom characteristic of hysteria is inability to stand on the feet and to walk, though the legs preserve their usual strength in movements carried out when the patient is in the horizontal position, or seated in a chair (as may readily be proved by the use of a dynamometer). Blocq was the first to describe this peculiar condition under the name of *astasia-abasia*. The term is still applied to it, and exactly sums up a state of things the truth and

frequency of which have been confirmed by numberless observations.

Astasia-abasia is not to be confused with *akinesia algera* (*dolorosa*), though this syndrome, which may last for ten or twenty years, is also to be regarded as a manifestation of hysteria. According to Bechterew, *akinesia algera* is a separate neurosis, but Möbius holds that it is only hysteria, and Spanbock, Strümpell, Erb, Binswanger, and Mingazzini regard it as a monosymptomatic hysteria, to which there is no corresponding organic lesion, in spite of its long duration.

Astasia-abasia (*non dolorosa*) occurs in two different forms. There is an ataxic form due to inco-ordination, and a true parietic form which depends upon weakness. The ataxic variety is rather a *dysbasia*.

One very frequent form of paralysis is that which renders the vocal cords inactive, giving rise to *hysterical aphonia*. Unlike aphonia due to catarrh or congestion, hysterical aphonia, which occurs suddenly from psychical or unknown causes, and independently of the action of cold, may be successfully combated by *methodical exercise*. When the disorder can be cured in this way, the case can only be one of psychogenic origin. In some cases hysterical aphonia may continue so long as to simulate laryngeal tuberculosis, but it is easy to recognize its true nature by the *sonorousness of the cough*. When the aphonia is due to some local disease of the larynx, the voice is also lost in the cough.

In addition to suffering from paralysis of the superior laryngeal nerve, hysterical subjects may be affected by a true state of *mutism*. This hysterical mutism is also of emotional origin, and constitutes a complete imitation of cortical aphasia (without right hemiplegia). Nevertheless, the patient suffering simply from hysteria differs distinctly from the true aphasic. She does not make efforts to articulate words, she does not display paraphasia, but quickly takes up her pen, and writes without hesitation and copiously. Motor aphasia, on the other hand, is always associated with *agraphia* (Dejerine). Recovery from *hysterical mutism* takes place, as a rule, by crisis, and in virtue of such an occurrence, the legend may be true according to which the son of Croesus, who was mute, but not deaf, recovered his speech, and was able to say to one of the enemy's soldiers, "Do not slay my father." Hysterical mutism may also be combined with deafness, and there is then the condition of hysterical deaf-mutism, which is the only possible form of acquired and acute deaf-mutism. Mendel has described a case of it in a man aged fifty-one, who had suffered since youth from malaria, and later from hysteria major.

The amyosthenic diathesis of hysteria does not, however, end

here. It may manifest itself in other forms of paralysis, either completely systematized or quite partial. There are some patients who fall like lead immediately they have closed their eyes, presenting Romberg's symptom in its extreme form. Cases of *complete ophthalmoplegia*, with immobility of the eyes, amimia, and a certain difficulty in the movements of the tongue, have been described (Ballet). It seems that this syndrome occurs specially in those cases of hysteria which are complicated by exophthalmic goitre. A well-known symptom of hysteria is *strabismus*, which may be called acute; it may suggest meningitis, cerebral syphilis, or tubercular nodules, and is accompanied naturally by *diplopia*. Inco-ordination of the muscles of accommodation may give rise to *monocular diplopia*.

Meteorism is a very common complaint in hysterical subjects. In some cases it is to be referred to the amyosthenic diathesis, for many of the patients who possess the unenviable gift of being able to swallow air at their pleasure do not return it by the œsophagus, but allow it to pass on into the intestine, and, as Ebstein has shown, this happens in consequence of a special *incontinence of the pylorus*, or from simple insufficiency.

Briquet, who was an early but very able observer of hysteria, made a statistical study of 115 cases of hysterical paralysis in order to ascertain the frequency of this condition in various parts of the body, with the following results :

Paralysis of the principal muscles of the trunk and			
of the four limbs	..	..	6 cases
Paralysis of the two left limbs	..	..	46 "
„ of the two right limbs	..	..	14 "
„ of the two arms	..	..	5 "
„ of the left arm	..	..	7 "
„ of the right arm	..	..	2 "
„ of the legs	..	..	18 "
„ of the left leg	..	..	4 "
„ of the feet and hands	..	..	2 "
„ of the face	..	..	6 "
„ of the larynx	..	..	3 "
„ of the diaphragm	..	..	2 "
<hr/>			
115 cases			

Only one objection is to be taken to these results : monoplegias, especially of the arm, are perhaps more common than they are made to appear. In Briquet's time traumatic hysteria was not recognized, and the considerable number of monoplegias that belong to this variety of neurosis cannot have come within the scope of the author's inquiry, conscientious though it doubtless was.

As might be expected, fibrillary movements in the muscles and the reaction of degeneration are absent in hysterical paralyses, a fact which serves to distinguish them from paralyses of peripheral and nuclear origin.

The spastic phenomena of hysteria are still more numerous. Of these, the most important are the *contractures*, which, according to Charcot, are the expression of a special diathesis of contracture. The diathesis of contracture consists in this : that, given certain circumstances, any contraction of the muscles, whether voluntary or automatic, purposive or accidental, or even passive, becomes transformed into contracture. A fall, a twist, pain, an excessive movement, prolonged immobility, fear, or the recollection or actual presence of paralysis in a limb, muscle, or group of muscles, is sometimes sufficient to maintain that limb, muscle, or group of muscles in a state of forced contraction. A school-boy who was the subject of hysteria suffered from *trismus* after having received a box on the ear from his master, and an hysterical mother developed monoplegia of the right arm with rigidity after having given one.

Hysterical contractures have katatonic characters only during a major convulsion, when the patients assume emotional attitudes. Excepting in these cases, they resemble the ordinary contractures to be observed in organic diseases. They may be transitory or permanent. They may also occur from imitation. All these contractures, whilst they resemble those of organic origin, differ from them in respect of the fact that, as a rule, they disappear during narcosis, although sometimes they persist during sleep.

When the stomach is disordered from any cause, even though very slight, the spastic diathesis may reveal itself in *cramps*, and also in *uncontrollable vomiting* (Bristowe). In these cases, washing out the stomach, or the simple introduction of the stomach-tube, is an efficacious method of treatment. Irritability of the œsophagus may, however, render difficult this somewhat rude expedient of suggestive therapeutics.

If the nasal mucosa of an hysterical patient is tickled by a very slight stimulus, or if she recalls a similar proceeding, it is not uncommon for the expiratory muscles to undergo a succession of spasmodic contractions—in other words, for a paroxysm of sneezing to occur. Such paroxysms may become habitual. An hysterical *spasmodic cough* is also distinguished. It may occur explosively at fixed periods, or when the body assumes certain positions. The *hysterical hiccough* is also highly characteristic. I knew a female patient who for years suffered from it from morning till evening, and in whose case even hypnotic suggestion did not suffice to put a stop to it—at least, for more than a few

hours. It is well known how a sudden surprise often serves to check the occurrence of this symptom, from which even healthy persons are not entirely exempt. An authoritative word of command may put an end to a slight attack. The hiccough of hysterical subjects is, however, more enduring. *Spasmodic yawning* may occur in hysteria, but it is rare. One of Charcot's patients yawned eight times per minute, which amounts to 480 yawns per hour, and 7,200 in a day of fifteen waking hours. These uncontrollable inspirations ceased only during sleep, and were distinguishable from physiological yawning not only by their persistence, but also by the very wide opening of the jaws, which was so great as to cause danger of dislocation. Hysterical yawning may occur as a continuous phenomenon for a certain period, and also as an equivalent of the minor attack.

The *hysterical bolus*, or *globus hystericus*, is a much more frequent and characteristic phenomenon, but it is not easy to classify. It may indicate the approach of a convulsion, it may constitute the aura of an abortive attack, and it may recur habitually like the hysterical cough. In some cases it is complicated by *aerophagia*, or swallowing of air. In certain respects it is a *sensation*, or complex of sensations, and to be included in the group of sensory disturbances; in others, it is a spasmodic condition, and a manifestation of the diathesis of contracture. In fact, it is a spasm, often rhythmical, of the pharynx and œsophagus. The patient makes vain efforts to swallow saliva, is unable to drink, and has difficulty in breathing, and thus arise the feeling of suffocation and the congestion of the face. Gilles de la Tourette holds that the *globus hystericus* may result in death.

Charcot places the *hysterical tremor* between rapid tremors and slow tremors. It may be regarded as an expression of the spastic diathesis, but some of its manifestations might perhaps be more correctly classed among the signs of amyosthenia. It appears that men suffer from it more frequently than women, and that it is specially common in traumatic hysteria. Further, it may be general (affecting head, trunk, and limbs) or partial, in which case it is confined to the arms, to the legs, or to one limb, or portion of a limb. In some cases it lasts for months or for years, and the amplitude of the movements may be increased by the action of the common hysterogenic agents. As regards the different forms of hysterical tremor, for the most part they are similar to those associated with other well-known diseases. There is a tremor with three or four oscillations per second resembling that of *paralysis agitans*, a rapid tremor with eight or nine vibrations per second simulating exophthalmic goitre, an intentional

tremor of medium rapidity similar to that of *insular sclerosis*, and a tremor of the legs which, on account of its unusual situation, bears a resemblance to the tremulousness of *spastic paraplegia*. The negative results of post-mortem examination indicate hysteria to be the cause of all these tremors.

There is a very large group of hysterical symptoms which comprises disturbances of sensibility and of the special senses. The most important of these disturbances is hemianæsthesia, upon the occurrence of which many diagnoses of hysteria are based, and which, especially if it is not accompanied by hemiplegia, is, indeed, a pathognomonic symptom. It is true that this symptom is often obscure or in a latent state, and that the patients are unaware of their infirmity until the moment of medical examination, but this does not deprive the hemianæsthesia of its diagnostic value. A point of special interest is that the hemianæsthesia is almost always localized to the left side, which would not be the case if it were due simply to a suggestion from the doctor in testing the sensibility and questioning the patient. Even granting that involuntary suggestion on the part of the doctor is able to act in this way, there is still no explanation why the hemianæsthesia should exhibit so constant a preference for the left side of the body. It must, therefore, be admitted that a tendency to anæsthesia of the left side pre-exists in hysterical subjects, and that suggestion arising from medical examination does not do more than bring it into activity, or so accentuate it as to render the patient aware of it.

As a rule, the hemianæsthesia of hysteria is complete, for it affects at the same time the senses of touch, heat, cold, pressure, and pain, though cases are not uncommon in which the insensibility is limited to pain. Frequently hemianæsthesia is associated with paralysis (on the same or on the opposite side) of a special sense, besides that of movement. It differs from hemianæsthesias of organic origin in that there is no formication, or numbness, or sense of pulsation. In capsular hemianæsthesias the senses are never involved, with the exception of the special and typical case of bilateral homonymous hemianopsia. It is more important to remember that a certain degree of hemianæsthesia (of equal frequency on right or left side) is not uncommon in epilepsy (Lombroso).

Complete anæsthesia is very rare in hysteria. Indeed, Oppenheim has not observed a single case, notwithstanding his large experience. Sometimes there is an almost complete anæsthesia, with, however, an island of normal sensibility, in the shape of a rectangle or trapezium, not corresponding to any anatomical nervous distribution. Insensibility over multiple scattered areas

is less rare than complete anæsthesia. These isolated areas of anæsthesia might be confused with the scotomata (if the metaphor may be allowed) of cutaneous insensibility which characterize syringomyelia, but in the latter condition there is the so-called *syringomyelic dissociation* of sensibility (sensibility to heat and pain are lost, whilst that to touch is preserved), and, in further contrast to what is found in hysteria, dystrophic zones are added to or intermixed with the zones of insensibility.

A fundamental and very common symptom of hysteria is *concentric contraction of the field of vision*; this also is of importance in diagnosis. Graefe was the first to draw attention to it. Hysterical *amblyopia* and *amaurosis* are only this symptom exaggerated to the greatest possible degree. Before it leads to amaurosis, however, restriction of the field of vision may manifest itself in another manner—namely, by a modification of the normal extent of the different special colour fields. Normally the most extensive field of vision is that of white; then comes blue, followed in order by yellow, orange, red, green, and violet. Hysteria may reduce the field of vision by causing the restriction, for example, of the blue, and in such a case the red, orange, and yellow fields are relatively extended, and take a place immediately behind the white.

If, then, the concentric contraction in the case of each colour is a campimetric contraction proportionate to the respective physiological extension, it is natural that those colours the perimeter of which is less extensive will suffer a relatively greater loss, and this loss may reach such a point as to produce *partial blindness*, as maintained by Galezowski. Partial blindness occurs especially at the expense of violet and green, which are the two most centralized colours, and only rarely affects blue or yellow. These partial achromatopsias are not, however, of retinal origin. In order to prove this, Régnard devised a very pretty experiment. Supposing he had a case of partial blindness to green, he employed a disc with red rays and green rays. He found that hysterical patients, or patients suspected of hysteria (epileptics are liable to post-convulsive dyschromatopsias), had a correct perception of the red rays, but confused the green with the white. Further, as soon as the disc was made to revolve, it appeared grey to them. This result implied that in their retina the red rays were combined with the green to form white or grey, whereas, if the condition had been one of true retinal daltonism, even with the disc in motion, the image of the red rays would simply have persisted.

The sense of hearing, also, is systematically disturbed in hysteria. *Hysterical deafness* is more often unilateral than

bilateral, is frequently accompanied by buzzing and other subjective phenomena, and is nearly always localized on the side of the hemianæsthesia, with which, as a rule, it is associated. More characteristic of this symptom is, however, the fact that in cases of hysterical deafness the auricle, including the concha and the external auditory canal, is insensitive, which is never the case in deafness due to organic lesions. Further, transmission of sounds is effected less readily through the bone than by way of the air, as may readily be proved by means of the tuning-fork (Rinne's test), or even simply with a watch. In this way it is possible to exclude at once that the deafness is due to peripheral diseases of the ear.

The anæsthesia may also be localized in the mucous membranes of the genital organs and bladder. *Anaphrodisia* results; the pressure of the urine does not arouse desire to micturate, and there is consequently a painless *retention* of urine, which in course of time is aggravated by contractions of the vesical sphincter. Retention of urine, necessitating the use of the catheter, is common in cases of *hysterical paraplegia*. Cases of *anæsthesia of the rectum* have been recorded.

Among affections of the other specific senses are *ageusia* and *anosmia*. Dislike for food is common, and may amount to *sitophobia*. There are sitophobic children in whom the *anorexia* is due to grave hysteria. Care must be taken not to confuse such cases with those of gustatory or olfactory insensibility from local causes. In hysteria the action of quite analogous causes cannot be excluded, but the results are out of all proportion, and often paradoxical, and they are, at any rate, due principally to the co-operation of the psychical centres of representation.

The other disturbances of specific and general sensibility are rather of the nature of constitutional stigmata than acute hysterical disorders. They may appear at any moment, if circumstances arise that serve to reveal them.

Hysterical Stigmata.—In the sphere of movements, the stigmata of hysteria exist only in the state of simple tendencies. There is a *convulsive diathesis*, a *spastic diathesis*, and an *amyosthenic or paralytic diathesis*, which, by the slightest stimulus, sometimes even one not affecting consciousness, can be transformed into convulsions, a contracture, or paralysis; and the various hysterical episodes, including the convulsive seizure, are simply the active manifestations of these potential diatheses. In some cases the exciting cause is pathological and accidental, such as a blow, a local affection, a fright, a strong emotion or grief. In others it is not accidental, but is strictly connected with the hysterical constitution, and in this case it may be that

it arises directly from the brain, inasmuch as the brain is the seat of an abnormal state of consciousness, or that, though it comes from the brain, it does so simply as a response to some abnormal sensation. The abnormal sensation, or the absence of a sensation, is, in its turn, the expression of an hysterical stigma, for it has its source in a limited and constant area of the skin, a mucous membrane, or an internal organ. Such areas constitute a perennial spring of hysterical reactions, and they have, therefore, been termed *hysterogenic zones*. These hysterogenic zones may also readily become hypnogenic zones.

Hysterical stigmata thus manifest themselves in the sphere of sensibility as well as in that of mental activity. They are keys out of tune, which, when touched, or even without external pressure, always give a false note.

Among the stigmata of sensibility, hemianæsthesia, and especially hemianæsthesia of the left side, which so frequently manifests itself fully in the form of an acute attack, continues permanently in an attenuated state as hypo-æsthesia. Few hysterical patients feel equally on both sides of the body. Right hypo-æsthesia, and still more often left, constitute a persistent stigma, not only of hysteria, but also of epilepsy, as was observed by Lombroso and confirmed by Tonnini and others. A local anæsthesia, very characteristic of hysteria, is that which is revealed by touching the mucous membrane of the pharynx lightly with a spoon. Absence of the *pharyngeal reflex* on contact of a foreign body is a probable cause of the *globus hystericus*. Hysterical patients very often exhibit absence of the *conjunctival reflex*. If the sclerotic is touched with the head of a pin or the corner of a handkerchief, the patient feels no inconvenience, and the eye does not move; whereas in normal persons there is violent and involuntary closure, or at least spasm of the eyelids. This stigma is not, however, so decisive as the former, for a great deal often depends on the manner in which the investigating instrument is applied to the eye. Even non-hysterical subjects, who have been forewarned, and who feel the touch a little distance from the cornea, show indifference to this experiment.

Hyperæsthesia of the left ovarian region is one of the stigmata of hysteria which, on account of its great frequency, and the discussion to which it has given rise, deserves special attention. This ovarian hyperæsthesia was known in the time of Romberg and Piorry, but notwithstanding the fact that it does not require to be provoked in order to be manifested, it was forgotten for many years, along with the ancient theory which attributed hysteria to causes of an erotic nature and to anomalies of the uterus. In 1873, however, Charcot reinvestigated this symptom.

He ascribed to it a deep and definite localization in the body of the ovary itself. Féré holds that during pregnancy the hyperæsthesia of the ovarian region changes its site, following the movements of the ovaries. In reality, it seems difficult to exert pressure on the ovary, except by adopting the bimanual method of examination. In any case, however, ovarian hyperæsthesia, whether deep or superficial, possesses not only a diagnostic value, but is also of hysterogenic importance. Frequently the hysterical convulsion follows a spontaneous ovarian neuralgia, which precedes it like an aura.

Mastodynia, *rachialgia*, *pleuralgia*, and *sacrodynia* are also stigmata of hysteria. *Clavus hystericus* is a hyperæsthesia of the bregmatic region, which by a sudden exacerbation becomes transformed into a violent pain. Each of these stigmata may become the point of origin of an hysterical aura or convulsion. *Pleuralgia* may give rise to *pseudo-angina pectoris*, just as hyperacusis and *acusma* may cause a *pseudo-vertigo* of Ménière. *Coxalgia* may also occur in hysteria; it may readily be distinguished from coxalgia of organic nature by the fact that in the former the shortening of the limb disappears under chloroform.

A peculiar and not very common manifestation of hysteria is that anomalous condition of sensibility which Pitres has termed *aphalgesia* ($\acute{\alpha}\phi\acute{\eta}$ = contact). It consists in pain, which is caused, either in a particular region or in any part of the body, by contact with some special substance, such as copper, tin, silver, or gold. To these may be added juice of lemons, peach-skins, and many other things which produce feelings of repugnance in some patients, even with their eyes closed (idiosyncrasies).

The Hysterical Character.—The hysterical character, with all its different degrees of intensity, may be regarded as a *psychical stigma* of hysteria. Hysterical subjects display even a manner of thought and action which has its foundations in their special character, and which asserts itself as something fairly typical, notwithstanding endless individual differences in the degree and kind of intelligence. Thus, psychical hysteria, though less obvious, is not less important than the disturbances which are connected with sensation, movement, and the convulsions.

Instability is the fundamental feature of the hysterical character. Inclinations, temper, and general feelings all change with incredible rapidity. As Huchard says, there is a sort of moral ataxia. It might be more correctly said that there is an *affective ataxia*. The fickleness of hysterical subjects, the spectacle of their *contradictory* tendencies, and the adaptability that they display to the continuous changes in their course of action, have led to the belief that hysteria is a compound of

artifice, mystification, and imposture. It is certainly the case that this constitutional anomaly, by altering the affective tone in accordance with the numerous cœnesthetic variations, increases the complexity of character without equally increasing its coherence. Sometimes hysterical patients, especially females, who are constantly suspected of insincerity, find it difficult to explain the contradictory impressions that they feel within them. Knowing that a true description would be incomplete, they add falsehoods, which correspond better, if not to the objective sequence of events, at least to the subjective sequence of their feelings. It is difficult to obtain absolute objectivity even in those who are dispassionate spectators of the changes of hysteria, and very much more difficult in the case of those who, being the authors, actors, and judges of these changes, cannot protect themselves from the suggestions of an intense or overpowering subjectivism.

If their excess of subjectivity renders the conduct of hysterical patients voluble, it also increases the range of their æsthetic and ethical consciousness. When the patients are persons of high intelligence, as is far from rarely the case, it may be that, in virtue of their hysteria, they rise to new points of view, commanding horizons far wider than those which bound the vision of persons of physiological mediocrity. Perhaps there is no poetry without a shade at least of hysteria. Hysteria, when moderate in degree, imparts—at least, from time to time—grace and spontaneity even to persons of limited intelligence; it is antagonistic to *routine*, pedantry, and misoneism. For this reason hysterical subjects feel drawn to heroes, martyrs, foreigners, and those condemned by law. At the same time, they exercise a certain power of attraction over men. Among the hosts of female subjects they are always the representatives of revolutionary tendencies, sometimes in the direction of progress. Men, on their part, when under the influence of hysteria, have a refinement of feeling unknown to ordinary individuals; it is egocentric to an extreme degree, but when applied to the arts it is understood and appreciated by all. This egocentric character, while it adds new strength to the personality, certainly does not exempt it from selfishness. The selfishness of hysterical subjects is, indeed, prepotent, indomitable, and, in its unceasing metamorphoses, irresistible. Inconstancy of feeling, intrigue, simulation, and quarrelsomeness attain to degrees that can hardly be imagined. Gratuitous insults, meaningless slanders, anonymous letters, theatrical suicidal attempts, tricks with the thermometer to simulate fever, reprisals, hostility due to sudden and unjustified antipathies, etc., are all to be found in the *répertoire* of the female hysteric, and also to some

extent in that of the male—at least, in a small minority of characteristic cases. These manifestations of an extreme *emotional restlessness* are not, however, permanent. They represent one facet, but not the entire polyhedron of the hysterical character, which possesses many facets continually in motion. There are hysterical patients who seek amorous adventures from an invincible need for romantic fiction, emotional excitement, and novelty, in spite of the most absolute anaphrodisia. If they are not occupied with their own love-affairs, they must interfere with those of others, and are famous makers of matches, but also of discord between husband and wife, and of divorces. The kaleidoscope of their feelings is an object of wonder even to themselves, and this fact explains the readiness with which they recount in public their doings and private quarrels. They consult many physicians, try numberless cures, abandon themselves to the arrogant empiricism of professors of hypnotism, graduate and non-graduate, and seem not to know whether they ought to bewail or to wonder at their fate. Any new fact which interests them, even the most futile, is, however, sufficient to make them forget all their ills.

The extreme liveliness and variety of their feelings render hysterical subjects no less frank and eloquent in their speech than they are prompt and sometimes energetic in action. When roused by passion, they can dare and succeed in anything. Women particularly, breaking the fetters which the selfishness of men has imposed on their sex, take flight into distant regions, and devote themselves to art, to love, to philanthropy. They act in defiance of public opinion. To-day they are sisters of charity, nurses on the field of battle, or singers, and to-morrow careful housewives, prostitutes, or rabid fanatics; delightful mistresses, but insufferable wives.

Hysteria, skilfully managed, may remain undiscovered. In some instances it is to a certain extent utilized for altruistic ends, or for obviously selfish purposes. St. Catherine of Siena was a type of the *superior hysteric*. There are not a few hysterics among artists and controversialists of note. The disordered but active energies of hysteria, with a little dissimulation and a little discipline, become converted into elevated ambitions, well-considered fixity of conduct, and inflexible severity, and among the ranks of hysterical subjects there are exemplary mothers of families, who know how to educate their children, can manage their household affairs excellently, and take a high place in the circle of their acquaintances, giving proof of a strong resolution. In the worldly and fast life of great cities, hysterical women, if they possess physical advantages or considerable wealth, often find an environment so well adapted to their changeable and

pleasure-seeking ideals that they have no further cause to suffer, or to react morbidly, and their hysteria assumes the appearance of a refined sensibility. They make tools of followers and imitators who possess no initiative or spirit; they teach them habits and dictate laws—at least, in regard to style of living. In the elegant drawing-rooms of to-day there are no middle terms with which to qualify persons and things that are mediocre, though these are innumerable as compared with the best and the worst. Everything that pleases, even in moderate degree, is at once called *splendid*, and everything that displeases, however slightly, is *horrid*. The hysterical *répertoire* of adjectives includes only superlatives.

The facility with which in hysterical subjects localized angio-spasms or angio-paralyses, with their accompanying sensations, are produced outside, and probably also within the brain, predisposes such patients to *hypochondria*. Their attention is often centred on the state of their health, notwithstanding the fact that it is in general robust. Hysterical hypochondria may degenerate into true *obsessions*, or even into more or less systematized *delusions*. At the best, preoccupations of a hypochondriacal nature merely impel the patient to adopt an eccentric way of living, to be continually on the hunt for fashionable remedies, to travel about from one place of treatment to another, and to visit the consulting-rooms of innumerable doctors. On the other hand, the inconstancy of the vaso-motor and sensory disturbances, which change their situation or disappear quite unexpectedly, sometimes, after the use of extravagant or ridiculous remedies, begets in the patient alternate periods of discouragement and of hopefulness. The sense of well-being that he feels at the end of an attack causes him to deny or to minimize the misfortune he has recently deplored with despairing exaggeration. Hence the hypochondria of hysterical subjects is very wordy, but subject to remissions which pass into states of euphoria. The delusions or obsessions which originate from a hypochondria of this nature are often subsequently denied. The patients become slightly incoherent, and appear to be contradicting themselves, simply because they feel and give way to the contradictions in their own sensations without succeeding in estimating them dispassionately.

When their nervous and psychical equilibrium is in so unstable a state, it is not to be wondered at that hysterical subjects become affected, not only by *psychopathic disturbances*, but also by true and distinct *psychoses*, especially of an affective nature. When this occurs, the diagnosis of hysteria introduces a favourable element into prognosis, since it permits the hope of a recovery, perhaps sudden, from the psychopathic attack, and puts into

operation methods of treatment by suggestion which are immediately effective, and which are insufficient in the case of a genuine psychosis. The syndromes of melancholia, mania, systematized delusion, and hallucinatory amentia may spring from an hysterical basis, and grow on their own account, as if they were the primary diseases, but their course is more irregular, shorter, and, on the whole, not so severe. In some instances they are really *secondary states*, or hysterical crises extraordinarily protracted, which recur with a certain periodicity. These cases are characterized by peculiar alterations of memory; the secondary state causes loss of the records of the ordinary state, but resuscitates those of preceding attacks which had seemed destroyed.

The grave psychopathies occur in association with hysteria, but not very commonly. As a rule, they are not a consequence of the hysterical constitution, but the associated and parallel expression of psychical degeneration, which has manifested itself in two ways. For example, hysteria may be associated with *epilepsy*, and become fused with the intellectual deterioration that takes place in epileptics after a long series of repeated convulsions; it may precede *dementia præcox*, and be obscured thereby; it may be combined with *constitutional immorality*, or with *hereditary imbecility*. The most common combination is that of hysteria with *constitutional neurasthenia*, and with the diathesis of emotional depression, or of emotional exaltation. In this way hysterical subjects become the victims of *obsessions* and other states of permanent mental disorder which, strictly, should not be ascribed to hysteria. It is not impossible for the signs of hysteria and of *paranoia* to be present together in the same individual. Generally speaking, all the mental anomalies and all the distinctly degenerative diseases, such as adolescent dementia, are apt to be associated, and the combination of hysteria with the psychopathies just mentioned is only a particular instance of the operation of this law.

Etiology and Course.

Hysteria is a strongly hereditary anomaly, and, indeed, constitutes in pathology one of the most characteristic examples of *similar heredity*, the only really typical form of morbid heredity. The female sex is much more liable to it than the male. Briquet, before the work of Charcot had served to demonstrate that hysteria is a common disorder in men, found only one male hysteric for every twenty female, but it is probable that his statistics were rather incomplete; nevertheless, the great preponderance of women over men among sufferers from hysteria is an indisputable fact. Women are normally more prone than men to tears,

laughter, fear, trembling, shivering, and every kind of emotion (Kraepelin). It is always necessary to bear in mind, however, that an isolated stigma, such as pharyngeal anæsthesia, or scarcity of the alkaline phosphates, is not sufficient to establish a diagnosis of hysteria in a woman, and that a touch of hysteria is almost inherent in feminine nature.

It is now, indeed, recognized that males are subject to spontaneous hysteria, but it affects them chiefly prior to adolescence—that is to say, when the sexual characteristics have not yet become differentiated. The onset of puberty, which is the most dangerous period for the female, often coincides with the disappearance of hysteria in the male. According to Marie, the minor form of hysteria is more common in women than in men, but in regard to the major form—at least, in the lower classes—the opposite is the case. The women of the working class have no time to spend on the luxury of hysteria major, which demands leisure and spectators. On the other hand, men are more exposed than women to accidents of various kinds. *Traumatic hysteria* is the prerogative of dangerous occupations, such as those of the builder, the slater, the surfaceman, the miner, and the sailor, which are followed exclusively by men.

Since Charcot, in 1882, succeeded in collecting seventy-seven cases of hysteria in the male, the proportion indicated by Briquet has been considerably surpassed. In the out-patient clinic of Mendel and Eulenburg, 10 per cent. of the neuropathic subjects (numbering about 12,000) were sufferers from hysteria, and, out of 1,224 hysterical patients, 122 were males. These included peasants, soldiers, cabmen, smiths, teachers, and clerks. As to age, the following statistics, drawn up by Pitres in 1891 regarding 100 cases observed by himself, may be quoted :

Age.	Men.		Women.		Total.
6 to 10	1	..	1	..	2
11 to 15	4	..	12	..	16
16 to 20	6	..	34	..	40
21 to 25	2	..	18	..	20
26 to 30	4	..	4	..	8
31 to 35	8	..	0	..	8
36 to 40	5	..	0	..	5
41 to 45	0	..	0	..	0
46 to 50	1	..	0	..	1
	31		69		100

The symptoms of hysteria in the male do not differ from those in the female, except in being more violent. As Marie has remarked, there is in women a predominance of the milder forms that shade off into the normal. The very early occur-

rence of hysteria imparts to children an impressionability that does not interfere with their intellectual development, but rather awakens and stimulates them, widening the horizon both of their contemplation and of their activity. The seizures and the stigmata of *juvenile hysteria* do not differ from those to be observed in adults.

The course of hysteria is traceable only in its relation to age. The malady begins either in early childhood, or in adolescence, or when full manhood is just reached. Even traumatic hysteria rarely occurs for the first time in old men who have not already given evidence of an hysterical constitution. In women the menopause and old age may eradicate, mitigate, or transform hysterical disturbances, but there are exceptional cases in which they create these disturbances.

Hysteria major may be interpolated as an incident in the course of hysteria minor. The latter, which is the true heritage of the female sex, may in its turn run an interrupted course, with very long remissions equivalent to a healthy state, and with rare exacerbations which involve only very slight departure from the normal. In some instances an exacerbation is due to the occurrence of a serious personal misfortune, or to some other definite and accidental cause. In such cases the hysteria cannot be regarded as constituting more than a simple diathesis. To many women, especially those of the leisured classes, hysteria is only a form of normal hyperæsthesia, with a tendency to emotional expression in the fields (vaso-motor, secretory, and trophic) of involuntary innervation. Persons affected by an anomaly of so slight a character can easily avoid its unpleasant consequences, or be shielded from them. Male hysteria often disappears about the age of eighteen. The statement that it is more serious than female hysteria applies to its symptoms, and not to its prognosis.

Traumatic hysteria may be regarded as a variety of ordinary hysteria, from which it differs in respect of its unlooked-for onset in connection with a traumatism or a fright. This variety, which as a rule occurs comparatively late in life, is an hysteria that has remained latent throughout the years that preceded the traumatism or fright. It was first described by Walton under the name "railway spine" in 1882. Railways, though the most common scene of serious collisions, have not a monopoly of traumatic hysteria, but the imposing character of the spectacle of a railway accident, to the danger of which travellers are exposed, the cries of a frightened crowd, and the variety of the lesions that are caused or threatened by such accidents, favour in a remarkable way the development of hysteria, not only among the actual victims, but also among those who simply witness the occurrence.

Indeed, emotion is of itself sufficient to produce shock in the most predisposed persons. The Germans have not been slow to substitute the term "traumatic neurosis" for that of "railway spine," which is too compromising to railway interests.

Walton himself, as also Page and Putnam, who described the first cases of "railway spine," clearly apprehended its true nature. They took pains to distinguish the condition from spinal concussion, and explicitly stated their conclusion that it was one of hysteria. To understand the true significance of their "railway spine," it is sufficient to mention the cases which formed the subject of Walton's description, and suggested the terminology he employed. The first was that of a railway employé, fifty-five years of age, who had been seriously injured on the right side, and who presented severe rachialgia, diminution in sexual sensibility, psychical irritability with tendency to weeping, motor weakness, right hemianæsthesia, concentric limitation of the field of vision, right hemianosmia, and right hemiageusia; the second was that of a girl of sixteen who had not been injured, but simply frightened.

The very severely marked character of the phenomena to be observed in acquired hysteria, and their seeming exclusion from the ordinary sphere of psychical influences, have led some to believe that these forms of traumatic hysteria are true organic diseases. Oppenheim and Thomsen maintained such an opinion in opposition to Charcot, who, in 1885, defended the view that railway spine is simply hysteria. In support of their contention that the lesions of traumatic neurosis are irreparable, they pointed to the occurrence of pupillary rigidity, atrophy of the optic nerve, and epileptic fits, which, they maintained, clearly indicated the presence of a cerebropathy, or of an organic myelopathy, unless it could be shown that they were in reality an occurrence quite independent of the syndrome in question. Somewhat later, Charcot himself made an indirect contribution to the same thesis, maintaining that hysteria, even in its ordinary forms, is capable, although only after a very long time, of producing structural changes in the brain and spinal cord, and that, for example, an hysterical contracture of long and uninterrupted duration determines degeneration of the pyramidal tract. This opinion has not been confirmed. Klumpke examined the brain and cord of a woman who had suffered from hysterical contracture for six years, and found nothing abnormal. Rosenthal, in a woman with double hysterical hemiplegia, anæsthesia of arms and legs, and bilateral amblyopia, which had lasted for six years, found only cerebral anæmia and œdema, and nothing else. Both patients died from tuberculosis.

Traumatic hysteria usually manifests itself by the occurrence of major seizures, and by the development of stigmata, which become permanent. In some instances there are only manifestations of mono-hysteria—for example, a fracture of the radius may be followed by a brachial monoplegia; a tumour of the concha, necessitating an incision of the ear by the surgeon, may induce facial paralysis of the same side. Post-operative neuroses are likewise merely traumatic hysteria. All of these hysteriform reactions to traumatisms, to operations, to severe fright, or to habits of concentrated attention directed to a particular region or function of the body, do not manifest themselves immediately, but some days or weeks after the causal event. As has already been mentioned, Charcot designated this latent interval *the period of meditation*. During this period there goes on in silence the work of auto-suggestion that afterwards determines the outburst of the hysterical phenomena. The possibility, and, indeed, the constancy, of a preparatory period is the best proof of the thesis advanced by Charcot, and more recently also by Möbius—namely, that the traumatic neurosis is, just like hysteria, of psychogenic nature. It resembles hysteria because it is hysteria, and it does not differ from the common forms, excepting in the special nature of the determining cause.

Acquired hysteria may also be contracted by imitation, and in some instances it affects many persons simultaneously in epidemic form. In 1883 Tonnini observed two companion peasant-girls who presented a simultaneous and homologous syndrome of hysteria. In Madagascar, about 1863, there broke out an epidemic of hysteria in young women, ranging in age from fifteen to twenty, after the assassination of Radama II. Fright and imitation co-operated to produce an hysteria that was both emotional and epidemic. A remarkable example of emotional hysteria is one in which a little girl of seven became hysterical in consequence of having seen a girl of her own age in a state of intoxication.

If the appearance and disappearance of hysteria very commonly occurs at the critical ages of life, which correspond principally to the changes in the sexual functions, this does not mean that these functions are a specific source of hysterical symptoms. The foremost gynæcologists reject absolutely the idea of such an etiological factor. The genital organs are hysterogenic, like any other viscus.

This hereditary anomaly, although favoured by the habits of civilized life, is not uncommon among negroes. It is probable that savages also suffer from it. As for the hypothesis once advanced that hysteria affects the Latin races in preference to

the Germanic races, it was merely a *fin de non-recevoir* on the part of German neurologists when confronted with the novelties described by Charcot and his school. German literature was, however, soon enriched by clinical histories that rivalled the French ones. The dramas of Ibsen should suffice to demonstrate to what morbid heights hysteria can reach in any country. Bourneville and Dange have even described a case of convulsive and psychical hysteria in an idiot. Hysteria in young children is often preceded by somnambulism.

Treatment.

In the treatment of hysteria, the methods of the Middle Ages still obtain. In 1863, Barker Brown did not hesitate to propose amputation of the clitoris. This method of treatment found illustrious followers, who improved it. Thus Friedreich, in 1882, substituted cauterization for amputation. In eight cases he repeatedly touched the clitoris with the actual cautery, and obtained a cure in each. Only one of these patients, who was also an onanist, relapsed after two years, but she recovered permanently after a second cauterization. *Castration* has still its advocates. This was originally practised apart from any special indications; now it is resorted to only in cases in which, from the point of view of gynæcology, there is also a distinct and urgent indication for the operation. Thus, Landau and Remak performed ovariectomy in a woman who suffered from an ovarian dermoid cyst. The patient was relieved of her ovarian pains, but not of her hysteria. Flechsig also has recourse to surgical measures, but only when there is a surgical indication for them. In three cases he performed, with successful results, castration, removal of the uterus, and forcible dilatation of the neck of the uterus, because he had ascertained the presence of corresponding local lesions. Forel states, and not without ground, that castration, instead of being a remedy, is apt to become a cause of psychosis. Gynæcologists are unanimous in condemning it. As Landau and Remak put it, it would be as reasonable to extract a healthy tooth for trigeminal neuralgia, or to amputate a leg for simple sciatica. In short, hysteria does not constitute a reason for castration, and even in cases of local disease it is now maintained that it is only indicated when the gynæcological disorder is serious, and the operation is of itself of evident and decided surgical utility.

Among the fanciful forms of treatment that have been employed, there is also to be mentioned that by sham operations, the patient being put under an anæsthetic, and a cutaneous suture being made. This treatment is, however, far from being

free from dangers of various kinds, and it may, instead of curing hysteria, actually produce it by psychical traumatism. The cautery applied to the dorsal spine is a revulsive, but probably one of a psychical order. It may be that it diverts the hysteria from the brain to the spinal cord, where it is perhaps less harmful, but also that it transfers it from the shade to the light, aggravating its effects.

As is well known, Charcot at the Salpêtrière employed a belt which, by means of an appropriate screw, applied pressure over the region of the left ovary. He had observed that in the case of an hysterical patient with inguinal hernia the wearing of a truss relieved the patient of both troubles simultaneously. He was, however, well aware that there was no proof that the cause of the cure was anything else than suggestion. Moreover, Schröder has drawn attention to the impossibility of compressing a healthy ovary with a belt of this kind. *Metallotherapy*, *hypnotism*, and the *magnet* have worked similar miracles, but always simply by suggestion. The credulity of hysterical patients is such that it leads them at certain times, and through particular persons, to adopt unhesitatingly even the most inadequate, absurd, and unscientific therapeutic procedures. For example, Babinski apparently produced by means of a magnet the transference of a hemiplegia from one hysterical female patient to another. In order to eliminate the element of suggestion, he considered it sufficient to separate the two women by means of a screen, which prevented them seeing one another. There were evidently here two forms of suggestion (one of cure in the case of the hemiplegic patient, and another of illness in the case of the other hysterical patient) that operated through a simple coincidence of thoughts and of time, favoured by the apparatus employed in the experiment. It was certainly not the paralysis that, attracted by the magnet, traversed the screen, and emigrated from one brain to the other.

A method that still savours of mediæval tradition, because of a costly character, and because sometimes applied without discernment in every kind of hysterical disorder, but which, used with discrimination, is not without rational foundation and good effects, is that which is still known as the Weir-Mitchell treatment, and which consists of graduated artificial alimentation (gavage). Playfair introduced it into Europe. The patient is separated from her home surroundings ; she is isolated, and placed under the care of trained and kind nurses ; she is subjected to general massage and faradization of the muscles for several hours every day. At first a milk diet is given, and when the stomach has been made ready by this partial fast and by the energetic

metabolic changes aroused by means of the massage to redouble its functional activity, hyper-alimentation is progressively applied. This treatment, which is of service also in neurasthenia, was adopted by Binswanger, by Jolly, and also by Charcot, who claimed for France and himself the priority of it.

The Weir-Mitchell treatment includes isolation and enforced rest in bed, which perhaps exercise an influence no less efficacious than the gavage. There is nowadays general agreement as to the importance of isolation, not only in cases of imitative hysteria, but also in the more common forms, and especially in children. At the Salpêtrière, hysterical females are now located in separate rooms, and Dejerine supplements the material isolation by psychical isolation, compelling the patient to remain in bed, to have only mild diet, and to be attended to by only one nurse. The bed-curtains are constantly drawn, the nurse makes only brief visits every hour in order to bring the milk, and the patient sees in addition to this one nurse nobody excepting the doctor, who is laconic and formal.

To the advantage of isolation there is to be added that which comes from the abandonment of the domestic environment. The family environment is often, indeed, a home, but one full of discord and harmful suggestions, which in severe cases must be forbidden absolutely. As regards marriage, it is necessary, in order to avoid injury to the patient's health and to preserve peace, that the hysterical consort, whether man or woman, should be mated with one of an opposite nature. The family regime must be tolerant, but firm. The patient's friends must not show unnecessary initiative. They must avoid contradiction of an immediate, inflexible, irritating, and argumentative kind; they should allow the hysteria a certain freedom of relief, without attaching excessive importance to it, and without increasing its violence by sentimental sympathy. Hysterical patients are tractable to those who are able to be patient with them. When the storm has abated, they sometimes recognize their error of their own accord, and are content to obey the dictates of prudence, custom, and good sense, with which they are well endowed, in spite of appearances to the contrary. Blind, repeated, and irrepressible revolts against severity or gentleness, against anger or indifference, against methodical treatment or an empirical and changing regime, are not manifestations of simple hysteria, but of constitutional immorality, of paranoia, or of dementia præcox, to which hysteria is superadded.

CHAPTER XX

EPILEPSY

THE clinical conception of epilepsy, originally limited to the epileptic fit and the phenomena directly related to it, is now so amplified that mental and nervous phenomena, which present no feature of motor disturbance, are to-day included in the disease. A diagnosis of epilepsy may now even be made in cases in which a classical motor seizure has never occurred. This change began with the admission that the epileptic attack may occur in partial and spurious forms, as well as in that of generalized tonico-clonic convulsions. The various sensory, sensorial, motor, or vaso-motor disturbances, which in many cases precede the classical epileptic fit, and constitute the so-called epileptic aura, may occur separately, and constitute in themselves incomplete or abortive attacks. The convulsion may be limited to one-half of the body, or to a single limb (Jacksonian epilepsy); and, lastly, the profound disturbances of consciousness which precede or follow the epileptic seizure may completely usurp its place, without the occurrence of any other disorders of a motor, sensory, or vaso-motor nature. They then constitute a *psychical equivalent*.

In addition to the various transitory disturbances, there is a permanent group of symptoms, or constitutional signs, both of a bodily and of a psychical nature. Persons who have repeatedly suffered from any of the convulsive forms of epilepsy gradually become subject to mental enfeeblement and characteristic symptoms, which, in their turn, constitute a special variety of dementia.

While, on the one hand, the various phenomena of epilepsy may occur in persons who, during quiescent intervals, present no evidence of disease, on the other, they are present also in patients suffering from serious organic lesions of the brain with evident paralysis, paresis, dystrophy, and arrests of development. This fact has led some authorities to describe an idiopathic or essential epilepsy, as opposed to an epilepsy symptomatic of cerebral lesions, but the dividing-line between the two varieties is not clear. Further, the fact that epilepsy for the most part manifests

itself in youth is considered to indicate a congenital degenerative predisposition which betrays itself in some such morbid event, while in other cases the epileptic phenomena become evident only in advanced age, and in consequence of such causes as intoxications, disturbances of the circulation, infective processes, degenerations of the bloodvessels, traumata, cerebral cicatrices following softenings, or cysticerci. In these cases, so widely different from the etiological point of view, the motor and psychopathic syndromes are often so similar that a diagnosis of the cause is impossible without a history. Sometimes not even the history is sufficient, and anatomical evidence is required. A single conception of epilepsy is therefore not justified, either from the point of view of etiology or of pathogenesis. It can be sustained only from the symptomatological standpoint.

Granted these restrictions, epilepsy should disappear from the list of mental diseases, and only be readmitted in an anonymous form as a non-essential syndrome or symptom distributed among those psychopathies which may be associated with it, or, rather, productive of it, such as the infantile cerebropathies, the cerebropathies of adults, general paralysis, diabetes, uræmia, alcoholism, etc. Thus there would be an end of the artificial association of epilepsy and hysteria on the ground of a seeming and nominal analogy between their respective forms of seizure. Nevertheless, the existence of many cases in which the *cause* of the epilepsy is absolutely unknown renders premature either its removal from the list of mental diseases properly so-called, or its separation from hysteria.

Symptoms.

The Epileptic Fit.—Though, as a rule, the epileptic fit occurs suddenly, without any premonitory sign, not uncommonly it is preceded by special sensory and motor disturbances, of which the patient himself is conscious, and which may be obvious to others. In individual patients these phenomena have always the same character. They constitute the so-called *epileptic aura*. This precedes the epileptic seizure by a fraction of a minute, and is sometimes so brief that the patient has not time to take any precautions against danger from the fit. Prodromata of another nature may precede the attack, as, for example, malaise, irritability, confusion, or a sense of oppression in the head, which may continue for hours or days before the attack. These phenomena are, however, quite distinct from the aura.

The aura is capable of traversing any nervous tract, and of assuming any form. It may be sensory, sensorial, motor, vasomotor, secretory, or psychical.

The *sensory aura* may consist in paræsthesia, formication, numbness, or acute pain, which most commonly begins in an extremity, and proceeds more or less rapidly towards the trunk. Very frequently it is a sensation of weight in the epigastrium, which passes up towards the throat. The onset of the fit coincides, as a rule, with the propagation of these sensations to the head. An aura in the form of intense headache is not uncommon.

The *sensorial aura* is an elementary hallucination of hearing or sight; it may take the form of some buzzing or hissing sound, or dazzling sight, or may be a defined hallucination, generally of a terrifying nature, as, for example, of flames, blood, or threatening language. There may also be compound hallucinations derived from the various senses.

The *motor aura* reveals itself in localized contractions of muscles, turning of the head and eyes, rotatory or drill-like movements, mastication with repeated acts of deglutition, more rarely in co-ordinated movements. These movements are directly continuous with the convulsive seizure, which, to a certain extent, represents their general diffusion. Other examples are running forwards, and various expressive or professional attitudes and movements.

The *vaso-motor aura* manifests itself in sudden pallor, or, more rarely, flushing of the face, of one-half of the body, or of single portions of it.

The *secretory aura* may consist in a sudden hyper-secretion of saliva or sweat. Flechsig has observed an increase in the specific gravity of the urine one or two days before a fit, and looks upon it as a renal aura.

It is to be noted that the aura does not in all cases consist in some phenomenon indicative of excitement. In exceptional cases it takes the form of a sudden paralysis, word-blindness or word-deafness, complete and sudden deafness, motor aphasia, and paresis or paralysis of the limbs.

The *psychical aura* is represented by the images which pass across the patient's mind, rising suddenly, without any association with the ideas of the moment. Often it is a recollection (always the same), for example, of some affecting scene in which the patient has taken part. It may have chiefly an emotional character, reducing itself to a sudden sense of distress or unfounded fear.

Immediately after the aura the patient loses consciousness, and is seized by a tetanic contraction of all his muscles, including those of respiration. This is the tonic phase of the fit, which lasts for a very short time, half a minute at the most. The actual fall is not brought about by muscular relaxation, but

marks the beginning of muscular rigidity. It may be said that every epileptic has his characteristic attitude, so that he always falls in the same manner, to one or other side, on his face, or backwards. The head injuries, which are so readily produced, always occur in certain patients at the same point. One of my patients carries on the back of his hat a sort of cushion shaped like a half-moon, and stuffed with cotton, which protects his occiput; he has learned that when the fit occurs he will fall straight back, striking the earth with his head. Violent expiration, with contraction of the vocal cords, may sometimes cause a cry. The lower limbs become powerfully extended, the trunk becomes rigid, the hands firmly closed, and the head bent backwards. The tongue is sometimes caught between the teeth, which are spasmodically locked. The respiratory spasm causes asphyxia, and the face, which was pale at the onset, becomes suddenly flushed, and then cyanosed. The pupils are widely dilated and fixed. According to Siemens, at the first moment of the seizure, and simultaneously with the cry, they exhibit an intense contraction, which is momentary and transitory. At the end of the tonic phase there is often an escape of urine and fæces, less frequently of semen.

The tonic phase is succeeded by the clonic. Violent muscular contractions occur in the limbs, thorax, and head. These may become so intense as to produce serious traumatic lesions, such as bruises, fractures, and dislocations. The clonic movements of the jaws and tongue may cause the latter to be bitten. Breathing recommences with deep inspirations and expirations, and the breath as it passes noisily between the jaws and the bitten tongue forms a blood-stained foam on the lips. The cyanosis disappears, the body becomes covered with sweat, the pulse is rapid, and the temperature rises 0.1° C., or even 0.5° C. The clonic phase lasts for a few minutes, not more than four or five.

Thereafter the patient may return suddenly to his normal state with consciousness fully restored. As a rule, however, he remains confused, and passes into a deep sleep, from which he awakens after some hours, dull and depressed, and suffering from headache. In other cases, after the fit, there arise special psychical conditions, therefore called post-epileptic, which will be described later. It is not uncommon to find a slight degree of albuminuria after the fit. In the post-epileptic sleep the pupils are sometimes very markedly contracted.

The tendon reflexes after a fit vary much in different cases. Sometimes they are exaggerated in association with a condition of muscular hypertonus; sometimes, but more rarely, they are diminished, or altogether absent. This difference in the reflexes

does not depend on the intensity of the fit, but rather, according to Lugaro, on its localization and diffusion in the cerebral cortex. There are cortical areas from which issue, in the normal condition, inhibitory influences on the muscular tone and its reflexes ; there are other areas from which stimulating influences pass. The state of epileptic exhaustion, according as it predominates in one or other of these areas, will give rise to opposite effects ; but in the same patient, on account of the uniform nature of the fits, the cortical localization of the nervous explosion, and consequently its secondary influence on the muscular tone, will be constant.

The frequency with which the fits occur varies greatly in different individuals. Some epileptics are subject to them only very rarely, as, for example, at intervals of months or years. In other cases, though rarely, the fits occur in groups, the patient remaining free from them for two or three months, and then having two or three or more in one day, or on successive days. Sometimes the fits follow each other in great numbers, and separated by short intervals of relative lucidity (*a series of fits*). Lastly, they may occur so close to one another that the patient does not recover consciousness, the first fit being followed by a state of coma, interrupted from time to time by new convulsive seizures (*the status epilepticus*). This condition constitutes a serious danger to the life of the patient. It is accompanied by a marked rise in temperature, which may go beyond 42° C., and which is gradually produced as the fits are repeated (Bourneville).

Partial Fits (Jacksonian Epilepsy and Sensory Epilepsy).—Localized and partial convulsive seizures are generally the symptomatic expression of a circumscribed cortical lesion, such as a tumour, or hæmorrhage, or a localized inflammatory process. It is, however, unquestionable that they can also arise from general causes, especially of a toxic nature, as in alcoholism, uræmia, diabetes, and general paralysis. The phenomena of Jacksonian epilepsy may thus occur not only in those cases of epilepsy in which, from the existence of other symptoms, a localized lesion of the brain is evident, but also in cases which, because of the absence of any cerebropathic symptom, are regarded as belonging to the category of essential epilepsy. It may happen that in certain cases partial seizures alternate with complete fits ; still more frequently partial seizures may occur at the beginning of the illness, and gradually give place to general fits.

Further, even when the fits are general, it is not uncommon to find an asymmetrical distribution on account of the unilateral predominance of the muscular movements, or the convulsions may begin on one side or in a group of muscles, becoming general after a few seconds.

In cases of pure Jacksonian epilepsy there is often a sensory aura localized in the limb that is immediately afterwards affected by clonic contractions. This shows that the aura has its origin in an irritative action of the epileptogenic agent in a definite area of the cortex in which the epileptic discharge is readily initiated. This fact renders still more close the relations between general and partial epilepsy.

The partial convulsive seizure consists of simple clonic contractions, and is not preceded by a tonic phase. Consciousness persists; it is lost only when the Jacksonian fit changes into a general convulsion by the spread of the muscular contractions to the other side and to the whole body. The muscles of the face and arm are chiefly and often exclusively affected.

Partial epilepsy may assume the sensory form, in which case the seizure is reduced to abnormal sensations, which become localized in some sensory area, or even in one or more of the special sensory centres, in which case it takes the form of *hallucinations*. This sensory seizure may be regarded as an attenuated form of epilepsy. As a matter of fact, we know that in epileptics who are subject to seizures with an aura, it sometimes happens that the aura occurs alone, without being followed by the fit. This is virtually equivalent to a rudimentary or an abortive epileptic fit.

Epileptic Equivalents.—In dealing with the sensory and sensorial forms of epilepsy, and with the cases of aura not followed by convulsive seizures, we have already entered upon the field of so-called epileptic equivalents—that is to say, of those accessory phenomena of epilepsy which manifest themselves extra-cortically, not as spasms and convulsions, but in some other form of more or less partial automatic activity.

Epileptic equivalents are usually divided into the short and the protracted. The former may last for only a few seconds, the latter even for months. There are, however, transitional forms. The distinction from the symptomatological standpoint is justified, since short equivalents are capable of assuming very many forms; it need only be said that they may exactly copy all the forms of *aura* which have been described, and even assume an executive and co-ordinated character so as to imitate conscious acts. Protracted equivalents, on the other hand, consist in various forms of mental disease in which consciousness is clouded, but not altogether obliterated.

In addition to those equivalents which reproduce the various forms of *aura*, other brief disorders are met with which are of importance, both because they are of frequent occurrence, and because they often constitute the only phenomenon from which

the diagnosis of epilepsy can be made. In the first place there is the so-called *petit mal*. The subject of *petit mal* suddenly stops in the middle of his talk or occupation; his attitude becomes rigid and his look fixed, and he grows pale. Often he exhibits minute movements or tremors of the lips, tongue, or limbs. These phenomena last for a few seconds—a minute at the most—and then consciousness returns, and the patient resumes his conversation or work at the point at which they had been interrupted, without being aware that anything has happened. Such patients may be in complete ignorance of their disease, for the *petit mal* is not, as a rule, accompanied by objective disturbances, and it is very rare for involuntary loss of urine to occur.

Incontinence of urine during sleep may in itself, however, constitute a sign of masked seizures (*épilepsie larvée*), or of equivalents which occur during the night. This is, of course, in cases in which this symptom is the only observed sign of a true epileptic fit. Convulsive seizures, as a rule, leave behind them very much more important traces, such as states of malaise, ill-temper, headache, irritability, and bodily signs, such as contusions, bites of the tongue, and cutaneous and subconjunctival ecchymoses. *Nocturnal enuresis* cannot, however, be regarded as an epileptic equivalent, except in cases in which it is an obstinate symptom in youth or adult age. In children it is often a transitory phenomenon, which has no apparent connection with epilepsy.

The epileptic equivalent may show itself in the form of *pro-cursive epilepsy*, in which the patient suddenly throws himself forwards, running as if impelled by some irresistible force. The fact that as he runs he is able to avoid obstacles shows that consciousness is probably not altogether lost, although the patient at the end of the seizure has no recollection of what has occurred.

Similarly there may be *impulsive acts* of all kinds under the influence of an epileptic equivalent, with complete amnesia following them. These are most frequently of a violent nature, often directed against individuals, and committed in a state of apparent consciousness, and with outward signs of anger. Not infrequently these seizures are followed by common post-epileptic phenomena, such as headache and sleep. An epileptic equivalent may also pass into a true convulsive seizure, which thus ends the scene, and comes as it were to testify to the nature of the impulsive action.

A somewhat rare form of epileptic equivalent consists in *periodic attacks of sleep*. In these cases it is important to exclude hysteria, and all the more so because the occurrence of narcolepsy is much more frequent in hysteria than in epilepsy.

The protracted equivalents include all psychopathic phenomena occurring as attacks of long duration. Their characteristic feature is a more or less profound disturbance of consciousness with consecutive amnesia, or very imperfect recollection of the seizure, and with a tendency to impulsive and violent acts. These protracted equivalents have a great variety of forms, which cannot be clearly distinguished from one another, since they are connected by innumerable gradations and links. In certain milder cases affective disturbances predominate, generally of a depressed nature. Such are the fits of *epileptic malaise*. In other cases the disturbance is more profound, and affects the whole of consciousness, ideation, and sensation. In these the mental condition is one of *confusion* with hallucinations, dreaminess, obfuscation, and automatism. Sometimes the hallucinations are the most important feature, and, in spite of the confusion, impress some special character on the train of ideas, thus determining a more or less disordered *delusional state*. In cases more protracted, but of less intensity, the delusions may become systematized and paranoid in character.

The fits of epileptic malaise are relatively short ; they may last a few hours, or a day, or a week, or a little longer. The patients are dull and irritable ; they complain about everything—their food, their companions, the attendants, and the doctor. They are extremely prone to quarrel, to fly into a passion, to come to blows, and to commit acts of blind fury. Usually they complain of a sense of oppression in the head, or of actual headache, but often they describe various disorders of a hypochondriacal nature, such as discomfort in the epigastrium, obscure and agonizing feelings in the bowels ; they declare they are seriously ill, besiege the doctor with verbose descriptions of their infirmities, and grumble and swear, declaring that they are neglected, and that no one will listen to them. They threaten to commit suicide, and in some cases actually attempt to kill themselves. The ill-temper and general hostility to their surroundings may go so far as to give rise to an actual delusion of persecution ; they are the playthings of Fate, have been deserted by their relatives, are doomed to end their lives in a hospital, spurned by all, and exposed to excessive severity of treatment, and to moral and physical cruelties. This condition disappears rapidly, generally after sleep or after a convulsive seizure. It has, however, a great tendency to recur.

The confusional states of epilepsy differ essentially in no respect from those of amentia, alcoholism, and pellagra. The most prominent features of the clinical picture are the mental confusion, the more or less complete insensibility to external

stimuli, the hallucinations of various senses, and delusions of a chaotic nature. States of mental anguish and terror and aggressive tendencies are certainly more frequent in epilepsy, but they do not constitute a sufficient basis on which to found a differential diagnosis. They manifest themselves in very different ways, according to the prevalence of psycho-motor excitement or arrest, or the occurrence of hallucinations or affective disturbance.

There is one confusional state in which the patient is agitated and furious, which is wrongly called *epileptic mania*. The patients are confused, but have not altogether lost touch with their surroundings; they reply to questions, but very soon lose themselves in an incoherent loquaciousness; they cry out, strip themselves naked, and wander about the room, rush at the first comer, sing at the pitch of their voice, assume grotesque attitudes, and laugh convulsively. This condition may last for some hours, or for a few days. It then disappears completely, or is followed by different forms of confusion and stuporous states. It is probable that the cases described as *transitory mania* belong to this form.

A form of confusion with terrifying hallucinations is very common. The patient believes that he is amongst enemies, that his life is threatened, and that he is pursued by devils. His face expresses the most intense anxiety; he defends himself desperately against any aggressors, and tries to put an end to his own life.

In some cases, on the other hand, the hallucinations are of a religious nature. The patient sees God, the Virgin, and angels, hears their voices, carries out their commands, prays, beats his breast, sings, or proclaims himself to be a messenger from God who will redeem the world. In these cases also a hostile view may be taken of the environment; the other patients are looked upon as Mohammedans or Jews to be exterminated, or as atheists to be converted to the faith, and subjected to the rites of the Church by force.

A more profound disturbance of consciousness than occurs in these states of confusion with excitement is to be found in the so-called *epileptic stupor*, attacks of which may arise separately from, subsequent to, or alternately with the former. The patients stand motionless and rigid, with dilated pupils which scarcely react to light. Katatonic attitudes are assumed, words and detached phrases are pronounced, or the patients are absolutely dumb. They cease to react to external stimuli, and pay no attention to their bodily needs. Sometimes they exhibit a wax-like flexibility of their muscles, and preserve for long periods the most grotesque attitudes.

In all these varieties of confusion, and especially in the stuporose

form, the memory of what has happened during the attack is very incomplete, or altogether lost. Although defectiveness of memory is a feature of all confusional states, it is certainly the case that in those of an epileptic nature the disturbance of consciousness is more profound, and the amnesia more severe.

A more marked degree of amnesia, often complete, is also met with in other protracted equivalents of epilepsy, which, however, cannot be said to be confusional, although there are grounds for believing that in them consciousness undergoes a certain degree of clouding. In these states the isolation of the patient from his environment is never complete, and to a certain extent he may behave himself in a normal manner in regard to external occurrences. Judgment and the association of ideas seem, however, to be entirely suspended, so that the actions of the patient appear to be completely destitute of any motive, and as if effected by a sort of automatism. In the memory of the patient these states are quite independent of the normal state, and they therefore resemble the *second states* of hysteria.

We have, firstly, to consider the states of protracted automatism, or the *eccentric actions* of epileptics. Whilst wide awake, and in the midst of some occupation, the patient affected by such a seizure suddenly stops working, leaves the place in which he has been, and begins to wander about aimlessly. Sometimes, having found his way on to a road, he speeds quickly on until at length he falls exhausted from fatigue and hunger ; or he wanders about, stopping here and there as if in a dream, muttering incoherently, and doing strange and improper actions. For example, he may divest himself of his clothes, appropriate articles belonging to others, or expose his genitals for the purpose of urinating or of masturbating, as if no one were present. More rarely his behaviour is fairly orderly, and the series of his actions rather complex. Thus, he may go to the railway-station, purchase a ticket, and make a long journey, stopping, changing carriages, and taking refreshment at proper times and places without attracting any special attention. When the seizure is over he awakes as if from a dream, and has no recollection of what has happened.

These *fits of automatism* may occur during sleep, giving rise to the well-known phenomenon of *somnambulism*. The patient rises from bed, lights the lamp, dresses himself, walks about the house, reads, writes, does some professional work, goes back to bed, and falls asleep again ; or he goes out in a nude state, unconscious of his condition and without object, unknowingly exposing himself to many dangers. Notwithstanding the evident dulling of consciousness, automatic co-ordination of movement is perfect, and would even appear to be better than it ordinarily is.

Thus the patient is able to promenade with ease on the top of a roof, and to let himself down by a water-pipe. It would seem as if unconsciousness of danger rendered his movements more sure.

The more protracted forms of simple delusion, which may last for some months, have a close resemblance to these states of automatism. The patient is possessed by delusions, for the most part of grandeur, or of a mystic or religious character. He is, however, lucid and well behaved. In these cases there is not a complete disjunction of consciousness and the recollection of past events ; there is merely a more or less wide interval between them, comprising some days or months.

Pre-epileptic and Post-epileptic States.—The symptomatology of the pre-epileptic and post-epileptic states is in every respect identical with that of the protracted equivalents. There is not a single symptom among those that have just been described that may not present itself after a convulsive seizure ; and, on the other hand, the phenomena of a protracted equivalent may end in one or more convulsive seizures, or be interrupted thereby. The convulsive paroxysm cannot, therefore, be considered either as the cause or the consequence of the psychopathic seizure ; it is rather an individual feature, giving evidence of special participation of the motor centres in the epileptic process. It is an individual feature, because in each patient the relation between the convulsive phenomena and the psychopathic phenomena is very constant. There are epileptics who never suffer from the classical motor seizures, but only from the equivalents ; in other cases the psychopathic disturbance precedes, generally very shortly, the occurrence of the fit ; in still others it follows or alternates with single fits, or, even more frequently, with groups of successive fits. Modifications in the type and succession of the various phenomena take place only slowly in the course of many years.

Permanent Psychopathic States.—Epileptics are not in all cases mentally affected. Very many of them, although they suffer from more or less frequent fits, never show any psychopathic disturbance such as to necessitate their confinement in an asylum or hospital, and are, indeed, able to follow their vocations without inconvenience, and to manage their own affairs. Among such epileptics there are sometimes persons of remarkable intelligence and unusual mental activity ; but the great majority of sufferers from epilepsy, amounting to about 80 per cent., reach, in the course of some years, with the continued occurrence of the fits, a peculiar state of mental enfeeblement, a chronic derangement of character and emotion, usually designated *epileptic degeneration*.

Disorders of the emotions and character are most constant ; it

may, indeed, be said that they are manifested in a more or less marked degree even by those epileptics who are of ordinary intelligence, and who live in society as normal individuals. The fundamental feature is impetuosity of character or emotional excitability. Epileptics are always easily excited to anger and to violence; they are energetic, and often unscrupulous in their conduct. Restless and fickle, they lead, as a rule, a life of excitement, made up of a series of impassioned adventures into which they rush without reflection. In religious and political opinions they always go to extremes; they are rabid Conservatives, violent revolutionaries, fanatical proselytes of old and new religions. In such matters they are always followers of others. Their passions rarely have an altruistic quality. Their conduct is, on the contrary, governed by the fundamental selfish instincts, such as love of money, insatiable sexual appetite, and desire for power. They therefore very readily acquire criminal tendencies; many thieves, murderers, and sexual offenders are epileptics.

In those individuals who, on account of frequent convulsions, injuries they have sustained, or incapacity for work, live in a state of perpetual valetudinarianism, the instinct of love of life assumes morbid and troublesome forms, and expresses itself in actions and habits of a hypochondriacal nature. Such patients pester the doctor with long accounts of their symptoms, doubts, and miseries, for ever demanding treatment, luxuries, or medical prescriptions, which they make use of with somewhat sceptical enthusiasm. Continual anxiety about their health, and the feeling that they are the victims of a grievous and fatal misfortune, lead them to become more offensively fanatical; they recite interminable rosaries, diligently attend Mass and confessional, haunt vestries, and love to assist at Mass, to take part in the Sacrament as bell-ringers, or to attend funerals, even of persons whom they have not known. Just as, however, ceaseless concern about their health does not deter them from indulging in debauch when occasion strongly tempts them to it, so also their religious sentiment does not suffice to restrain them from arrogance of conduct. Though persecutors of those who use profane language, they are themselves past-masters in the art of blasphemy. Unctuous in manner, and humble and servile even to offensiveness towards the doctors whom they regard as superiors, they are nevertheless haughty and intolerant to their fellow-patients.

Intellectually they may present all degrees of enfeeblement, even to the most profound dementia. In this connection the frequency of the fits has much influence, but most important of all is the age at which the epilepsy began. In cases in which the

seizures have occurred from the time of adolescence, and have afterwards continued to be frequent, the dementia reaches a very deep degree. On the other hand, in cases in which the disease commences late in life, intelligence suffers only slight deterioration.

In mild degrees of dementia there are to be noticed only slowness and limitation of the ideational processes. The patients express themselves with difficulty and slowly; they exhibit a limited vocabulary, and have recourse to long circumlocutions and endless similes when endeavouring to explain even the simplest matter. In their narrations they lose themselves in petty details, needless explanations regarding antecedent circumstances and long digressions, rendering conversation with them an extremely tedious business. Their intellectual stock-in-trade becomes greatly reduced, and even limited to a few platitudes. In more advanced cases there is a distinct weakening of the retentive power, in consequence of which the patient is no longer able to absorb new ideas, or to remember ordinary events. In the most advanced forms of epileptic dementia there is complete loss of the sense of time and of place; the patients pass their existence in a state of profound hebetude; in some instances even the power of speech is almost entirely lost. It is only among hebephrenic demented that there are to be observed degrees of mental decadence comparable to those that are associated with epilepsy in its more severe forms.

Somatic Characters and Symptoms.—A considerable number of epileptics present physical characters, which, though not pathognomonic of the disease, are associated with it in an interesting way. The Italian anthropological school, with Lombroso at its head, has diligently carried out the anthropological examination of epileptics, endeavouring especially to discover in them the so-called *stigmata of degeneration*. These stigmata certainly occur with unusual frequency in such patients. Abnormal development of the frontal sinuses, excessive prominence of the frontal eminences, nasal deviation, the presence of the lemurine appendix, unusual development of the jaws, prognathism, dental anomalies, the Darwinian nodule, prominent ears, sessile auricular lobules, etc., may be characters exhibited by normal persons as well as by epileptics, but they are more commonly to be observed in the latter.

Owing to their uncertain significance, these stigmata have less importance than certain other anomalies which, as we shall see, are to be considered as an indirect expression of pathological lesions suffered by the brain or other nerve centres early in life, rather than as a true degenerative sign. *Cranio-facial asymmetry*, which in some instances attains remarkable proportions, is the

most important of these conditions. Analogous asymmetries are sometimes to be observed in the development of the limbs. A functional anomaly of a similar kind may occasionally be seen in the form of a disproportionate difference in the muscular force on the two sides, constituting motor or sensory left-handedness. Nystagmus, strabismus, and unilateral paresis are conditions of a more distinctly pathological nature. They merge with those forms of physical developmental arrest and functional deficiency which are characteristic of early cerebroplegia, and which, as we shall see, have an intimate connection with epilepsy.

Other symptomatic anomalies are to be regarded as a consequence of frequent fits. This applies, for example, to certain varieties of *paresis*, chiefly unilateral, which manifest themselves in course of time, especially upon the side chiefly affected by the convulsions, in cases in which the seizures are violent and often repeated. Exaggeration of the tendon reflexes, accompanied by slight hypertonus, is another common result of repeated convulsions; it is an indication of the occurrence of an incipient degenerative process in the pyramidal tracts. Probably the marked hypo-æsthesia of many chronic epileptics is also an acquired condition.

In epileptics subject to frequent fits the articulation of words undergoes a characteristic change after some years. The patient speaks with great difficulty and very slowly, as if a spasm held the organs of phonation in the positions that they successively assume. In the more advanced cases there is added to this *bradylalia* a true *dysarthria*, which may also be very marked, sometimes, indeed, causing the speech to be almost unintelligible. This disorder of articulation can, however, be distinguished from the dysarthria of general paralytics; it lacks the syllabic slurring, the hesitation and repetition, and also the omission of letters and syllables.

The emotional storms that constantly agitate the mind of the epileptic leave in course of time an indelible impression upon the features and facial expression of the patient. Not uncommonly chronic epileptics have a distinctly animal expression.

Differential Diagnosis.

The diagnosis of epilepsy is in the majority of cases extremely easy. The patients themselves proclaim it, even before they have described their symptoms. In a certain number of cases, however, it presents considerable difficulty, often necessitating a long and patient examination, and even thereafter sometimes remaining uncertain. There are especially two points regarding which there is apt to be doubt—namely, the nature of the con-

vulsive seizure, and, in cases in which seizures are absent, or are not known to have occurred, the nature of the mental disturbance.

As regards the convulsive seizure, it is of the highest importance to distinguish it from the hysterical fit. Complete loss of consciousness, a sudden fall resulting in injuries, biting of the tongue, mydriasis and pupillary rigidity, a state of asphyxia produced by tonic contraction of the respiratory muscles, short duration of the fit, and its succession by a period of coma, and involuntary loss of urine, fæces, and semen, point to the seizure being an epileptic one. In the hysterical fit, on the other hand, no injury is occasioned by the fall, which is accomplished almost discreetly; consciousness does not appear to be entirely lost; the initial pallor of the face and the asphyxial phenomena are absent; the confusion of mind lasts for a long period, in the course of which the patient assumes the expressive and passionate attitudes that have already been described; the aura is neither so sudden nor so characteristic; a premonitory cry is very rare. Sometimes a diagnosis is rendered difficult by the depth of the unconsciousness and the completeness of the amnesia that follow the major hysterical fit. Hysteria and epilepsy may even be associated with each other, thus leading to hesitation in forming the diagnosis, or to an erroneous alteration of it. In doubtful cases decision must depend upon a consideration of all the psychical and somatic symptoms that weigh in favour of the one disease or of the other.

Epileptic fits do not differ in any essential feature from the convulsive seizures that may occur in uræmia, eclampsia, cerebral syphilis, cerebral tumours, diabetes, and progressive paralysis. The subtle distinctions that some writers have drawn are of no practical value; the term "epileptiform fit," which has been suggested for these seizures, implies really only an etiological distinction, and does not include a symptomatological one. It is true that epileptiform fits are more commonly of the Jacksonian type, but the criteria afforded by this type, even in its most frequent form, would certainly not be a sufficient basis for a diagnosis in any particular case. As a matter of fact, the distinction between epileptiform and epileptic fits is only made *a posteriori* when the cause has become known. When, therefore, we have to deal with a new case, in which convulsive phenomena have been an initial symptom, a diagnosis of epilepsy ought to be arrived at by exclusion—that is to say, only when it has been found possible to eliminate with certainty the existence of all symptoms of other conditions, such as those which respectively characterize diabetes, uræmia, cerebral tumours, etc. This rule holds good with regard to the distinction of fits of essential

epilepsy from those of alcoholic epilepsy. In progressive paralysis also, when the scene is opened, as it sometimes is, by convulsive phenomena, it is by no means easy to distinguish the case from one of epilepsy that has begun late. The existence of other organic signs of progressive paralysis may serve to clear up the diagnosis. If, however, even the characteristic mental enfeeblement is absent, as occurs only very rarely, we should delay coming to a diagnosis of this disease. The true nature of the case will become clear in the course of a short time.

In cases in which the previous history of the patient is not well known, and does not serve to suggest the occurrence of an epileptic seizure, protracted equivalents may be mistaken for confusional attacks, mania or dementia præcox, more especially in its katatonic form. It is to be borne in mind that, as a general rule, in epileptics the disturbance of consciousness, even when comparatively slight, is attended by a certain degree of isolation, or insensibility to external impressions, and that the conduct of the epileptic is less a reaction to external impressions than a consequence of impulses having their origin in various emotions and internal representations. If these considerations make the protracted equivalents somewhat easy to distinguish from mania, in which the perceptive faculty of the patient is quick, and his attention easily attracted to the most trivial occurrence in his vicinity, they at the same time render it difficult to differentiate them from amentia, in which the disturbance of consciousness and the isolation are no less pronounced, and also from dementia præcox, in which impulsive actions may be manifested suddenly and unexpectedly, as in epilepsy. Nevertheless, by careful and patient observation, it is almost always possible to recognize features that enable one to make a correct diagnosis. In epilepsy the states of confusion generally last a very short time; they terminate suddenly, do not induce bodily wasting, and are followed by a condition of amnesia which sometimes extends into the past so as to embrace the events of a considerable period of the patient's life; in amentia these characteristics are absent. In dementia præcox it is exceptional to have amnesia, patients on emerging from a katatonic state being able to give a minute description of their feelings, as well as of the events in which they took part as mute and motionless spectators.

Etiology and Pathogenesis.

Opinions regarding the etiology of epilepsy range between two opposite extremes. According to most authorities, epilepsy is a hereditary disease, resulting from causes that are essentially internal, and connected with racial degeneration. According to

others, it is due to causes that are almost wholly external, being dependent upon various forms of encephalopathy, including those that are of infective and toxic origin, tumours, traumatisms, those resulting from the circulatory disturbances attending cardiac disease, and arterio-sclerotic lesions of the brain. The boldest and firmest supporter of the latter view has been Pierre Marie, who does not hesitate to maintain that the cause of epilepsy is always external to the patient, and one that operates only subsequent to conception.

There can be no doubt that very many epileptics have hereditary antecedents. Althaus found hereditary predisposition in 40.9 per cent. of his cases, Hughes Bennet in 41 per cent. Kraepelin has ascertained it to be present in 87 per cent. of cases, in more than 22 per cent. epilepsy having occurred in the father or mother. Such statistics are, however, open to criticism. In the first place, what is generally taken into account is the existence of a generic heredity, and on this basis any nervous or mental disease may be regarded as relevant. On the other hand, if one has regard only to similar and actually ascertained heredity, there is a very considerable reduction in the figures. Moreover, the occurrence of epilepsy in the parents is not absolute and incontrovertible evidence of a true morbid heredity. Epilepsy is very often an acquired disease; like all other severe physical disorders, it is a cause of developmental disturbances in the offspring, inducing true foetal encephalopathies, which may eventually assume the form of epilepsy as in the parents. To this is to be added the fact that epilepsy is often induced by parental alcoholism, which contributes largely to the occurrence of foetal encephalopathies, including slight and non-paralytic forms, which sometimes manifest themselves exclusively in epilepsy.

Beyond question, epilepsy in many instances develops suddenly in youth or adult life in consequence of the action of an external cause, and independently of any hereditary predisposition. Those infective and traumatic factors which in the first years of life so commonly determine the occurrence of cerebropathies may also, when they occur in the adult, give rise to epileptic phenomena, even though they do not cause distinct enfeeblement or arrest of mental development. Smallpox, scarlet fever, septic infections, typhoid fever, and malaria, are sometimes responsible for the occurrence of an epilepsy which certainly cannot be regarded as idiopathic. Syphilis, independently of any focal lesion or of gummatous meningitis, may produce a *parasyphilitic epilepsy* which is not amenable to treatment by mercury or iodides (Fournier). There is, indeed, no

form of chronic intoxication that may not cause epilepsy; in addition to alcoholism, lead-poisoning, ergotism, tobacco-poisoning, and enforced abstinence from morphia, may be accompanied by epileptic fits. Traumatism, compressions, intracranial parasites and tumours, may determine the occurrence of convulsive seizures differing in no respect from those of classical epilepsy, and they may, moreover, produce equivalent seizures of a vertiginous and psychical nature.

Whilst, on the one hand, the existence of a certain hereditary influence cannot be ignored, on the other the influence of a direct or indirect external cause is often very evident. It is upon these grounds that the extreme supporters of the theory of the endogenous or hereditary origin of epilepsy pretend to distinguish between epilepsies that are symptomatic of cerebropathies, intoxications, and traumas, and a form of essential or degenerative epilepsy in which it is impossible to demonstrate the influence of any external cause, and to which is assigned the position of chief importance. This distinction involves, however, a *petitio principii*. The term "idiopathic" is applied to that form of epilepsy in which a direct cause cannot be demonstrated; but if the cause is known, the epilepsy is called "symptomatic." Now, the epileptic fit of a cerebroplegic idiot does not differ in any respect from that of the victim of cerebral syphilis, or from that of an "idiopathic" epileptic. The distinction between true or idiopathic epilepsy and symptomatic epilepsy therefore rests solely upon ignorance of the cause in the so-called true epilepsy, and upon the knowledge of it in the other form.

In order to have a scientific foundation for the view that there is an idiopathic epilepsy which is distinct from symptomatic epilepsy, it would be necessary to be able to exclude the possibility of the occurrence of a latent or circumscribed lesion of the brain which manifests itself in epilepsy alone. It has not yet, however, been found possible to do so, and it seems, indeed, very probable that the truth lies in exactly the opposite direction. Among the subjects of infantile cerebropathies who suffer from epilepsy there may be observed all gradations in mental insufficiency from idiocy to a condition of complete integrity of intelligence. On the other hand, although the epilepsy of cerebropathies is often associated with paresis, paralysis, or other motor signs of a cerebral lesion, it is certain that in some cases epilepsy is the sole motor symptom accompanying the mental deficiency. Why, therefore, should there not be cases of circumscribed cerebral lesions, having an origin similar to that of the lesions that occur in infantile cerebropathies, and manifesting themselves exclusively in epilepsy, which would thus correspond to the so-called idiopathic epilepsy?

In these cases may there not be, as maintained by Lemoine, minute disseminated lesions, produced in infancy by micro-organisms or toxines, and cicatrized prior to the period at which the epilepsy becomes established ?

This hypothesis receives additional support from an examination of the significance of the somatic stigmata, as well as certain dynamic features that never fail to manifest themselves during the epileptic fit.

We begin with the somatic stigmata. Facial asymmetry, which, according to Lasègue and Delasiauve, is constant in essential epilepsy, is capable of being interpreted as strictly of pathological origin (Bourneville and Sollier)—that is to say, as a consequence of pathological processes which affect the two cerebral hemispheres in different degrees. This view is also favoured by the observation of Kreuser that tenderness on pressure over the sutures is common in these cases. It is known that the subjects of infantile cerebropathy, in whom phenomena of paresis, contracture, and atrophy give ample evidence of the existence of a cerebral lesion, exhibit cranio-facial asymmetries which are even more marked than those of epileptics, and also that they very frequently manifest those various malformations of external organs that are regarded as degenerative signs. All the other trophic and functional asymmetries recognizable in epileptics are capable of bearing a similar interpretation—that is to say, they may be looked upon as an indirect consequence of an early unilateral cerebral lesion. Tonnini has observed that trophic, vaso-motor, and sensory disturbances are specially evident on the side of the body opposite to that on which occurs the cranial deformity determining the asymmetry ; and Venturi holds that the convulsive movements are similarly more strongly developed on one side.

On the whole, it may be said that the exclusive occurrence of the convulsions on one side, or their prevalence on one side, as well as the diversity of form that these fits present, and still more the occurrence of circumscribed seizures which alternate with general fits, or which manifest themselves at the beginning of the disease, constitute evidence in favour of the hypothesis that there is a sharply localized intracerebral lesion. The local pareses which in some cases follow a fit, and the seizures, which take the form of paralysis, likewise favour this hypothesis.

Other more frequent phenomena, which are of momentary duration, and which form an integral part of the fit, are capable of being interpreted in the same way. An epileptic aura is not observable in all patients, but in cases in which one does occur it is constant in nature, course, and localization. This fact shows

that the aura is of the nature of a morbid radiation which starts from a localized lesion of the cerebral cortex. An aura is also common in Jacksonian epilepsy, and furnishes evidence regarding the seat of the lesion even more valuable than that given by the convulsion. Is it not, therefore, reasonable to regard the aura, which with constantly uniform characters initiates the fit, as an indicator of the locality of the brain from which the epileptic discharge spreads to the other cortical centres, and in which the lesion has its exclusive, or at least its chief, seat ?

In some epileptics the fit is accompanied by deviation of the eyes and head. This implies that during the convulsion one hemisphere acts more strongly than its fellow. In other cases there are distinct rotatory phenomena. These symptoms are also capable of being interpreted as signs of the existence of a lesion that is essentially local. In a similar way *procursive epilepsy* may be interpreted as a complex of co-ordinated and automatic acts, having origin in a specialized centre. If at the same time we regard the running as a psychical act, and the procursive epileptic seizure as a psychical equivalent (Büttner), or as an impulsive action (Kramer), we do not thereby abandon the view of the circumscribed nature of the impulse and of the lesion that provokes it, for the psychical centres are subdivided, and they may be affected separately by morbid conditions. Many epileptics always fall in the same manner and in the same direction, and injure themselves in the same spot. This further shows that the convulsion is not uniform throughout ; at the beginning, at least, it affects by preference certain groups of muscles, as if it always started in certain definite portions of the cortex, and then spread to the rest. There are epileptics who bite the tongue always on the same side. Oliver has further observed that the bite in the tongue occurs on the side towards which the eyes and head are rotated at the beginning of the seizure, and that often there are clonic contractions of the foot on the same side. A premonitory cry occurs in only a minority of epileptics, but it is a constant phenomenon in those patients who exhibit it. Oliver considers this also to be a focal manifestation which radiates from a corresponding cortical centre.

The absence of paretic symptoms is, therefore, not a sufficient ground upon which to reject the view of the cerebropathic nature of epilepsy. In the majority of cases of what is called essential epilepsy the seizures are either not uniform in character, or they begin with special phenomena that imply localized cortical irritation, which is a sign or effect of antecedent cerebropathy, just as certainly as paresis, contractures, and atrophies are.

These considerations need not, however, lead us to form too

far-reaching conclusions. Though it is probable that in every epileptic there has occurred some cerebropathic process of which only a trace, functionally imperceptible, remains (for example, a cicatrix or a diffuse area of slight sclerosis), it is not necessary to believe that such a cerebral lesion is the only possible cause of epilepsy. Experiments upon animals prove that even brains that are anatomically intact are capable of producing epileptic seizures, for example, under the influence of toxic substances. Further, even in those epileptics in whom the existence of an infantile cerebral lesion is certain, the fits do not always, but only in a minority of cases, commence immediately after the occurrence of the lesion. Often, indeed, the lesion becomes entirely latent, and epilepsy manifests itself only after several years, in consequence of other exciting causes.

Thus, intoxications may either be the direct and exclusive cause of convulsive seizures, as appears almost always to be the case in uræmic and diabetic convulsions, or they may co-operate in the production of the epileptic seizure as exciting causes. Alcohol is the substance which most commonly acts in this way. The special intolerance of alcohol manifested by all epileptics proves the existence of a predisposition ; this, if well marked, will give rise to pathological drunkenness, or determine an epileptic discharge, even without the assistance of any anatomical lesion. A few drops of alcohol, given to a person who has a constitutional intolerance of it, will suffice to make him an epileptic. Intolerance of alcohol may also be acquired as the result of cerebropathic processes, so that the factors of epilepsy come to be three in number—namely, primary cerebropathy, alcoholic intolerance, and alcohol (when present alone, and even in extremely small amount). When it has this effect, alcohol acts as a sensitizer of the brain, a revealer of epilepsy. There is, however, a third possibility. Certain chronic intoxications—as, for example, lead-poisoning and metasphyilitic conditions—are also capable of determining severe cerebral lesions, and therefore they act in two ways—namely, as a cause of encephalopathy, and by giving rise to acute dynamic disturbances which provoke an epileptic seizure.

In persons who, probably in consequence of minute cerebral lesions that have occurred in infancy, are predisposed to epilepsy, the seizures are determined by various other occasional causes. Among these fright is one that is very commonly blamed. There can be no doubt that in very many cases the convulsions occur for the first time immediately after a psychical trauma. In such instances the patients commonly show characteristic stigmata, and sometimes even distinct signs of cerebropathy, which attest the organic nature of the epilepsy ; but epileptic phenomena in

the strict sense have manifested themselves as a consequence of the fright, and but for its occurrence would have remained latent.

Among the exciting causes of epilepsy there are to be included certain changes in the peripheral nervous system or other organs from which stimuli may proceed. Peripheral cicatrices are very often the cause of the so-called *reflex epilepsy*. Affections of the auditory apparatus (Ormerod), and especially otitis media (Kupper), are sometimes causes of epilepsy. Nasal polypi and dental caries are likewise capable of producing it. Wigglesworth and Bicherton have made the interesting observation that many habitual epileptics are the subjects of marked errors of refraction, and that the epilepsy is improved when suitable means are used for the correction of their optical defects. These observations have been confirmed by Hern, Stevens, Martin, and Dodd. Removal of the exciting cause of epilepsy does not, however, always result in the disappearance of the convulsive phenomena. In some cases they are only diminished, in others they are in no way modified. In these instances the exciting cause has presumably determined the epilepsy, but the frequent repetition of the fits has increased the irritability of the nervous centres, and resulted in the establishment of a habit of convulsive reaction.

These facts are of no small assistance in enabling us to understand clearly the special pathogenesis of the epileptic attack. That the point of origin of the epileptic discharge is in the cerebral cortex can hardly be doubted, when we consider the numerous affinities between Jacksonian epilepsy and generalized epilepsy, and also the transitional forms that occur. At the same time it is not to be excluded that lesions of subcortical centres are capable of inducing generalized convulsions, and it is possible that they also participate in the production of general convulsions initiated by a cortical discharge. At present, however, it is rather another question that is under discussion—namely, What is the stimulus that determines the discharge?

In some cases in which there is an evident cerebral lesion it is easy to imagine that cicatrices, resulting from old cerebropathic processes or traumatism, may produce a continuous irritation of the motor centres, until, by summation of stimuli, periodic and sudden discharge results. When, however, the existence of a cerebral lesion is not obvious, it is necessary to think rather of a more diffuse stimulus. In this connection we have to consider the pathogenetic conceptions of those authors who regard epilepsy as a congenital state of nervous disequilibrium, dependent upon a constitutional degenerative change in the whole organism. Many of these authors hold that the epileptic discharge is to be regarded as a sign of an alteration that our present means of

investigation do not serve to reveal ; the nervous centres, owing to a special modification of their molecular equilibrium, have become unable to retain latent energy. Others hold that there are less direct mechanisms of action—for example, vaso-motor disturbances of the cerebral cortex, in the form of anæmia or hyperæmia, dependent in their turn upon changes in the sympathetic (Meynert, Echeverria). Nowadays, however, it seems more than ever improbable that such disturbances of the circulation are capable of determining epilepsy ; there is more reason to believe that the alterations that occur in the cerebral circulation are merely an effect of the fit. No importance can be attached to the fact that anæmia and asphyxiation of the nervous centres sometimes provoke convulsions—as, for example, in experimental compression of the carotids, or in the process of death from bleeding, as in these instances the disturbances are extremely violent, and not such as can be presumed to occur in epileptics as the result of a simple play of vaso-motor actions. It is, moreover, to be remembered that the existence of vaso-motor nerves in the cerebral vessels is still somewhat doubtful, and that in any case vaso-motor irregularity is far from being sufficient to explain the origin of the fit. The adoption of such an explanation would only serve to shift the question to that of the agent, which, in its turn, determines the sudden modification of the circulation.

The hypothesis that epilepsy is due to a congenital narrowing of the vertebral canal in its upper portion (Solbrig) was for a time in favour, but more recent observations have not served to bear it out. Permanent or temporary increase of the intracranial pressure, however determined, has also been regarded by some as the cause of epileptic seizures, but the researches of Navratzki and Arndt have shown that, though there is an increase of the pressure of the cerebro-spinal fluid during the tonic period of the fit, it occurs only as an effect, being secondary to the respiratory arrest and venous stasis.

At the present day the toxic theory seems to be the one that is most probably correct. According to this view, epilepsy is determined by a state of intoxication which from time to time presents exacerbations. Whilst, however, there is a very general agreement as to the toxic pathogenesis of the fits, there is at the same time the greatest divergence of opinion with regard to the particular toxic substance that affects the organism. On the ground of chemical studies, Haig concludes that the epileptic fit is the expression of an accumulation of uric acid in the blood. Herter has not been able to obtain evidence of such accumulation, but has found that there is a high proportion of ethereal sulphates. According to Krainsky, it is not uric acid that is the cause of the

fits, but ammonium carbamate, a substance allied to urea, containing one more molecule of water. Evans maintains that there is always an auto-intoxication of intestinal origin. Donath has found choline in the blood, and attributes the fits to the convulsive action of this substance. Other authors have endeavoured to investigate in a general way the toxicity of the urine before and after the fits, but the results obtained have for the most part been contradictory and negative. Researches have also been made upon the alkalinity of the blood, which, according to Pugh, is constantly lower in epileptics than in normal persons, undergoes diminution before the fit, and a still further diminution after it, and returns to the usual level after six hours, excepting in cases in which another fit takes place after a short interval.

Although all of these researches are open to criticism, both on account of the methods employed and of the contradictory nature of some of the results obtained, they at least show that alterations of metabolism are frequent in epileptics. It is, however, doubtful if these alterations constitute the exclusive cause of the fits; on the contrary, it is probable that they are in large part a secondary result of the nervous affection, which provokes violent dynamic disturbances in the whole organism. It is, however, still more probable that these disturbances, although secondary, tend to excite fresh seizures, and so help to perpetuate the disease. This is at least evidently the case as regards the auto-intoxications of gastro-intestinal origin, and it is also certain that the diet is capable of exercising a remarkable influence upon the frequency of the fits in all types of epilepsy.

Lastly, it may be said that the genesis of the epileptic seizure cannot be summed up in any one theory. The nervous discharge, periodic and spasmodic in nature, represents in a certain sense the pathological exaggeration of a normal property of the elements of the nervous centres—namely, that of storing up repeated slight stimuli, or even continuous and imperceptible ones, and of responding to them periodically with much energy. The pathological stimuli that are able little by little to confer upon the brain the power of a pathological summation, as if by functional saturation of the elements concerned, are of various kinds. They include localized actions of a congenital or acquired, autochthonous or centripetal nature, and generalized actions of a toxic character. The theory of a single and specific intoxication is useless, improbable, and contrary to experience; very many substances are capable of exciting or paralyzing the nervous centres, and so also very many substances can exercise an epileptogenetic action. It may be that the epileptic explosiveness of the

brain is sometimes a congenital character, a degenerative phenomenon that has been gradually impressed upon the stock by pathological conditions in the course of several generations; but this pathogenetic conception is a mere hypothesis, which can be applied to only a certain number of cases by a process of exclusion. It is probable that the repetition of the epileptic fit aggravates the tendency of the centres to violent periodic discharges, and that thus every fit is in a sense the prelude, or at least a preparatory element, of every succeeding seizure.

Clinical Forms and Course of the Disease.

The various symptoms of epilepsy, diverse in character and in their frequency in individual cases, have led to the distinction of as many different clinical forms. Thus in some epileptics the disease manifests itself in convulsive seizures only; in others as vertiginous phenomena, or as larval epilepsy; in others, again, as more or less protracted equivalents. These distinctions, though of importance practically, have little scientific value, inasmuch as, in spite of this symptomatic polymorphism, the fundamental characters of the disease are always identical, and there are no well-defined relations between particular causes of the disease and the special symptoms.

Other clinical distinctions are based upon the fact that some exciting causes of epilepsy are related to definite periods of life, and so give a special character to the course of the disease, or else suggest the adoption of special curative measures. Thus the forms of epilepsy most probably connected with infantile cerebral affections, being able to manifest themselves during a longer period, and arising in young brains that have not reached complete development, readily lead to states of profound dementia; whilst, on the other hand, the forms of epilepsy which develop late in life, and which are connected with arterio-sclerotic processes or cardiac diseases, rarely give rise to severe dementia. In cases of traumatic epilepsy there are all degrees of gravity; of specially frequent occurrence are the psychical and vertiginous forms, but purely convulsive forms are not wanting. It is believed that the vertiginous seizures are specially detrimental to the intellectual powers.

Epilepsy is, as a rule, progressive in its course. With the repetition of the fits the mental weakness and the perversions of character become more accentuated, even though the seizures do not increase in frequency. There are, however, a few cases in which the fits gradually diminish in number. Abstinence and the adoption of a suitable regimen may lead to cure, especially in cases in which the epilepsy has followed alcoholic intemperance.

There are also cases that recover spontaneously, as if some irritative process had subsided.

Epilepsy may of itself cause death; the occurrence of a series of fits and the *status epilepticus* are specially dangerous. It may be said that at least one-half of the epileptics in asylums die in consequence of seizures. An epileptic fit may also lead to death from suffocation, drowning, precipitation from a height, and other traumatisms resulting from the fall. Not a few epileptics commit suicide.

Pathological Anatomy.

When epilepsy is associated with an acquired cerebral lesion, capable of being diagnosed during life—that is to say, in all cases of the so-called *symptomatic epilepsy*—the post-mortem examination is constantly positive. If the case is one of epilepsy acquired in infancy, the appearances described in the chapter upon Infantile Cerebropathy are present; if, on the other hand, the epilepsy has been acquired during adult life, traumatic lesions, tumours, intracranial parasites, apoplectic foci, etc., are found. We need not, however, enter into these; here it is necessary for us to consider the morbid anatomical conditions in those cases which, presenting no symptom of cerebroplegia, are diagnosed as examples of *essential epilepsy*.

In these cases it is possible to make a further division. In some instances there are gross macroscopic changes; in others the aspect of the brain is normal, as far as can be determined by the unaided eye. There is, however, no sharp distinction between these two categories, for if the macroscopic lesion is circumscribed and very small, its discovery depends chiefly upon the care that is taken in the search.

The macroscopical changes are those of infantile cerebropathy, although they are rarely so extensive as those that are to be observed in severely marked examples of this condition, associated with paralysis and other permanent symptoms. We find, rather, evidence of circumscribed encephalitis, convolutional atrophies, softenings, cysts, cerebral cicatrices, internal hydrocephalus, etc. These lesions may fail to be diagnosed during life. This is owing to the fact that they are very minute, or that they are situated beyond the motor zones, so that they do not manifest themselves in evident clinical signs. Sometimes the cicatrix is so small that a careful examination of the brain in serial sections is necessary in order to find it. It may be localized in the subcortical regions, in the white matter of the hemispheres, or in the basal ganglia. It is certain that if careful and systematic search were made, the frequency with which these lesions are observed would be increased.

A very common morbid condition, to which Meynert was the first to direct attention, and the occurrence of which has been confirmed by a long series of observers, is *sclerosis of the cornu ammonis*. Usually on one side only, but sometimes on both, the cornu ammonis is small, as if shrunken, and remarkably hard. The frequency of this morbid change is such that Worcester found it in 50 per cent. of cases, and Bratz has been able to describe forty cases. According to the latter author, the condition is one of true hypoplasia, and is evidence of a disturbance in the development of the brain. According to Hajos, this interpretation is applicable to only a minority of cases ; in the great majority there

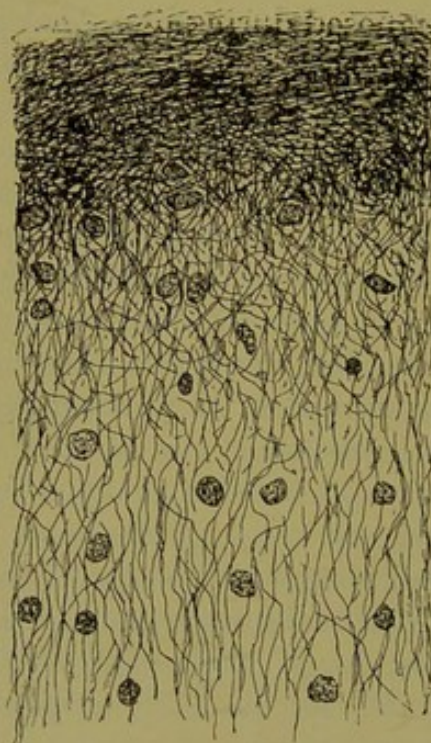


FIG. 106.—EPILEPTIC GLIOSIS.

Molecular layer of the ascending frontal convolution in a case of epileptic dementia. The layer of superficial fibres is ten times the normal thickness, and is very dense. The excess of fibres gradually shades off into the subjacent layers. (Selective method of Weigert.)

has been a process of *sclerotic atrophy*, similar in all respects to that which follows infantile encephalitis, which is so frequent in epileptics. Laufenauer, Fischer, Nerander, Rosenstein, and Ljubimow have observed that the pathological process is not confined to the cornu ammonis, but may extend to other parts of the brain. Nissl maintains that whenever there is sclerosis of the cornu ammonis, diffuse lesions of the whole cerebral cortex are also discoverable. Alzheimer and Hajos have, however, observed cases in which there was true sclerosis of the cornu ammonis without any lesion in the rest of the cortex. It is at any rate to be said that, even if these lesions are present, they have neither

the same importance nor the same character as the localized sclerotic lesions of the cornu ammonis.

Other macroscopical changes sometimes met with in cases of long-standing epilepsy are a certain degree of *internal hydrocephalus*, *opacity of the pia-arachnoid*, *granular ependymitis*, and *optic atrophy*. Cases of epilepsy acquired at an advanced age (those of the so-called *senile epilepsy*) generally show severe diffuse *arterio-sclerosis*. Death in *status epilepticus* usually determines the occurrence of *venous hyperæmia* of the whole brain and small *scattered hæmorrhages* in the grey and white substance. Special importance used to be attached to such hæmorrhages in the medulla and pons, which are frequently to be observed, and which it was supposed might have a causal relationship to the fits. Now, however, it is recognized by all that they are simply a consequence of the fits.

Even, however, in cases in which the naked-eye examination does not reveal any alteration, microscopical lesions of a diffuse and typical kind may generally be found. It is doubtful if these lesions are causal factors, or if they are not rather a consequence of the frequent seizures and of the attendant circulatory disturbances in the brain. It is certain that, whilst they are absolutely constant in old-standing cases of epileptic dementia, they are hardly recognizable, or may be entirely absent, when the disease has been of short duration.

Of first importance are the *alterations of the neuroglia*, which some authors regard as characteristic (Chaslin, Bleuler). A condition of more or less marked *gliosis* pervades the whole extent of the outermost layer of the cortex. This layer normally contains neuroglia fibrils that can be selectively stained by Weigert's method. In epileptic gliosis the fibrils increase very greatly in number, and sometimes also in thickness, so as to form in not a few instances a compact stratum underneath the pia mater (Fig. 106). According to Bleuler, this process of gliosis is proportional to the degree of dementia. In many cases neuroglia fibres appear in the thickness of the cortex, where normally they are not present. In this position there may also be found considerable numbers of greatly hypertrophied neuroglia cells, very similar to those that occur in progressive paralysis. These cells are also to be found in the midst of the layers of the sclerosed cornu ammonis (Fig. 107).

Where the gliosis is somewhat marked the nerve cells show alterations of a chronic atrophic type. They are diminished in size, show a paucity of prolongations, and sometimes contain an abnormal amount of pigment. The cellular change is always directly proportionate to the intensity of the gliosis. In the more

marked cases it may proceed even to the destruction of a considerable number of elements, so that the normal arrangement of the cortical strata is destroyed. The relation between these chronic changes and the gliosis is as yet little understood. According to Alzheimer, the cellular alteration is primary and



FIG. 107.—EPILEPTIC GLIOSIS.

Sclerosis of the cornu ammonis. Convoluted stratum of the cornu ammonis. Atrophic nerve cells and numerous monster cells. Staining with iron-haematoxylin.

the gliosis secondary. It is, however, evident that we must, in regard to this question, separate the processes of diffuse gliosis, which may be a secondary effect of toxic and circulatory disturbances dependent upon the seizures, from processes of circumscribed gliosis, which constitute a local radiation of an

encephalitic focus. It has, at least, not been demonstrated that either toxic actions or circulatory disturbances are capable of inducing a primary process of gliosis if the nerve cells are not altered.

The nerve cells also frequently show *acute alterations*, similar to those that are met with in acute and subacute toxic infective processes. Such alterations do not belong directly to the pathological picture of epilepsy; they are rather an expression of a toxic state that is closely connected with epilepsy, or they are the result of the morbid processes that have caused death, or they are the last expressions of agonal states, pyrexia, or the *status epilepticus*.

The bloodvessels often show diffuse alterations, including thickening of their walls; proliferation of their cells, more especially of those of the adventitia; perivascular gliosis; and the presence of lymphocytes in the adventitia and in the perivascular lymphatic space. These alterations are to be considered as for the most part an effect of the repeated fits, which cause conditions of stasis and transitory cerebral asphyxia. It is, however, certain that the severe diffuse arterio-sclerotic lesions associated with late epilepsy have a causal importance. Further, Hochhaus has observed in all forms of epilepsy a very marked degree of calcification of the more delicate cerebral vessels, and he does not hesitate to consider this process an important factor in the pathogenesis of epilepsy.

Apart from the cerebral lesions, anomalies of the *cranial bones* have some importance in epilepsy. They may be a sign of various pathological alterations, such as *hydrocephalus*, *rachitis*, and *syphilis*. They consist in *asymmetries*, *premature obliteration of sutures*, *abnormal thickness of bone*, *delayed obliteration of sutures*, *hyperostosis*, etc.

Among the lesions of the viscera, some importance is to be attached to those of the *heart*. Valvular lesions, if not the cause, are often at least a contributing cause of epilepsy, and especially in cases in which this disease manifests itself in adult life or in old age. Simple hypertrophy of the left ventricle is a constant result of repeated and numerous fits.

Treatment.

Few diseases have led to so many therapeutic experiments as epilepsy has done. From the use of innumerable drugs to the employment of the most heroic operative procedures, the history of the treatment of epilepsy has been that of a ceaseless pursuit of empirical expedients, symptomatic remedies, and rational methods of cure.

The surgical methods of treatment have been wholly inspired by etiological and pathogenetic preconceptions. Thus, ligature of the vertebral arteries was suggested and carried out by Alexander with the object of diminishing the circulation of the blood in the brain. This operation was repeated by many others, and appeared to have beneficial effects, but in the end it has been recognized that the benefits are at best only temporary. Later, Jaksch suggested that the successes obtained from ligature of the vertebrals were due to the fact that in this operation the sympathetic is severed; he therefore tried simple section of the sympathetic, with a view to influencing the cerebral circulation. This operation, as well as the more radical one which consists in extirpation of the superior cervical ganglion, although extensively tried, has given contradictory or negative results, sometimes leading to aggravation of the patient's condition, sometimes to temporary improvement. Simple trephining of the skull, with incision of the dura, has frequently been advocated; Kocher believed that he had found an explanation of the beneficial results obtained in the fact that the pressure of the cerebro-spinal fluid increases during the fit, and that the fits abort if the fluid is evacuated so as to restore the normal pressure. The investigations of Navratzki and Arndt have, however, shown that the increase of pressure is not the cause of the fits, but a secondary effect of them, due to the venous stasis occasioned by the cessation of respiration. Moreover, Berezowski has been led to conclude from his observations that the benefits derived from trephining are at best only temporary, and that eventually the condition of the patient returns to what it was at first.

Indeed, trephining of the skull is nowadays sanctioned by experience only in cases of pure *traumatic epilepsy*, in which there is reason to believe that fracture, accompanied by depression or splintering of bone, has set up local irritation, a condition which generally gives rise to Jacksonian fits. Even in such cases, however, there is prospect of success only when the disease is not of long standing, and above all when the localized seizures have not become general.

The *medical treatment* is largely symptomatic, and has as its object especially the prevention of seizures. It would be useless to give a simple enumeration of all the substances that have from time to time been employed for this purpose, some of them on the ground of the most extravagant suppositions—as, for example, curare. General experience now teaches that the bromides are the anti-epileptic drugs *par excellence*. The employment of other substances that have been tried is only justified in cases of intolerance or proved inefficacy of the bromides. Among these

other substances, atropine (Weiss) is of some value, as are also antipyrine (Lemoine, Amadei) and amyl alcohol (Wildermuth). At one time borax was much in favour, but experience has shown that it is often useless, and that it produces a serious condition of cachexia, accompanied by cutaneous trophic disturbances, eczema, acne, psoriasis, loss of hair, atrophic conditions of the nails, and severe gastric disturbances, including catarrh and dyspepsia.

Of the various bromides, those of potassium, sodium, and ammonium are of practical value, but the therapist has exercised his fancy in the combination of bromine with every kind of metal—the alkaline, the earthy, the heavy—and even with gold, perhaps to flatter the vanity of some parvenu. The administration of bromides has, however, its inconveniences, and should be employed only in suitable cases and with caution. Whilst the prescription of bromides is plainly indicated in cases of epilepsy with frequent fits, and a tendency to the occurrence of them in series, or *status epilepticus*, it is harmful and irrational in patients whose fits occur only rarely. Persons saturated with bromides manifest certain characteristic symptoms, which constitute the so-called *bromism*. These include catarrh of the conjunctiva, stomatitis, gastric catarrh, acne, torpor, and blunting of the mental faculties. In some individuals small doses are sufficient to set up disturbances so grave as to necessitate cessation of the treatment. In order to avoid bromism, whilst continuing the use of bromine, two substances have been introduced—namely, bromalin (bromethylformin), which, however, is less efficacious than the bromides, and in large doses is not free from danger of causing bromism; and the bromipin of Merck, a combination of bromine with fats, which may be administered even hypodermically, and which is of more service than the former drug.

In *status epilepticus* bromides may often with advantage be associated with chloral or with amyl alcohol. Naab advocates the administration of this substance *per rectum* in doses of from 5 to 7 grammes, or even by intramuscular injection in doses of from 3 to 5 grammes. Bondurant highly recommends venesection.

Some recent methods of treatment aim at increasing the sedative action of bromine by suitable medicinal combinations and rotations. Thus, in Bechterew's method of treatment bromides are combined with *adonis vernalis*. To an infusion of from 2 to 3.75 grammes in 180 grammes of water there are added from 7.5 to 11.25 grammes of bromide, and of this mixture four to eight tablespoonfuls are given daily.

Flechsig gives a preliminary treatment with opium, in doses increasing from 5 centigrammes to a gramme or more, at various

intervals for about six weeks ; then he stops the opium suddenly, and gives instead large doses of bromide—about 7 grammes per day—decreasing the dose to about 2 grammes after about two months ; then the cycle is repeated. This treatment has been very extensively applied by numerous physicians, but in general the results have not been very encouraging. Although there are some who have reported remarkable improvement even in cases that have been of an obstinate nature, in which no effect was produced by the usual bromide treatment, many others have obtained indecisive or even distinctly harmful results. In some cases even *status epilepticus* and a fatal issue have ensued (Bratz). On the whole it would seem that, although opium is sometimes capable of giving good results as a sedative, it is harmful to most epileptics on account of its general action ; as to the bromide, it is true that it gives beneficial effects even in persons in whom the disease has proved obstinate, but this depends upon the large doses that are given after a period of abstinence. The conclusion seems warranted that Flechsig's treatment is one that is too energetic, and even dangerous.

For some years past Richet and Toulouse have advocated a new method of treatment, which consists in the administration of bromides in moderate doses, whilst at the same time the amount of chlorides taken in the food is diminished by the use of a special diet. According to these observers, the deficiency of the chlorides in the body determines their substitution by the bromides, and these, being present no longer as foreign substances, but actually taking part in the mechanism of metabolism, and in the chemical structure of the nervous tissues, become more efficacious. This method has also been widely tried, and though, on the one hand, it has met with approval, on the other it has been condemned as harmful and even dangerous. Pandi has observed that Richet's method tends to produce bromism, and that it may even lead to death from cardiac weakness. All the beneficial effects of this method can, moreover, be obtained without the administration of bromides by simple adoption of a diet deficient in chlorides. The adoption of a regular diet of a mixed nature in the method of Richet and Toulouse is perhaps the most efficacious part of the treatment.

The simple dietetic treatment of epilepsy has frequently been lauded. Thus, Wistocki has advocated a milk diet ; Haig, on the ground of his pathogenetic theory, which attributes epilepsy to the accumulation of uric acid in the blood, advises a mixed, but mainly vegetable, diet, and asserts that he has obtained the very best results with it. It is at least certain that regularity in regard to diet is one of the surest means of diminishing the

number of fits. There are epileptics who have fits only rarely, and always in consequence of dietetic intemperance. Many epileptics who are admitted to asylums or hospitals on account of frequent and repeated fits improve very greatly, and sometimes do not have any seizure for weeks or months, solely on account of the regular diet they receive. The removal of gastrointestinal catarrh, which is so common in epileptics, the use of a moderate and regular diet, and the living of a quiet and fairly active life, are elements of the first importance in the treatment of epileptic patients. It is at least necessary to avoid the excessive use of meat, and also the use, not to mention the abuse, of alcoholic beverages. If there is habitual constipation, as is common, it is very useful to encourage the intestinal functions by means of myokinetic purgatives. When there is indigestion saline purgatives are valuable.

Epileptics require not only medical treatment, but also, and perhaps even more, care and supervision. Many of them are quite able to work, but when at work they run special risks on account of their fits. Another source of danger to the chronic epileptic lies in the psychopathic states, both transitory and permanent, to which he is subject. In order to shield the patients from these dangers without restricting them to a mode of life that is too abnormal, it is desirable that suitable asylums should be established for them, where, during the quiescent periods of their malady, they may be employed in simple and healthy work, more especially agricultural labour, whilst being kept under skilled supervision.

CHAPTER XXI

DEMENTIA PRÆCOX

DEMENTIA PRÆCOX is a process of mental disorganization of irregular course which affects predestined individuals who have previously been intelligent, and who in most instances are youthful. After a series of severe attacks it leaves them in an often incomplete, but always typical, state of mental deficiency, especially as regards the emotions and the will. It is exceptional for the patients, after passing through the acute stage, to emerge from it recovered; in some instances there is partial recovery, some almost imperceptible defects remaining; the ordinary result is, however, profound and irreparable, though partial, loss of intelligence.

By these features, and by certain constant stigmata that often allow of an instantaneous diagnosis being made, dementia præcox is sharply distinguishable from other forms of psychical involution. Whilst in true dementias—for example, in progressive paralysis, and in cerebral arterio-sclerosis of aged people—all the psychical functions become weakened in like degree, or, if there is partial damage, it affects the quickness of perception and the memory, in dementia præcox the memory, and what the Germans call the *Auffassungsfähigkeit*—that is to say, the power of comprehension—are exactly the faculties that remain intact; but the character and the will undergo systematic disintegration.

Dementia præcox did not appear on the horizon all at once. To-day it forms a clinical group of very vast proportions, which includes at least 25 per cent. of the patients confined in asylums; but this great mass, notwithstanding its irrefutable unity, is composed of three distinct varieties of mental disease—namely, hebephrenia, katatonia, and the paranoid psychosis of incoherent type, three varieties which on first view do not seem to be allied by any kind of analogy, and which, in fact, have been differentiated from the chaos of mental disorder only one after the other at intervals of some years, after having remained for some time separate.

Historically, the first germ of dementia præcox was hebephrenia, which was early recognized by a small minority of alienists, but only as an autonomous and rare disease. Katatonia also at first embraced only a few cases of stupor, in which the patients assume statuesque attitudes; it was not regarded as being allied to hebephrenia until observers, by taking up the investigation of its equivalent manifestations and attenuated forms, came to study it in a wider field, and with greater interest. They then perceived, among other things, that this syndrome was the sad privilege of youth, and they therefore regarded it as forming, along with hebephrenia, a single disease, which they designated "juvenile insanity" (Aschaffenburg).

The conception of juvenile insanity then became replaced by the almost identical one of dementia præcox (Kraepelin), a term which refers, with some ambiguity, not so much to the age of the persons affected (some of them are over thirty-six years of age) as to the rapidity with which the disease advances to terminal dementia. The actual importance of this psychosis depends also, however, upon the fact that, hardly had it been reconstituted under the name of "dementia præcox," when it greatly widened its limits. Through the work of Kraepelin its clinical confines were advanced into the territory of paranoia.

How by successive steps this extension was brought about is easy to relate. The idea of "hebephrenia" (from Hebe, the goddess of Puberty) arose in 1871, when Hecker, influenced by the teaching of Kahlbaum, separated off from the ordinary cases of *vesania*, under this name, a disease (we should now say a syndrome) which begins between the ages of sixteen and twenty, passes, without following hard-and-fast rules, through the stages of melancholia, mania, and confusion, and then ends in dementia, being characterized in all its manifestations by a puerility, frivolousness, and unnaturalness, that are so gross as almost to appear to be simulated. Hebephrenia, though it still remains in psychiatry, is reduced to the level of a simple variety, one of the special forms of dementia præcox; it, moreover, retains the same features as those detailed by Hecker when he described it for the first time. As a variety of dementia præcox it has obtained from clinicians that recognition which was denied it so long as it was maintained to be an independent psychosis.

Three years later (1874) Kahlbaum, a pioneer but little heeded, again disturbed the existing taxonomy of mental diseases, this time directly, by introducing into its numerical series a new term, in reality merely a syndrome—namely, "katatonia." Prior to that time katatonia had been an unnamed and scarcely known variety of stupor, or of melancholia attonita; but the few clinicians

who had given some attention to it had not shown themselves able to grasp its distinctive features—namely, its frequency in young persons, its emotional vacuity, and its distinct tendency to persist in chronic forms, and to become converted into masked forms. The celebrated Belgian alienist, Guislain, an original and diligent observer, although somewhat unfortunate in his synthesis, had with clear vision of the truth grouped together the majority of the symptoms that correspond to the clinical picture of *katatonia*—namely, fantastic automatism, declamation of stereotyped words and phrases, periods of obstinate silence maintained for whole years, a spirit of systematic contradiction, and odd mannerism of gesture and language.

Arndt, another alienist of great experience, had advocated since 1868 a very similar principle of selection, grouping, as little amenable to treatment and closely related to one another, all those cases of dementia, hysteria, stupor, and melancholia which, notwithstanding the difference of diagnosis, presented stereotypism of certain eccentric habits, echolalia, a handwriting of an entirely personal character, and silly, continuous, and automatic verbigeration; in short, the series of dysbulic symptoms which, together with statuesque attitudes, compose the clinical conception of a *katatonia* in broad outline.

The existence of *katatonia* as a distinct syndrome is now so little questioned that its anatomical substratum is being studied with advantage (Alzheimer). Little by little, through the work of independent observers, it became possible to free *katatonia* from the preconceptions of Kahlbaum, who had ventured, on account of its motor complications, to regard it as allied to progressive paralysis; the diagnosis of the disease was extended beyond the limits of cases exhibiting the classical statuesque attitudes, and increased experience served to verify the opinion that *katatonic* manifestations almost always occur in the young. A bridge having been thrown across between *katatonia* and *hebephrenia*, juvenile insanity, without dispute and preserving its two forms, became added to the list of mental diseases (Aschaffenburg, Arndt, Morselli, Kraepelin).

The last phase in the historical development of *dementia præcox* is represented by the annexation of paranoid delusions. In the fifth edition of his "*Psychiatrie*" (1897), Kraepelin had begun to divide *paranoia* into two subspecies—the classical or combined, and the spurious or fantastic. In the sixth edition (1899) he left to *paranoia* the plausible, logical, progressive, and fixed delusions, which he had previously assigned to the combined subspecies, whilst he definitely assigned to *dementia præcox*, in association with *hebephrenia* and *katatonia*, all those delusions

of an imaginative nature, and wanting in lucidity, stability, and seriousness, that were previously regarded as paranoiacal, and which, indeed, were merged with those of the classical type. As the result of this transference of paranoiac delusions, dementia præcox attained its present wide clinical extension without loss of its special features.

The unity of dementia præcox depends upon the fact that all other forms of insanity impel the patient to a definite conduct, and have their psychological basis either in affective disturbance, or delusional convictions, or errors of perception, or loss of memory, or dulling of consciousness, or lack of intellectual acumen; given the morbid passion, the mystical preconception, the hallucination, the amnesia or the confusion, poverty or lack of ideas, one can easily explain and almost predict the behaviour of the patients, for it is the natural consequence of fallacious premises.

Dementia præcox, on the other hand, does not affect the contemplative function of intelligence, but consists in a systematic discontinuity of thought and action, which is neither possible nor conceivable from the point of view of psychology, for it is the negation of all subjective determinism. Indeed, the will of these patients does not act under the influence of *motives*, but through the operation of purely organic stimuli which have no psychical correlative. For this complex, characteristic, and very common psychosis, which constitutes the truest and fullest incarnation of insanity, the term *vesania*, which was adopted by Kahlbaum to express something of a very similar nature, is peculiarly suitable. This name, which is also employed by Morselli, might well supplant that of dementia præcox, which is certainly unfortunate and ambiguous. It would not, however, be practicable to make this change of name unless it should meet with the general approval of alienists.

Symptoms.

The fundamental symptom of dementia præcox is *stolidity of conduct*. Whatever be the clinical variety to which his malady belongs, the patient suffering from dementia præcox displays the disorder of his intelligence not so much by what he says and thinks as by what he does; even when he expresses and seemingly thinks something contradictory, absurd, or foolish, as often occurs, the unprejudiced observer easily perceives that the patient is not faithfully conveying his own thoughts, but is to all appearance falsifying them purposely, either from ostentation, as a joke, or owing to an involuntary treachery on the part of the volitional function. Cases are not uncommon in which patients explain

away and disown, at least verbally, their purposeless acts and senseless declarations of a little while before. In some instances their autocritical faculty is excellent, although cold and devoid of any bitterness or remorse. If to this relative sanity of thought there does not always correspond sanity of speech, it is because the subjects of dementia præcox are perverted in their will-power, and speech is an elementary form of action.

The perversion of voluntary activity displays itself in two ways : on the one hand, in the general character of the conduct, and, on the other, by isolated or even repeated, but not continuous, acts of morbid automatism, of which the patient is almost always conscious, and which he remembers. The general conduct is altered either slightly, in respect of the passivity of the patients, or greatly, by the development of katatonia and negativism. With regard to the isolated or intermittent acts of stolidity, they are innumerable, and yet so characteristic that many of them have received a name.

The *passivity* of the patients is especially revealed by the readiness with which they adapt themselves to asylum life ; many of them, especially those in whom the disorder is of long standing, except for some habitual peculiarities of gesture and speech, are docile, moderately active (provided that no initiative is required of them), and orderly even to pedantry. With such characteristics they might be able to remain at home were it not that every change, however slight, involving a departure from their programme of uniformity and automatism, even the effort that is required in order to make so simple a choice as that between an evident benefit and an equally evident disadvantage, is beyond the will-power of the patient.

It is true that in some instances these patients are intolerant of asylum life ; but their rebelliousness is, as a rule, merely an act of negativism, and exhausts itself in a purely verbal protest, which is devoid of any real feeling, and which is repeated every day in the same words at each visit, like a refrain or the plaint of a beggar. Some of these eternal petitioners request, in the usual tone of indifference, with almost incredible persistence, to be transferred to the asylum of their own district, or to the pavilion for excited patients ; they gravely ask to be bound ; they stand motionless exposed to the sun ; they walk up and down all day along the same path, as if obeying some law of inertia. Neither for their inaction nor for their actions can they indicate any motive, and, indeed, they have none. Their will is detached from reason, and acts on its own account, losing, of course, all the characteristics of voluntary activity. I once gravely asked a man, the subject of dementia præcox, who had been a teacher of

literature in the secondary schools, and who for ten years had been a lucid, very quiet, clean, idle, and contented inmate of the asylum, if there was any desire that he wished to have gratified, and after a long pause, during which he seemed to meditate, the patient, by way of saying something, quietly remarked that he would be pleased to have a glass of water. This was the first request he had expressed in the course of ten years, and he was not thirsty.

Katatonía is a state of spastic immobility in its classical form, and of discontinuous stereotypism in its minor manifestations. In both types the patient is active, but the activity is one that is purely external, and that does not affect the higher functions of



FIG. 108.—KATATONIA.

The patient continually stands erect, with his feet together and his arms approximated to the trunk; he holds his head rigid, and keeps looking downwards. For many years he has not spoken a word.

the brain. Psychically, katatonía is always passive, because its muscular outward expressions, notwithstanding their conspicuousness and their persistence, do not correspond to any psychical impulsion, nor is there any psychical impulsion or any other determinism that serves to modify it. If *catalepsy* is unconditional obedience to the suggestion of others, katatonía is blind and unconditional obedience to an internal impulse of no psychical value. Passivity, catalepsy, and katatonía are similar, but not identical, expressions of the same fundamental condition—namely, the failure of the will. The patient is no longer able to make use of his will; or he does use it, but only in subordination to the will of others; or he sets it in action, but by the impulse of an irra-

tional and invariable stimulus. In all three cases the volitional act is unnatural; there is only an appearance of will, only an automatic phenomenon, mechanically active and psychically passive.

A major and a minor katatonia may be distinguished. Major katatonia is characterized by statuesque attitudes, or by spastic immobility; minor katatonia by insensate habits, such as *echopraxia*, *echolalia*, *neolalia*, *neographia*, and various *mannerisms* of gesture, gait, and pronunciation. The statuesque attitudes of katatonic patients, which have already been described in Chapter VIII., are not to be confounded with the emotional



FIG. 109.—DEMENTIA PRÆCOX IN KATATONIC PHASE.

The patient remains immobile, silent, and with his eyes closed.

expressions of hysterical patients during the terminal period of their attack. The latter patients always have something dramatic, and even æsthetic, in their mystic, erotic, terrified, or angry postures; whereas sufferers from dementia præcox in the katatonic state, notwithstanding their solemnity, are rather clownish, and have nothing of the romantic about them. They often allow the saliva to trickle over their chin, or their nasal mucus to flow over their lips, and their maintenance of a particular position in spite of every opposing stimulus, even that of ridicule, does not tend to enhance their attractiveness. In Fig. 108 there is seen a composed facial expression, which might imply reflection; but

the long duration of katatonia and the military bearing of the patient, quite out of keeping with the concentrated expression of his countenance, prove that he is not animated by any emotion or delusion. Fig. 109 represents a young man in a state of katatonia, who is also cataleptic, and who never speaks, although he sometimes smiles and winks. In the attitude of the patient represented in Fig. 110 there is to be seen an expression of stupor, which in this case lasted several years. The patient never relaxed his immobility, except in order to steal food from his fellow-patients, which he attempted to do by a series of slow movements.

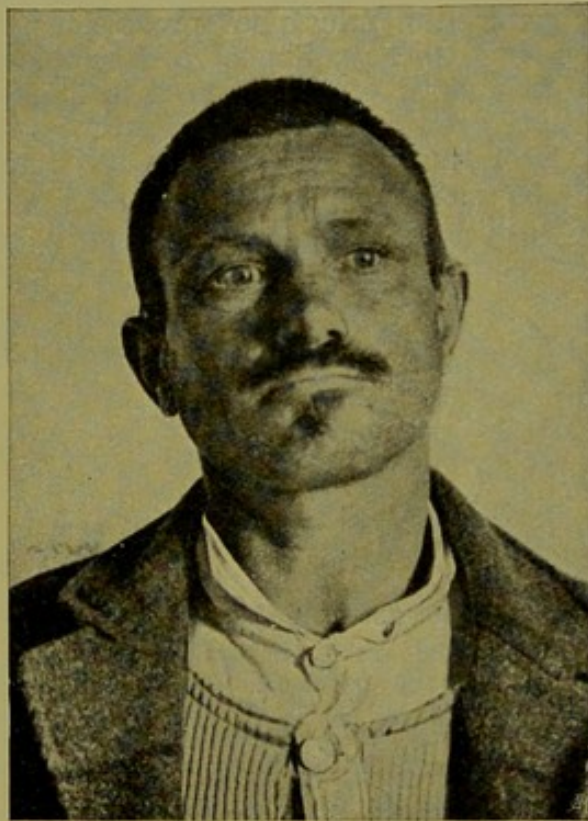


FIG. 110.—DEMENTIA PRÆCOX : KATATONIA.

Minor katatonia, and the forms it assumes, have already been dealt with in Chapter VIII. Here it will suffice to mention the more common forms of stereotypism to be observed in patients suffering from dementia præcox. They are as follows: Not swallowing the saliva, and so allowing the mouth to remain filled with it; speaking with the teeth together; habitual alteration of the terminations of words in speaking (neolalia), and of their orthography when writing (neographia, Fig. 111); walking on tiptoe; the adoption of ceremonious procedures upon every opportunity, and with annoying persistence; eating with the fingers, or slowly, or in the standing position, or with certain precautions dictated by imaginary prophylactic rules. There are patients who, while in the asylum grounds, continually follow in

the steps of some other inmate (echopraxia). In some instances the imitator, though suffering from dementia præcox, is endowed with a certain amount of intelligence, whilst the model, whose attitudes and movements he counterfeits, is an idiot. Patients suffering from dementia præcox repeat these actions for years with the attention and earnestness of one who performs a duty or a rite.

P. G., a clever worker in mosaic, forty-five years of age, has been a patient in the asylum for twenty-six years. He manifests no coherent delusion, is inoffensive and orderly, and draws, when it pleases him, with remarkable skill, both from nature and in depicting imaginary scenes, such as cavalcades, triumphal processions, battles, savage dances, etc., displaying delicacy of touch and happiness of invention. Nevertheless, the behaviour of this patient is quite insensate. He does not pronounce the vowels, or hardly accentuates them; he speaks only by movement of the lips; he deforms all terminations, either

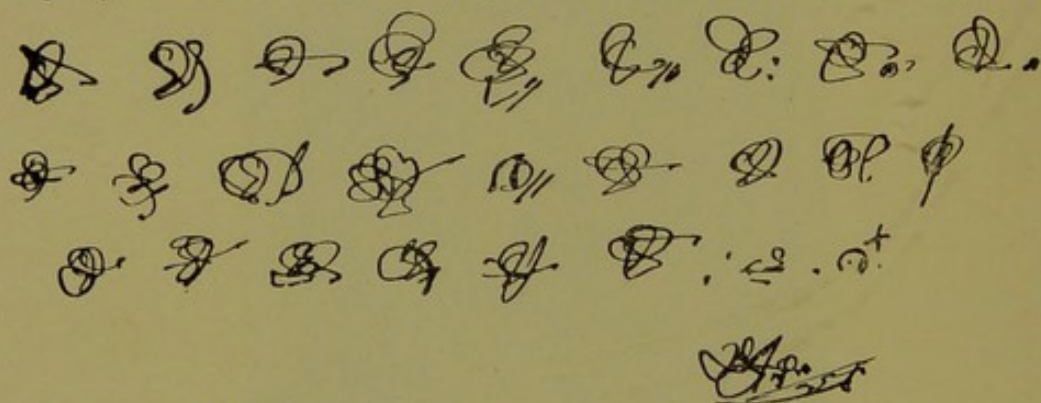


FIG. 111.—PSEUDOGRAPHIA IN A CASE OF DEMENTIA PRÆCOX.

The patient habitually intermingles these signs with the ordinary letters. As a rule he interpolates a character of the above nature between every eight or ten ordinary words (these being also devoid of any significance). Here the pseudographic characters occur one after the other; the three lines were preceded by twelve others of a similar nature. Each of the characters, notwithstanding the constancy of type, is distinct from the others.

truncating them or adding to them suffixes in *is* and *os*; he writes correspondingly, often making the individual letters excessively long, and always intercalating an *h* between the vowels *a*, *o*, and *u*, and the guttural sounds *c* and *g*, so that he signs himself *Ghaleffi schultore*, although his name is Galeffi, and he is not a sculptor (Fig. 112). His moral insensibility is complete; he never asks to be allowed to go out or to see his family; he remains impervious to every observation, exhortation, reproof, promise, or abuse, and neither money, nor desire for liberty or for other benefits, will persuade him to submit to regular work. For twenty years this absolute inertia has been maintained.

L. R., a man of independent means, twenty-seven years of age, was incapable of continuing his studies further than the elementary schools. He writes grammatically and fluently, but he behaves like a foolish and depraved child. He wished to marry in order that he might be on a par with his brother; he drinks wine and liquors to excess; he has no object in life; he does not respect his parents; he passes his time in complete idleness, and subjects his food to endless manipulations in order to free it from phosphorus, with which he believes it to be mixed.

There is a negative feature of katatonia to which the term "negativism" has been applied (Kahlbaum). In this we can similarly distinguish a *major negativism* and a *minor negativism*. Major negativism consists in habitual and complete opposition to every suggestion, whether it is imperious, calm, or flattering, whether expressed in words or indicated by signs. Every such suggestion, no matter if it is in accord with the most urgent and obvious interests of the patient, causes him to assume a katatonic attitude of an exactly opposite nature. If the patient is invited to eat, he shuts his mouth so firmly that he even looks as if he were suffering from trismus; if he is asked to lie down

FIG. 112.—DEMENTIA PRÆCOX.

Mannerism displayed in characters of writing, corresponding to a mannerism of pronunciation. "*Io Signior Ghalef Pio.... Udit da Lei Molt Illustre E Sapient.... nel Mes Genner del passed Ann 1877... che un stet d' salut era chonsidered quel ghuarid.*"

in bed, he rises up with resolute and theatrical demeanour, notwithstanding the cold and discomfort to which he exposes himself—in short, his attitude is one of passive resistance to everybody and everything (Fig. 113).

This paradoxical contrary reaction is also manifested in a less disagreeable, less absolute, and less persistent form in minor negativism, which does not go so far as mechanical resistance. In these cases the patients always seem to be opposed to what is said by their interlocutor, whoever he may be, even at the cost of contradicting themselves. The spirit of contradiction that is sometimes met with in normal persons, and frequently in hysterical patients, has never this pathological character, for

it is always dictated by some interest—for example, by strong feeling, by a sense of honour, or by scorn—and it is generally restrained in a natural way by the very egotism that has given rise to it. In the victim of dementia præcox the contradiction receives neither stimulus nor restraint from any sentiment, because it takes its origin in the obscure sphere of automatism.

This triumph of automatism occurs without any internal struggle, because self-respect, modesty, and the instinct of self-preservation are quite absent, especially in the chronic stage of



FIG. 113.—DEMENTIA PRÆCOX : KATATONIC NEGATIVISM AND PSEUDO-CONTRACTURE.

The patient cries out and resists whenever an attempt is made to change her position.

the disease ; the *affective vacuity* is complete. Morbid impulses meet with no resistance when moral control is wanting. There are patients who manifest no shame in telling that they are masturbators, and even in publicly maintaining the legitimacy and excellence of such practices. Few of those who suffer from dementia præcox make any attempt to conceal their lack of affection for their family. Some of them will commit in cold blood the most serious unnatural acts, even suicide, for the most inadequate reasons, or for no reason at all. A patient of this kind, a clerk of thirty years of age, twice threw himself from the

third story, miraculously escaping serious injury. He was not melancholic, and declared that by giving this proof of his courage he intended to disarm his enemies. At the same time he was not very certain that these enemies had any existence, and he did not attribute much importance to the possibility of their attacking him. A companion of this patient, of the same age, with paranoid delusions of persecution, was on one occasion offered a pansy, whereupon he was seized with the idea that this flower was a messenger of death, and, as the augury was not fulfilled, he cut his wrist deeply with a knife. As he did not succeed in killing himself, and notwithstanding that he had lost much blood, he ran off into the country, and, climbing a tall cypress-tree, he prepared to throw himself down; but at the sight of persons coming with a ladder to rescue him he changed his mind, and began to mock his rescuers, calling out gleefully from the top of the tree, "One, two, three," as if he was about to jump into the air. An army captain, likewise afflicted by paranoid delusions, and now a dement, attempted twice to commit suicide in order to demonstrate his invulnerability. On the first occasion he tried to precipitate himself down the well of a stair, but struck against the balustrade, and was thrown on to the flight of steps immediately below, receiving only some slight bruises. The second time he swallowed an infusion of cigars collected from the patients in the old asylum of Florence, but, having been at once seized with vomiting, he rallied in three days, after showing severe symptoms of poisoning. He now proposes, with the object of confirming his contention, to leap from the ground to the third floor. A young lady, who subsequently recovered and married, used to strike her companions without cause. She pulled out three of her incisor teeth, raising them up gradually with a handle of a pen. From time to time she laughed silently. Her mental disorder began with somewhat incoherent delusions of persecution.

Among the impulses to which patients suffering from dementia præcox are subject is that to run away from home. Such flights are foolish, purposeless, and sudden, the patient giving no warning of his intention, and setting out without money, in no spirit of anger, devoid of fear, and without having any particular object in view. When he is discovered he quietly allows himself to be taken home, as if nothing had happened. Sometimes these flights are repeated, always in a different manner, and the patients do not seem to realize the alarm that they cause to their friends. The explanations that they give of their conduct are often grotesquely puerile. They wish to take walking exercise, to seek fresh air, to pass the time, to explore new countries,

to study astronomy, to see the sun rise, or to stretch their shoes.

The affective indifference is manifested even during the stormy beginning of dementia præcox and in its acute phases—that is to say, when the patients behave like melancholics, or like maniacs, or like paranoiacs, and appear to be animated by great passions. Their acts of violence are too sudden, ephemeral, and incoherent to have origin in a true and lasting feeling. It is only when the diagnosis of dementia præcox has been made that an explanation is obtained of the purposeless flight, of the suicide when there was no despair, of the wound inflicted not in anger, or of the calumny spoken without any feeling of hate. A bus-driver, who has been for thirty years in the asylum, made his horses go at full gallop, to the great consternation of the people in the street, and he was certainly neither unconscious of what he was doing, nor irritated, nor intoxicated. Another man, also suffering from dementia præcox, and typical in respect of his extreme docility, suddenly with one blow killed his mother, whom he had always loved, and could give no explanation of his conduct, which was so contrary to his habitual gentleness, and seemingly inconsistent with the quiet type of his dementia.

Certain actions of minor importance are also to be explained in the same way. These include laughing without cause, crying when no grief is felt, outbursts of passion when there has been no irritation, calling out without having any feeling of fear, etc. Patients suffering from dementia præcox often commit grave indiscretions—for example, professing and believing themselves to be enamoured of someone, but their love is full of exaggerated expressions of heroism and constancy, for it is not sincere. In all their actions, even the most bold, the victims of dementia præcox show an absence of pride.

This absence of pride (and even of self-respect) is very evident in the terminal phase. A patient of this kind, whom I asked if he thought himself to be insane, answered laughingly that the point was not one that he was competent to give an opinion upon, and that it was one, not for him, but for me, as an alienist, to determine. Another patient will assume any position, make any gesture, laugh, tremble, or simulate ecstasy when asked to do so, making expressive but grotesque movements, even before numerous spectators, without being concerned at the poor figure he is cutting. Nevertheless, he is a cultured and intelligent man, who maintains his ability to observe acutely and to write with lucidity. Proof of this may be seen in the following note written by him, which is valuable in many ways as an illustration of the characteristics of dementia præcox.

"Having been asked by a patient in the asylum for a match, or for permission to light his pipe at the cigar which I held in my hand, I noticed, at the moment he brought his hand near to mine (after I had given permission) for the purpose indicated, that he had a deformity of one finger, and feeling sorry for him, the thought passed through my mind to exclaim jokingly, 'Avra i bachi!' (He must have worms).

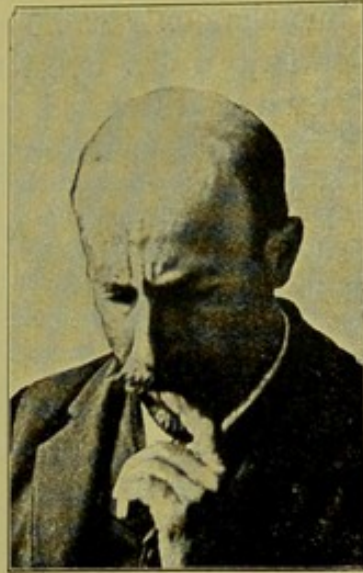


FIG. 114.

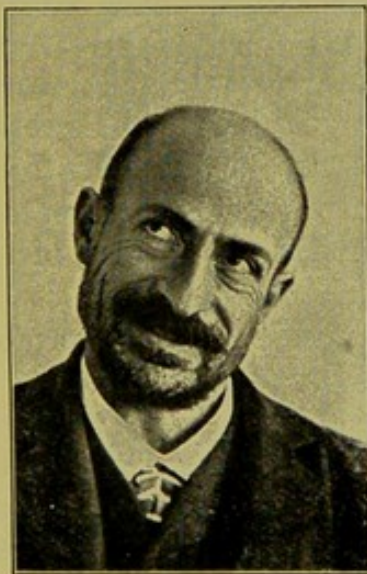


FIG. 115.

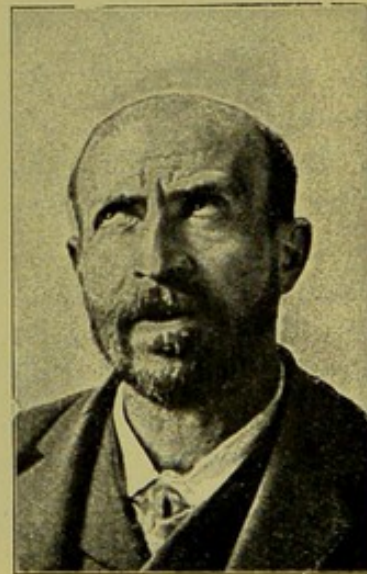


FIG. 116.

FIGS. 114, 115, 116.—DEMENTIA PRÆCOX: PARANOID FORM.

The patient, the moment he is asked to do so, assumes attitudes which are grotesque in respect of their exaggeration, and which are out of harmony with his habitual profound indifference to every occurrence, whether trivial or important.

as they say in Chianti. Now, whether it was that attendant Mazzanti had observed on my lips a passing smile, or that he opened his mouth accidentally and pronounced the words mechanically, the fact is that he heard distinctly what I had thought, but not expressed—namely, 'Avra i bachi!' I do not think that I can have *imagined* this, as an almost similar occurrence took place with another attendant,

Risaliti, at the thought *mortuus est et in camiciola jacet*. These may be superstitions, but, having heard of spiritualism, magnetism, and the predominance of a strong will over weaker ones, I was struck by the two incidents, which showed me how my thought may be read."

In this writing the clearness of the ideas and the somewhat pedantic style contrast with the futility of the pondered sentences of the patient, but the contrast becomes very great when one knows that this patient walks upon tiptoe, speaks with a ridiculous intonation, is never distressed at anything—not even at his own hallucinations—often talks foolishly, and has been for many years the most contented patient in a large asylum.

A phenomenon of frequent occurrence in cases of dementia præcox is that of *hallucinations*. Many patients suffer from them continually, but they do not always serve as the subject of a delusion. A young man, who always reads the same book and hums the same tune, who automatically repeats that he wishes to return to New York, his native place, and who never employs himself in any other way, suffers from auditory and olfactory hallucinations. He has preserved in his demential mannerism the habit of keeping the collar of his coat raised, and his hand is in continual movement in order to block either his ear or his nose (Fig. 117). Another patient—one of the most grotesque in the asylum—who speaks an incoherent slang, who covers his breast with imaginary decorations, and does humble work in the hospitals, from time to time takes sudden fits of swearing, kicks the wall, breaks the glass of the windows with his broom, and then triumphs over imaginary enemies, whose threatening voices he thinks he hears. Apart from the occurrence of these hallucinations, he is cheerful and quiet.

Even katatonic patients, notwithstanding their profound imperturbability, are often affected by hallucinations, and in their periods of remission they describe the terrifying or comical scenes in which they have thus taken part. In such patients a passing smile, an exclamation of surprise, or a threatening word, is usually the only vague indication of the actual occurrence of the hallucination. Patients of the paranoid variety are, however, able to give a more exact account of their experiences, sometimes doing so with many picturesque expressions. A young lady subject to auditory and genetic hallucinations sent me the following letter :

"Illustrious Professor, I am for ever in despair on account of the danger that threatens me. I can write only with difficulty, because I feel my head to be occupied in part by those invisible persons who cause me to be stunned and rendered incapable of thinking without tiring myself. I suffer from terrible pains in the abdomen, caused by these same persons who keep me bound by such vile means. I cannot

longer endure this slavery ; I must have my liberty and my health, because God has given me them. Have pity upon me, Professor, and see that I am delivered from these human beasts. Let the police know, and make them exercise supervision over them. Some expenses will be incurred, but these we shall willingly pay. Greeting you respectfully, I sign myself, devotedly.—N. N.

"Whenever I can get away from Florence, I will get a good doctor to examine my body ; and if anything is missing—if everything is not in order—I am capable of taking a terrible revenge."

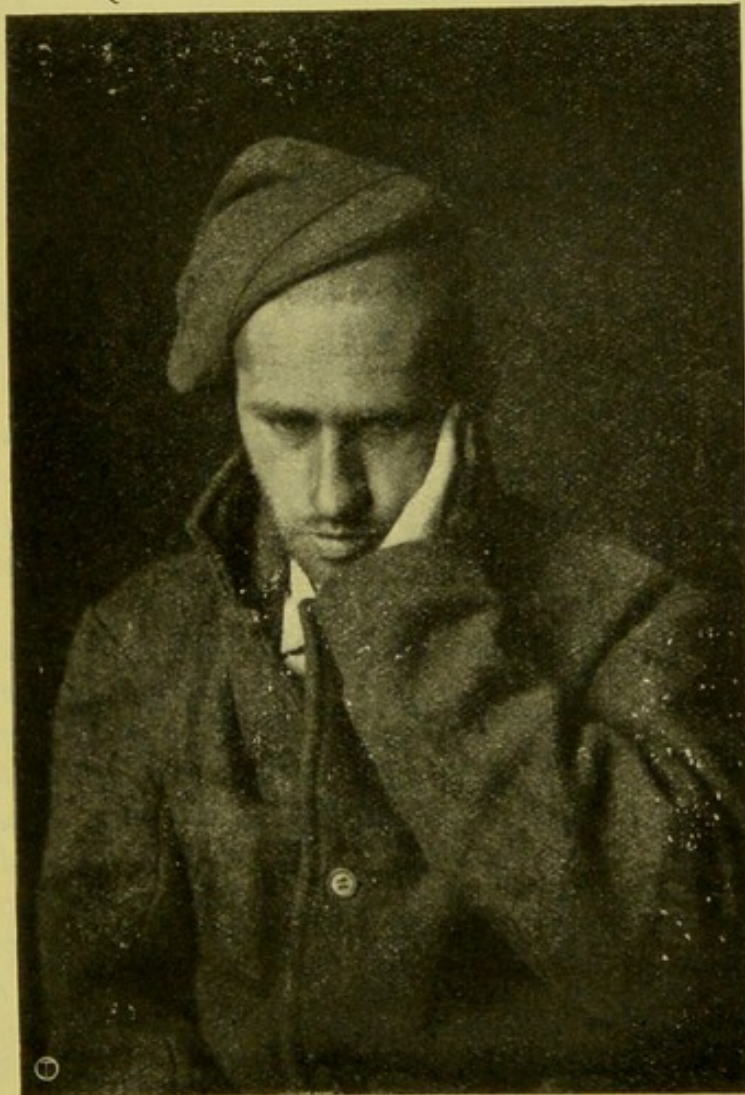


FIG. 117.—DEMENTIA PRÆCOX : PARANOID FORM.

The patient has for long suffered from auditory hallucinations, and has the habit of closing one ear with his hand and the other with his cap.

This lady, notwithstanding the earnestness of her complaints, is often cheerful and contented, and is sometimes so incoherent as to ask protection also for her persecutors, a list of whom she carries in her pocket, and shows to everybody.

Hallucinations are so frequent and characteristic a phenomenon of dementia præcox that Kraepelin almost doubts their existence in the chronic form apart from this disease, and holds that the

delusions of genuine paranoia are almost always unattended by hallucinations. This observation is very true. Whole classes of paranoiacs, such as the erotic, the querelant, the mattoid, and a large proportion of those with delusions of persecution, have had no experience of hallucinations, and stoutly deny ever having suffered from them; but a small number of persecuted paranoiacs, and almost all the ambitious paranoiacs—for example, the prophets of new religions—are subject to hallucinations as much as, and even more than, cases of dementia præcox, for the hallucinatory phenomenon in these paranoiacs is more definite in character than in any other form of mental disease. At the same time, with the exception of these few cases of paranoia, it is certain that chronic hallucination is a symptom almost pathognomonic of dementia præcox, just as acute hallucination is a symptom almost pathognomonic of amentia.

In those who suffer from dementia præcox, complex forms of hallucination are common, such as *audible thought*, *sonorous repetition of thought*, and *speaking visions*. Auditory (Figs. 117, 118), gustatory, olfactory, and cœnesthetic hallucinations are specially common. If, however, the patients are interrogated without the reply being suggested to them, and also without stimulating their negativism, it can be recognized that the hallucinations of dementia præcox are not always so schematic and precise a phenomenon as they seem. The explanation that the patients give of them varies from time to time, and the pretension that they have of being able to understand the mechanism of the occurrence militates against the objectivity of their description. At the same time, if we collect a large number of authentic confessions, there is no difficulty in detecting a common element which places the victims of dementia præcox in a psychological position that is quite characteristic. In many instances the phenomenon seen superficially by the person who has never had actual experience of it, and regarded as an hallucination, is not produced by vivid images similar to real ones, but by *mental images*, sometimes blurred, which, moreover, differ from ordinary thought in respect of their heterogeneity. These images have the character of *extraneousness*, and hence they are interpreted as morbid or artificial and malign phenomena, and they are never mistaken for images of actual things, because they are not true hallucinations. They are the so-called pseudo-hallucinations or psychical hallucinations of Baillarger.

In persons suffering from dementia præcox there is almost always at least a glimmer of *delusion*. Delusion is therefore not characteristic of the paranoid variety; it occurs transitorily also in hebephrenic and in katatonic subjects. The only difference

lies in this: that in the paranoid cases the delusion is more chronic; it is, however, neither much more complex nor much firmer. At any rate, as a systematized delusion is always a personal interpretation which betokens a certain power of initiative, hebephrenic and katatonic patients do not have delusions, excepting at the beginning of their disease, or during the phases of remission. Hypochondriacal delusions are the most frequent. The hypochondriacal delusions of cases of dementia præcox are distinguished by their inconsistency with the apathy of the patient, and by the pseudo-scientific dress that they assume, even in the minds of ignorant young persons.



FIG. 118.—DEMENTIA PRÆCOX: PARANOID FORM—HALLUCINATIONS OF HEARING.

The patient is in an attitude of listening to the voice of her daughter, who she believes is being cruelly treated.

Whilst the hypochondriacal delusions of paralytics are hyperbolic and ingenuous, but arise from a sense of ill-being that is felt acutely, those of persons suffering from dementia præcox are only a petulant affirmation full of ignorant presumption. The patients assert that they have heart disease, that a lung has been destroyed, that they have syphilis, general paralysis, anæmia, and even all these diseases together; but in talking about their maladies they manifest only feeble emotion, and in some instances they display more interest in the explanation than grief for their occurrence. This explanation, although much more probable than the explanations alleged by paralytics, is so ill-founded that one is left in doubt whether the patient, who is fairly lucid, is really convinced of it. Indeed, the hypochondriacal delusion has some of the fatuity, stolidity, and automatism that dominate the whole conduct of the patient who suffers from dementia

præcox ; in short, it may more readily be attributed to the dementia of his actions than to the dementia of his ideas.

When an adolescent or a young man, who is not neurasthenic, manifests incoherent hypochondriacal ideas, dementia præcox is most probably the correct diagnosis. The distinction from neurasthenia is very easy, because neurasthenics brood over their condition, but they do not become delusional ; they are always open to good advice, and they allow themselves to be comforted, and their ideas are always based upon sensations that are real, however deceptive they may be. The same may be said with regard to the hypochondriacal ideas that sometimes arise in cases of hysteria.

Less frèquent, but equally disconnected and weak in affectivity, are the *delusions of persecution*. The patients do not take measures against the plots that they fear, or say they fear ; often they make them the subject of boastful declarations, or of ironical jokes, which betray their indifference, or they have recourse to puerile defensive expedients. A photographer, graphomaniac, erotomaniac, and inventor, subject to pseudo-hallucinations, who had passed through a phase of confusional agitation, imagined that he could render himself immune to all hostile actions by having some threatening sentences scribbled on a piece of paper that he always kept in his pocket. A student of law, who was profoundly demented, but whose orientation was not affected, repeated the following words a hundred times a day : " In the name of God and of my Sovereign, the Ottoman Caliph, I, Umberto B., request of the Advocate Anselmo, of Florence, to be set at liberty, and I declare that I do not require to eat and drink anything except bread and water, provided that it is guaranteed to be pure and free from organic human substances."

All forms of delusion are represented in cases of dementia præcox. There is a delusion of sin, devoid, however, of feelings of remorse, and therefore very different from that of melancholic patients. Melancholics do not generally specify any particular fact, whilst patients suffering from dementia præcox describe imaginary misdemeanours, improvising freely, as if they wished to mystify.

Some accuse themselves of incest, some boast of having committed assassination, some confess active or passive pederasty unblushingly, but without there being a shadow of truth in what they say. The ambitious ideas of these patients engender *delusions of grandeur*, which flourish in absurd association with systematized delusions of quite a contrary character. A self-styled Nero, King of the Asiatics, of the Fabrizie and of the Concie, notwithstanding his very high rank, falls on his knees

every time he meets one of the asylum doctors, touching the ground with his forehead ; he is so addicted to this habit that he actually carries the mark of it about with him—namely, a corn a little above the glabella. Naturally he is the most adorned patient in the asylum (Fig. 119). In women who have reached the menopause, or who are near it (and more rarely in men who have reached an analogous time of life), there is liable to develop a *delusion of persecution* of hypochondriacal character, associated with cœnesthetic hallucinations. Its features, in addition to its late onset, are chiefly two—namely, that it never degenerates into



FIG. 119.—PARANOID DEMENTIA IN THE TERMINAL STATE, WITH EXTREME AND VARIED DELUSIONS OF GRANDEUR.

The patient converts into decorations box-lids, buttons, ribbons, and any other more or less suitable object. His face has a calm, satisfied, and benevolent expression.

incoherence, and that it is not associated with ambitious ideas, such as are so frequent in hebephrenics. Apart from the presence of these two features, *persecutory hypochondria* (Lugaro) is a paranoid delusion.

The writings of patients suffering from dementia præcox are an inexhaustible source of data that sometimes testify to the existence of an unexpected degree of lucidity ; in other cases they similarly reveal a strange laxity of the will, which does not appear to be so marked in the course of conversation with the patient. There is, as it were, a *graphic dementia*, just as there is a *verbal dementia*. Naturally there is most commonly a parallelism of

all the varieties of dementia, the general conduct, the expression, the speech, and the writing especially revealing the same degree of disorganization. At any rate, the form and the content of the writings represent, among all these symptoms, an extremely delicate indicator, which reveals with remarkable exactitude the presence and the degree of the disorder, or of the mental lucidity.

Patienza significa eroismo.
Per la Fede bisogna fare tutti i
sacrifici possibili ed immagi-
nabili - Bussa bussa ti sarà
aperto l'uscio per entrare nella
casa di Dio - Vicino a Gesù
ci stanno i libri, vicino ai li-
bri ci sta l'immagine della
Madonna di Pompei, e vicino
a te c'è la Verità - Fuori
dell'uscio ci sta la Menzogna.

FIG. 120.—DEMENTIA PRÆCOX: EXAMPLE OF WELL-WRITTEN BUT DISCONNECTED COMPOSITION.

On certain days the patient proposes to demonstrate his virtuousness, and with this object he fills whole sheets with insipid and commonplace maxims, to which he attaches great importance: "Patience signifies heroism—For the Faith it is necessary to make all possible and imaginable sacrifices—Knock, knock, to thee will be opened the door to enter into the house of God—Near to Jesus stand the books, near the books there stands the image of the Madonna of Pompei, and near to thee there is the Truth.—Outside the door there stands the Falsehood."

Among the preceding writings there is one that has been given as an example of *graphic lucidity*, contrasting with incoherent absurdity of conduct. As an illustration of the opposite condition—that is, of *graphic dementia*—the following will serve. A young man suffering from paranoid dementia passes his days filling whole pages with commonplaces or meaningless sentences, which are underlined and written neatly with irreproachable caligraphy (Fig. 120). A student of sculpture, whose behaviour is fairly good, writes as follows:

"Angelo Mosso doubts, or rather believes, that man is provided with a soul, deducing his theory from experiments made in the Alps; Baccelli, on the contrary, maintains that life is a product of muscular force. I prefer the second."

In some cases disorder of thought is associated with that of writing (Fig. 121).

Dementia præcox, especially the hebephrenic variety, is often preceded by almost incredible degrees of onanism, to which the patients give way without limit or sense of shame. According to common opinion, indeed, such abuses are the determining cause of the disease. It is, however, more probable that the excitement of the genetic sensibility is in itself a symptom of the disease. These practices accompany the early stages of this long involutive

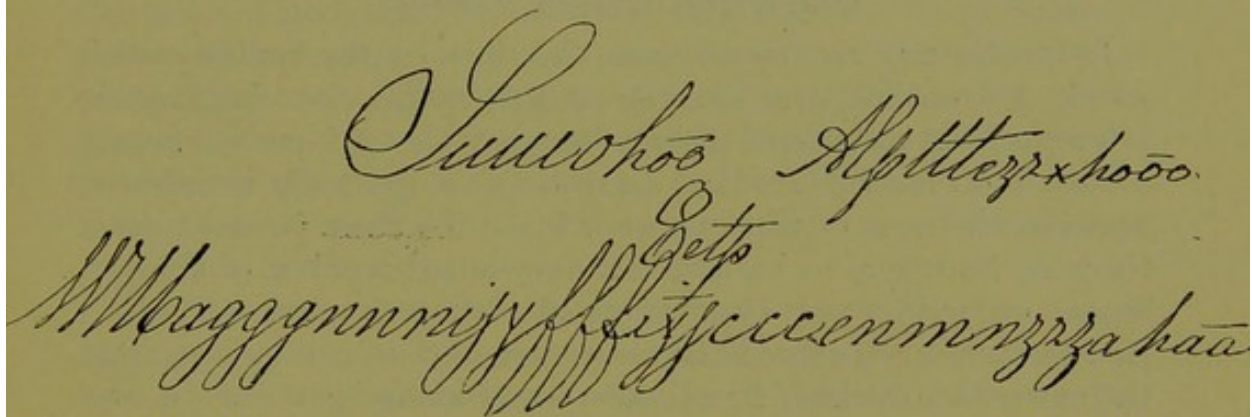


FIG. 121.—DEMENTIA PRÆCOX OF THE PARANOID VARIETY: TERMINAL STAGE WITH CHAOTIC INCOHERENCE.

Graphic mannerism, consisting in the repetition, most frequently three times, of certain letters, and in the interpolation of letters that should not be used. The words are "*Sua Altezza e Magnificenza*." This was written by the patient portrayed in Fig. 119.

process, and sometimes cause great emaciation, but it is not uncommonly the case that they afterwards cease suddenly and completely. It would appear that in the progressive involution of hebephrenia even genetic sensibility is involved. When every erotic stimulus ceases the patients begin to put on flesh, and after a few months they attain to a grossness and ugliness which, being displayed chiefly in the face, renders them unrecognizable. At this stage of dementia præcox all the symptoms of the disease subside permanently: the negativism disappears, the systematized delusions melt away, the patient no longer abuses himself—he is an extinct volcano.

As juvenile demented of both sexes are subject, independently of onanism, to very marked cyclical changes dependent upon the *general state of nutrition*, it is not improbable that the flaring up and the sudden extinction of the erotic manifestations are really special consequences of this general metamorphosis. On the other hand, the fact that the genetic sensibility, once it has become

latent, does not revive renders it probable that there is a partial sexual involution caused by the abuse of function.

With regard to *somatic symptoms*, the only ones that are really noteworthy, though far from being constant, in the course of dementia præcox are the variations in the state of the nutrition already mentioned. The exaggeration of the knee-jerks, the tremor of the eyelids when the eyes are closed, occipital headache, constipation, and insomnia, are features only of the acute stage, and belong to the neurasthenic syndrome. There is only one inference to be drawn from the occurrence of these symptoms—namely, that dementia præcox very often begins with more or less prolonged attacks of neurasthenia.

Course and Clinical Varieties.

Dementia præcox, apart from the fact of the rapidity with which it reaches the chronic stage, merits its designation “*præcox*” on account of the circumstance that it is pre-eminently a disease of youth. Its first symptoms are generally manifested between the ages of fifteen and thirty. To these juvenile cases there is, however, to be added a very small number of delayed cases, occurring not later than the sixtieth year, in which Kraepelin has recognized the characters of dementia præcox, and the existence of which I have also occasionally been able to confirm. These exceptions do not invalidate the statement that the disease is one of youth, and still less do they destroy its individuality. That dementia præcox is a disease of youth is attested by the now abundant statistics compiled by many different alienists.

That the occurrence of a few late cases in the long series of juvenile cases destroys the individuality of the disease is a view that is quite untenable. Dementia præcox manifests itself by symptoms so numerous and so characteristic that it can be diagnosed even without the patient's birth certificate. There are, indeed, diseases which, among other features, have that of the age at which they occur—for example, diphtheria, whooping-cough, and measles, which are diseases of the young, and carcinoma, arterio-sclerosis, gout, and apoplexy, which occur in old people. No one would, however, think of raising doubt as to the individuality of these diseases on account of the exceptions that occur with regard to the age of the individuals affected by them. The same tolerance should be accorded to dementia præcox. Moreover, it is not without importance that the few exceptions that occur are cases of persons who, though they have indeed reached adult age, are not so advanced in years as to warrant us to assume that they have reached the beginning of

senile involution. It may therefore be concluded that dementia præcox is a disease of youth, that persons over thirty are much less liable to suffer from it than younger ones are, that this liability is very slight after the fortieth year, and that old persons are quite immune to it. Not one of the various forms that senile involution may assume resembles dementia præcox; indeed, senile dementia, inasmuch as it clouds the memory and retards perception, is symptomatically also the complete converse of vesania, or dementia præcox.

The *course* of dementia præcox varies to a marked extent in different cases. As a rule it begins with paranoid delusions, usually of a hypochondriacal or persecutory nature, which afterwards disappear, giving place to katatonic symptoms and to delusions of grandeur. This evolution is the rule in the paranoid forms, and Magnan accurately describes it as characteristic of chronic delusion. The patient gradually, within a few years, passes into a state of profound apathy, in which there are still residues of delusions and katatonic mannerisms, but not loss of memory or of orientation. This progressive type of the disease represents its *classic* or *continuous course*.

In other instances dementia præcox develops by *poussées*, or by crises, which are more and more severe each successive time, and which are separated by intervals of lucidity that may last three or four years (*intermittent course*). Between one attack and the next the patients appear normal, but it is very difficult to be certain that they are not in reality to some extent weakened in their intellectual capacity, less energetic, less robust, and less imaginative than before. Figs. 122, 123, and 124 represent the appearance of a young woman in three different states: in the first, she is extremely depressed; in the second, she has a surprised and troubled look; in the third, she is shown as she appeared when she had recovered from her illness (*temporary recovery*, which in this case lasted for three years). It may also happen that with the first crisis of dementia præcox the morbid process exhausts itself permanently, and that the patient regains his original condition of health (*favourable course*—very rare); or, after one or two years, the patient descends some degrees in the intellectual and moral scale, and remains there permanently, without, however, presenting any psychopathic anomaly. Affective poverty, psychical sterility, readiness to submit to misfortune, renunciation of ambitious ideas, narrowness of mental outlook, and puerility of character, do not prevent a recovered patient from maintaining a regular conduct, devoid of delusional ideas and of morbid habits. In these cases of *abortive course* the lowering of the mental level is outwardly manifested by the fact

that the patient, although recovered, adapts himself to an inferior career, or abstains from any militant activity. Brilliant students at the Universities accept posts as clerks, and enrol themselves in the lower grades of the bureaucracy, of the army,

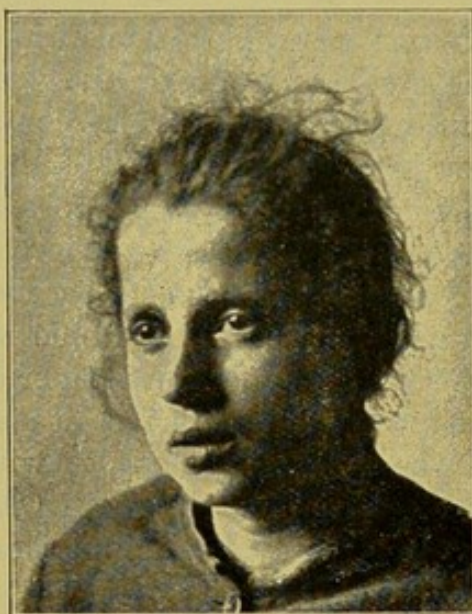


FIG. 122.—CASE OF DEMENTIA PRÆCOX IN STATE OF DEPRESSION.



FIG. 123.—THE SAME PATIENT IN STATE OF STUPOR AND DYSMIMIA.



FIG. 124.—THE SAME YOUNG WOMAN COMPLETELY RECOVERED.

For almost three years the state of mental integrity was preserved; now a fresh attack of hebephrenia has occurred.

of journalism, or of the theatrical profession; or, if they have money, they give themselves up to a life of ease without luxury or excitement, residing with their family as parasites, who ask for little and count for nothing; or they gradually become degraded

through being led by bad companions into alcoholic habits and dishonest ways, the victims, not of internal passions, but of their own passivity and of a bad environment.

Among the varieties of dementia præcox, the paranoid is generally the latest in developing. *Persecutory hypochondria* (Lugaro) is the most typical of the late forms ; it makes its appearance, especially in women, about the time of the climacteric, and sometimes also in men at about the fiftieth year. The paranoid delusion of persecutory hypochondria is fairly lucid, and it is preserved in its simple and coherent form to the end of life.

The prospects of partial recovery in cases of dementia præcox are not proportional to the gravity of the symptoms, but rather according to their quality. The paranoid cases recover less commonly than the hebephrenic and katatonic cases. Complete recovery never occurs in the late forms or in persecutory hypochondria. In some instances the attack of hebephrenia or of katatonia is very short, and it rarely lasts longer than two years. With regard to the terminal phase of chronic cases, which constitute the great majority, it has very various aspects. The state of partial recovery passes into that of complete automatism, but in all cases, however profound the disorganization of the intelligence may be, that of the will and conduct is always very much more severe. Patients who behave themselves in a wholly incoherent manner sometimes cause surprise by the acuteness of an observation, the ready wit of a reply, or the correctness of a recollection. It is true that such manifestations of intelligence are very rare and isolated, but for this very reason they serve to show that the mental activity is latent or obstructed rather than destroyed.

The three varieties of dementia præcox—hebephrenia, katatonia, and paranoid delusion—often merge in each other, but perhaps with equal frequency they occur in the pure form. In this case hebephrenia manifests itself by symptoms of mania or of melancholia, which are distinguished only with difficulty from true mania and melancholia. Nevertheless, the occurrence of an attack of melancholia or of mania in an adolescent always constitutes a very grave and almost certain sign of dementia præcox. This diagnosis is strengthened if the depressive or exalted condition is followed by a period of mental confusion ; if in the midst of the pseudo-melancholic or pseudo-maniacal symptoms there are incongruous signs of spontaneous hilarity, of incoherence, or of a tendency to mental calm ; or if the attack lasts only a few days or a few weeks. Naturally, the evidence of dementia præcox is much more easily perceived when the patient, during the crisis of depression or exaltation, gives exaggerated

expression to his feelings, makes parade of fine phrases, poses as Hamlet, or acts the pedant. Similarly, the young woman who pretends to be Ophelia is to be regarded as suffering from dementia præcox, and not from melancholia; and evidence of hebephrenia, and not of mania, is given by those who are impelled to violent acts by a perversion or vacuity of affection, who say, without any reason, that they hate their parents, who profess to be cynical, and who very often, but erroneously, are thought to be suffering from hysteria. Either from pseudo-melancholia or pseudo-mania the patient sometimes sinks into a state of *stupor* (a transition that very rarely occurs in the genuine forms of the affective psychosis), thus passing from the hebephrenic to the katatonic variety of dementia præcox.

Katatonia, whether comprising the whole course of the dementia præcox or representing only one phase of it, may last for many years without modification. The patients live in a condition of somnambulism, and if they do not reach complete immobility, they at least present a spectral slowness of movement that suffices for the purposes of the diagnosis. These amazed, wrathful, or smiling shades utter stereotyped apostrophes that have no relation to their demeanour, such as oaths, obscene words, and insensate remarks. They walk, dress, and eat like automatons; they may even be able to play a game of billiards, or of chess, but only with a stupidity and slowness that would exhaust the patience of a saint. Katatonic patients never experience the feelings depicted by their demeanour. Sometimes they smile or laugh explosively, and seem to be enjoying some joke of their own. Not infrequently they defecate or micturate over their person, but only under certain conditions—as, for example, when they are looked after by one particular attendant in place of another, as if out of spite, or as a joke. Some steal food, or strike their fellow-patients, or cry out at the pitch of their voice with sudden and irrational impulsiveness, and with equal suddenness and irrationality subside once more into their habitual immobility. They are, in short, statues capable of some activity, which from time to time become animated, exhibiting ill-timed and incongruous initiative. There are, however, cases in which katatonic patients, without any recognizable or imaginable determining cause, waken up, shake off their inhibitions, and give signs of a fair amount of lucidity for hours and days together. In these cases it is readily ascertained, from the behaviour and vague replies of the patients, that, notwithstanding appearances to the contrary, they have not been dominated either by true delusions or by strong emotions, and that their statuesque attitudes are purely the result of automatism. Consciousness, with-

out being wholly suspended, is in a state of dissociation resembling that of a person who dreams.

Paranoid delusions, which form the third variety of dementia præcox, embrace all the cases that were formally included in the category of paranoia originaria. These delusions are subject to rapid and illogical metamorphoses, which sometimes continue without intermission, but at others are interrupted by katatonic but anideic intervals. The relatives and ignorant persons are apt foolishly to attach special significance to these episodes, thinking that the patient has voluntarily become katatonic in order to expiate sins, offer supplications, or make a demonstration of protest, or that he has given way to them because overcome by passion. Even originally, however, the delusions are only unfortunate interruptions of the psychical paræsthesias—hallucinations, pseudo-hallucinations, and impulses—by which sufferers from dementia præcox are dominated without intermission. The interpretation is sometimes summed up in one or more neologisms—for example, there is a patient who says he is affected at times by *telepathy*, at others by *pathothelia*. By the first term he means true hallucinations, and by the second—at least, so it would appear—imperative mental images or pseudo-hallucinations. The paranoid delusions of sufferers from dementia præcox tend to grow indefinitely, for they require neither real occurrences nor intellectual efforts in order to widen the circle of their theme. Gradually their fantastic and incoherent conception of the world and of themselves takes so large a place in their mind as to leave therein no room for the real. Such patients with inveterate delusions break off all intellectual relations with their fellows. They care neither to know the thoughts of others nor to make known their own, but in the small affairs of daily life, aided by their automatism, they conduct themselves with placid monotony of habit, which is a sort of equivalent of regularity. Save for some residua of unconventionality, they rise, dress themselves, take food, greet their acquaintances, and work mechanically, but not without perseverance. They are slow, but indefatigable. The delusional ideas of the patients are so dissociated as not to suggest any reaction. Their resultant, whether with respect to logical conclusion or to a practical programme, is nil.

Thus cases of dementia præcox, from the agitated period of hebephrenia, from katatonia, and from the paranoid initial manifestations, pass more or less slowly, sometimes in four or five years, to a chronic terminal and uniform phase of complete apathy, interrupted by a few outbursts of impulsiveness or of hallucination, which are repeated with a certain uniformity, and

can, therefore, be foreseen and prevented. Among these chronic, quiet patients, who do humble services in the asylum, and who in some instances carry out with ability certain stereotyped forms of work, there are many who would be regarded as behaving themselves with perfect propriety, but for the fact that every now and again they speak to themselves, walk with studied step, assume the military command of invisible legions, or abandon themselves to paranoid practices. One of our patients, among the most active of indoor workers, fills with numbers every piece of paper that he finds, and traces numbers with chalk on the pavement and with his hands in the gravel in the garden. Another patient, not less assiduous in the performance of the same arduous labours, uses the garden pump in order to irrigate his anus as a prophylactic for piles. Another patient, who adds to his material activity an incredibly incoherent magniloquence, endeavours, if he has the opportunity, to eat human filth as an act of homage to a product, however humble, of divine omnipotence.

Sufferers from dementia præcox, when they have reached the chronic phase, remain indefinitely in a state of enviable good physical health, and do not show any anomaly in the domain of the somatic functions.

The following biographical summary of the case of a young man, who at the time was passing from the acute to the chronic phase, may be given as typical of dementia præcox of mixed course :

L. R., twenty-eight years of age, a graduate in law, has a brother who suffers from hebephrenia, and also other relatives who are afflicted mentally. It appears that his father was subject to slight periodic attacks of depression without delusion. The patient used to have a splendid memory, was studious, witty, and fond of discussion and of philosophic speculation. From childhood he showed abnormally sensitive feelings, and was always somewhat strange in his ways. At the age of twelve he manifested his first religious scruples. At the age of fifteen, with the wakening of puberty, there was abandonment of religious practices and suspension of studies. This period of psychasthenia, doubts, and phobias lasted for three years. At eighteen he took up his studies again and returned to his religious exercises. The patient took a vow of chastity, and, in order to be able the more easily to keep it, he went in for athletics to excess. At the age of nineteen he had gastritis with typhoid symptoms. At twenty he suffered from constipation. Exercises such as those of skating, bicycling, and gymnastics were continued, and he walked every day, sometimes even for six consecutive hours. At the age of twenty-two he fell in love for the first time. In regard to this matter there were difficulties which distressed the patient very much, but only for a short time. He became resigned under the influence of religious sentiment. When twenty-three he graduated in law. At twenty-four the constipation became accentuated, and he began to manifest the phenomenon of arrest in walking and speaking, as well as increase of

mysticism, and the young graduate in law was impelled to prayer, prolonged meditation, and penance. At times the patient was resigned. Nevertheless, he entered military service as a volunteer for one year. For the first six months all went well; then the phenomena of arrest manifested themselves once more, and he wished to leave the service. In May, 1900, when he had been taken to the country for the sake of his health, the patient manifested his first real signs of insanity. For several days he refused to feed himself, and he kept exclaiming, "Giuro!" "Morte!" "Fiat!" "Dolce, dolce!" and other similar words, which afterwards continued to form part of his katatonic repertoire. These symptoms lasted for twenty days. When taken to a mountain district at the end of July, the unfortunate patient improved. The obsession presented itself from time to time, but was overcome. In October he returned home and relapsed. Four weeks later he became convinced of his error, and wrote the following letter:

"November, 1900.

"MY DEAR DADDIE,

"Oh, how delighted I am to be able, thanks to Heaven, with exultant mind, to write to you directly, in order to tell you of the marvellous transformation that has occurred in me. Until a few days ago the usual ideas had held me tightly in their grasp with strong obsessions, chiefly (besides that of fasting) that of certainly having to die within three months, and therefore having to remain in the nursing home as a sacrifice awaiting death.

"But on Friday morning, thanks to God, mainly through a certain aspect of absurdity that my internal prohibitions assumed, the obsession, thanks to God, began to be less intense. Especially after prayers, I felt able to eat, and when mother came to take me out, although I had hitherto decided not to consult in any way any priest, the obsession had not the power to resist the suggestion of my mother, and she took me in a carriage to a Canon with whom she had made an appointment for a conference.

"I took courage, and, notwithstanding a humming that I still felt, and a certain confusion of mind that remained, I had scarcely spoken with the priest when I obtained a fairly clear lucidity of mind and a calm that enabled me to state concisely the whole of my history from some years back to the present time, and disposed me to accept the responsory of the Canon.

"I explained everything to him exactly, from the first appearance of such ideas, dividing the periods into groups, and regarding every group I requested his opinion.

"The calm of the priest, his kindness and his clearness of mind, made a good impression upon me. Without hesitation, with frankness, and in a somewhat persuasive manner, he praised whatever there was to be praised, indicated to me up to what point I had walked well—that is to say, the point to which he recognized the hand of the Lord—and from which I had begun to go astray (I regarding as good what he, on the contrary, looked upon as being the insinuation of the devil in the guise of goodness) in my manner of reasoning, and most of all by having held aloof from the Holy Sacraments and from speaking with the priest, of which, he told me, the Lord has no fear.

"And having then asked him if he believed it really to be the work of the devil or auto-suggestion, he replied that the evil spirit sometimes also behaved in this way. So he declared my ideas

to be substantially erroneous, and he exhorted me to resume my obedience.

"My mind and soul were at that moment ready to receive the impression of his words, which therefore had the desired effect. During the talk the prohibition was silent, and afterwards it remained overpowered.

"You can imagine our joy when we descended the steps of the Canon's house, after having obtained that which has been so long desired.

"The cause that held me there having ceased to act, there was uppermost in my mind an aversion to that place in which I had hitherto stayed, in which, though my physical condition obtained some advantage through restriction of food, my mental condition was certainly aggravated by solitude and the continual tumult of ideas, and I begged my mother not to send me back there, but to take me home with her. She consented, and in the evening we joyfully had supper all together. Thus it is that I am in the bosom of the family beside my dear mother, whom I have promised to obey implicitly. I take three meals a day, and my ideas have vanished like mist before the sun, like music that fades away into the distance, like a memory of the past.

"After some further talks with the Canon, which he has advised me to have, I shall feel disposed, by his direction, to partake of the Holy Sacraments, to go to Holy Confession as soon as possible, and to Holy Communion, from which, alas! I have been absent for a year.

"In accordance with the advice of the Canon and of my mother, I have also begun to take wine again. We have bought paper for balloons, a first of which, made by Nino, was sent off yesterday, and I feel, on the whole, that my mind is more at ease. How many things could I now tell you, and I should have to thank you for that love of a little letter, poor daddie! and to ask pardon for having caused you, although involuntarily, so much pain. But you long for a letter; mother wants it to go to-day, and Bernard waits, therefore I am obliged to close. I will only say that on this occasion also, as has been the case several times before, mother has been my delivering angel, without whose help I should still perhaps be rotting within."

This period of remission ended after a little more than two weeks. Towards the close of 1900 the patient had a third violent attack of mental disorder, with delusional ideas, sitophobia, and katatonic attitudes. On February 2, 1901, he began to waken up and to walk of his own accord; but almost immediately he relapsed into his former condition, which continued until the end of April. In July he was sent to the mountains again, and had another remission, but when he came back to the city about the middle of August he had a slight return of his symptoms, which remained the same until the following November. Since then the state of katatonia has continued and increased in its intensity. The patient keeps his eyes shut, and opens them only very occasionally. He does not reply to questions; he stands motionless, does not eat, but allows himself to be fed, dressed, and undressed, remaining entirely passive. Every now and again he cries out or exclaims: "Dolce, dolce!" "Fiat!" "Morte!" "Giuro, giuro!" He does not read the letters he receives, he does not open them, and he does not write any. He stoutly opposes every suggestion; he refuses to walk, to put out his tongue, or to raise his head. When

he calls out, he accompanies the cry with an action expressive of disgust. For example, he shakes his head as if he were seized with a shivering. He does not break silence except to ask to be left still and without food, or to ask for food suitable for fasting on Fridays and Saturdays, or to implore to be taken to Mass. At night he passes urine in bed, and sometimes smiles or laughs noisily without reason, or from some inadequate cause.

Nevertheless, in 1901, whilst the katatonic stupor was at its height, the patient one evening betook himself to the room of his sick mother, and said to her: "Listen, mother! I fear I am going to lose my reason immediately. Before this happens I should like to perform my devotions." In the same year, for a period of about thirty days, he kept saying: "Satan torments me, but I . . . nothing." In May, 1901, he was placed in a sanatorium, but he visited his mother's house every day. Although whilst in the sanatorium he could never be induced to eat of his own accord, the moment he arrived at his home he ate of everything without any assistance, joined in conversations, and made frequent excursions into the environs of the city in company with his relatives and friends, who had no idea of his peculiarities. He returned in the evening to the sanatorium, and his odd ways were resumed.

This patient, when his katatonia was at its worst, was entirely mute, passed fæces and urine involuntarily, and showed systematic sitophobia. Nevertheless, after a few months he had a remission, and went home. At present he leads a life of the most strange kind: he frequents lectures and elegant society, he goes out alone, holds very brief correspondence with friends of the family, and comments with good judgment upon the theatrical performances to which he goes; but he is five or six hours late for an appointment, for dinner, and in getting up, so that it has become his custom to rise in the afternoon, and his room, like the public street, is the undisturbed scene of capers, pirouettes, kneelings, and other seeming hygienic and religious, but in reality automatic rites, which assume grotesque proportions in the domestic solitude, whilst they are reduced to symbolic and rudimentary expressions in the presence of others.

Dementia præcox often assumes a family character, as in the following case:

A. R., a young man of twenty-five, had a great-grandmother who was neuropathic. His grandmother became insane at the age of twenty-seven, and was admitted to the asylum at Florence on July 4, 1851, suffering from mutacism, delusions, tendency to jump out of bed, and insomnia. His mother, the daughter of this patient, who meantime had recovered and left the asylum, became insane in her turn at the age of forty whilst suckling her last son, and now she is in a state of complete dementia, and has been resident since 1884 in this same asylum, which for a short period sheltered her mother. A maternal aunt of this patient was also insane. Along with the mother, who has reached her fifty-eighth year, there are now resident in the asylum the son already mentioned and a daughter to be referred to presently. Both are sufferers from dementia præcox.

In 1899, on January 1, this young man, who was fond of amusements and sufficiently well off to be able to pay for them, withdrew from his friends, made up his mind not to eat, and ceased to respond to questions that were asked of him. On January 16 he tried to commit

suicide by cutting his throat with a razor, but the wound he made was not serious, and he was taken to the asylum. He was in a state of profound stupor, but after a few days he wakened up, transacted some business, helped the other patients, and vied with the attendants in carrying out the most uninteresting work. During this time, however, every now and again he laughed without reason when asked a question, and winked his eye, and he was unable to give any satisfactory explanation of his attempt at suicide. Nevertheless, his friends imagined that he was suffering only from melancholia, and that he was on the way to recovery, and they took him home, though, as a matter of fact, he was not melancholic, and he had not recovered.

After a remission lasting a few months he was taken back to the asylum, because he had remained for whole days in a state of complete immobility. Now the patient almost always remains seated with his head much bent forward; he never speaks spontaneously, and does not reply to questions. Instead of answering he laughs silently, without changing his position, and his eyelids show a rapid tremor. When in bed he keeps his head covered with the sheet. If he is awake, he gives way from time to time to short bursts of quiet laughter. He often passes urine in bed. If asked to get up and walk he obeys immediately, moving with short quick steps, his head being bent and his hands placed on his thighs. When he sits down again he sometimes keeps his hands on the front of his thighs; at other times he puts them together as if in the act of prayer. Every movement he is ordered to make he carries out without hesitation or slowness, but with a certain *mannerism*. He does not resist passive movements, and his limbs remain for a long time in the position they are made to assume (catalepsy). No news, or promise, or visit from his relatives disturbs him. His face is either contracted in a stupid smile, or assumes an expression of deep meditation. The patient allows the mucus to run from his nose and the saliva to flow from his mouth, and his clothes are dirty. He has a good appetite. His skin is pale and shining, and the layer of subcutaneous fat is fairly well developed. His external genitals are normal. His tendon reflexes are very active, as are also the abdominal, hypogastric, cremasteric, and plantar cutaneous reflexes. There is no analgesia.

A. R., aged twenty-three, sister of the preceding, was twenty years old when, early in 1898, she began to show signs of mental disorder. She wished to leave home ten or twenty times a day, declared she was pregnant and must shortly be delivered of a child; but at the same time she protested that she was a saint, and that all other people were sinners. She varied quickly in her sentimental tone, weeping and laughing without cause. She saw the devil and sometimes became violent, smashing everything upon which she could lay her hands.

When admitted to the asylum she was in a state of great agitation. For fifteen days she remained in this state, and then the scene changed completely. She became apathetic and silent, and either would not reply to questions, or very slowly whispered a few monosyllables in a low voice. She never spoke in a natural way. Since this time the clinical picture has remained unchanged.

The woman, tall and of pleasing appearance, modest and reserved in manner, remains almost constantly seated, with her head bent. Occasionally, when ordered to do so, she knits a stocking or works some embroidery, but almost mechanically, and with extreme slowness.

In order to obtain a reply from her it is necessary to repeat the question several times. During interrogation she smiles, looks furtively at the doctor before her, but does not raise her head, nods and whispers some words. When asked to raise her head she does not obey, and, indeed, resists strongly. She refuses to get up, or to walk, or to eat, when ordered to do so; but if she is handed a book she hastily reads two or three lines correctly, and then composedly resumes the knitting of her stocking. She writes to dictation without making a mistake, but from time to time she lays down the pen and then begins again. If asked to do some simple mental arithmetic, she at first replies at random, but afterwards thinks, rectifies what she has said, and solves the problem accurately. If next she is set a sum—for example, one in multiplication—she does the first few figures correctly, and then scribbles the others rapidly at random. Moreover, she knows very well places, persons, and their names. The following is a sample of a dialogue with her:

"What is your name?" "A. R." "How old are you?" "Twenty-five." "Where do you live?" "At Florence." "In what street?" "Via Parione." "At what number?" Here she indicates correctly the number and the flat. "Are your father and your mother living?" "I don't know." "What day is this?" "Tuesday" (it is Wednesday). "What month is this?" "January" (correct). "What year is it?" "1902." "What place is this?" "I don't know." "Is it your home?" "Yes." "But who are those persons round about you?" "They are patients." "Are there patients at your home?" "I am not at home." "Where are you, then?" "At the asylum." "And who stays at the asylum?" "Those who are mentally ill." "Are you mentally ill?" She nods assent. "How long have you been at the asylum?" "For four years." "Do you love your father?" "Yes." "Can you sew?" "I can read." "Have you been at school?" "At the communal schools." "Would you like to go home?" "Yes." "Are you glad to remain here?" "Yes, certainly." "Is it true that you have sometimes seen the devil?" "Yes." "What is he like?" "He is black." "Is it true that your mother has also been confined in the asylum?" She indicates assent, looks across the room, and points out her mother, who, in fact, is present. "Is it true that you are pregnant?" "I have borne a child." "What is his name?" "Giulio." "Where is he?" "He is dead." "When did he die?" "He was never born." "Why, then, did you tell me that you had borne him?" "For fun." "Do you think you will become a saint?" "Yes." "What saint?" "The Madonna of the Lily."

Causes and Nature of Dementia Præcox.

The causes of this disease are completely unknown. That it is transmitted by heredity is a fact that may be observed frequently, but not constantly. It may be added that among the ancestors of those who suffer from dementia præcox the mothers are insane, hysterical, or peculiar more often than the fathers. This may depend, however, upon the circumstance that in matrimonial selection women—at least, as far as regards their intelligence and character—are discarded less stringently than

men. Hysterical patients do not provoke any aversion ; imbeciles pass as timid girls, educated in old-fashioned ways ; and those who are predestined to the affective psychoses, as they marry at an earlier age than men, have not yet given evidence of their morbid tendencies. For young women who live in the narrow circle of their family it is much more easy than for men to conceal their special defects. It is at least certain that of all mental diseases dementia præcox is the one that is most distinctly hereditary ; in some instances, indeed, it distinctly assumes the character of a family disease.

The brothers that are to be found in every large asylum are



FIG. 125.—DEMENTIA PRÆCOX IN THREE SISTERS : TERMINAL PHASE WITH APATHY, MUTACISM, AND SYSTEMATIZED ATTITUDES.

always cases of dementia præcox. Fig. 125 shows three sisters who became insane about the age of twenty, all being affected with dementia præcox.

As regards the stigmata of degeneration, it cannot be said that they are specially prominent in these cases ; the inexorable disease often attacks robust young men and young women in the flower of their beauty. Among those affected there is perhaps a predominance of males, but it is so slight as not to warrant any definite conclusion. In regard to pathogenesis we have little more than a conjecture made by Kraepelin ; according to this hypothesis, dementia præcox is dependent upon an auto-intoxication produced by poisons which are elaborated in the sexual organs, and which are specially injurious to the brain. The

physiological hypothesis of an internal secretion on the part of the sexual organs might explain dementia præcox as dependent upon a defective, or more probably an excessive, performance of this obscure function. The frequent appearance of the disease during puberty, the disturbance and variations that it determines in the generative functions, and the impossibility of the specific syndrome occurring in aged persons, would support this view. On the other hand, it is to be observed that dementia præcox does not spare adults, and that organotherapy, which has often been applied methodically and perseveringly, produces not the slightest beneficial effect. Other authorities compare the degeneration that takes place in dementia præcox to those processes of atavistic reversion by which certain cultivated plants return to their wild form, but it is unjust to savages to liken them to cases of dementia præcox.

At least, if by atavistic reversion is meant lack of adaptability to a complex environment, and the return of the organism to a form of adaptation that is inferior and therefore unseasonable, inopportune and monstrous, an hypothesis is put forward which is wholly contrary to facts. The sufferer from dementia præcox, with his passivity, negativism, and perversion of will, is certainly unadapted to the environment in which he lives, but he would be still less adapted to a less complex environment, from which he would receive neither assistance, consideration, nor correction. Dementia præcox is not a reaction, even a pathological one, to the external factors of disease, but is an endogenous degeneration which represents the negation of any adaptation, and which develops independently of any rule or historic phase of intellectual development.

In other words, dementia præcox is in all probability a disease, not a developmental anomaly. Even the small amount of information that we possess regarding its pathological anatomy confirms this view. Preparations made by means of the methods of Marchi and of Weigert show that the cerebral cortex of secondary dementis is altered, and secondary dementis are precisely the products of dementia præcox. The nerve cells show atrophy, and fatty and pigmentary degeneration; the nerve fibres of the associative tracts are degenerated and destroyed; the vessels exhibit sclerosis, obliteration, and fatty degeneration; the neuroglia cells show proliferation. These observations which Maschtschenko has made in cases of secondary dementia one can in part attribute to dementia præcox. In the katatonic forms Alzheimer has recognized distinct gliosis limited to the deeper stratum of the cerebral cortex. This interesting anatomical observation, which was subsequently confirmed by Dunton, is

capable of being harmonized with the clinical symptoms of dementia præcox. Lugaro has drawn attention to the fact that the mental disturbances characteristic of dementia præcox, which manifest themselves in a pure and isolated form in paranoid cases, consist in a disorder of the will and conduct, whilst the sensibility, motor power, memory, and ideation remain intact. Now, this characteristic partiality of the mental alteration accords perfectly with a selective and systematic lesion of special cortical neurons, which might appropriately be just these polymorphous cells of the deep layer. By exclusion it can be supposed that the polymorphous cells regulate those functions that appear to be altered in dementia præcox, and that normally are concerned with the co-ordination of the representations with the corresponding emotions, and with the carrying out of actions. The other elements have, indeed, to all appearance, other functions to perform. The tangential layer and that of the pyramidal cells are concerned more especially with similar and more simple associations; the large pyramidal cells serve the purpose of exporting the final product of cortical elaboration—namely, motion—and give rise to the paths of projection; the smaller elements of the granular layer are more directly connected with the afferent fibres, and therefore with sensation. Hence the connection between the emotions, will, and conduct, which constitutes the field of battle in dementia præcox, probably resides in the deep layer of the cortex, which anatomical researches indicate to be the most affected. Dementia præcox, whatever may be its cause, would thus appear to be the effect of a systematic and partial degeneration of the cortex. Only by anatomical examination of recent cases in the acute phase, dying from intercurrent disorders not very injurious to the nervous system, will it be possible to elucidate the question. Meanwhile dementia præcox is certainly to be regarded as the most typical of the psychoses resulting from internal causes.

Treatment.

In these cases we must speak of regime rather than of treatment. Vesanic patients do not respond well to depressing or to exciting drugs. Neither their impulsive violence nor their katatonic lethargy are the expression of an affective state; even by means of the most certain and energetic drugs it is not easy to suppress automatic reactions of unknown origin. Potassium bromide, hyoscine, warm and prolonged baths, which are so beneficial in cases of epilepsy, general paralysis, and mania, are often inefficacious in dementia præcox; opium, the cold bath, massage, and electricity, are without effect in cases of apathetic

katatonia, of mutacism, and of intestinal and vesical incontinence. Suggestion is still less efficacious ; indeed, if persuasion is resorted to the risk is run of arousing negativism and of producing complications. Persons suffering from dementia præcox are influenced neither by the authority nor by the benevolence of the persons who advise them ; they even do not heed the dictates of their own interests ; in their scepticism, rebellion, ingratitude, cynicism, and folly, they will go to limits that are almost incredible. Their regrets, repentances, and clear vision of their state, even at their best moments, are never complete.

Especially during the acute stage, which is not of short duration, it is necessary to place sufferers from dementia præcox in an asylum. These patients, who are unruly even when they are not angry, and show no self-restraint, caring not in the least what the consequences of their actions may be, are neither able to enjoy liberty nor to be properly taken care of in their own homes. In a disease such as dementia præcox, in which voluntary activity loses its nature even so far as to be devoid of every rational or emotional impulse, everything is possible, and nothing is capable of being foreseen exactly. The asylum, if not a means of treatment, is therefore at least a necessity.

When, however, the acute stage has been passed, usually within a year or so, the patients who have not recovered become much more amenable to discipline. Their impulsive and paranoid manifestations become less numerous ; their rough corners get smoothed down ; their behaviour becomes uniform, and marked only by the quiet manifestation of a few harmless mannerisms, which, within the walls of the asylum, where so much allowance is made, cause neither surprise nor resentment. The negativism of the patients becomes blunted under the influence of an imposing organization, which, like that of a hospital, opposes its passive and impersonal resistance to every kind of impulse, repressing it when it is necessary to do so, tolerating it whenever possible, and forbidding by its fixed rules every hesitation or contradiction in regard to the treatment prescribed. Thus by degrees patients suffering from dementia præcox, who are unfit for social life, often become adapted to the special conditions to be found in an asylum, and there display unexpected talents, commendable perseverance, and insuperable energy, provided that they are asked to do neither more nor less than they are able and willing to perform. In the agricultural colonies attached to asylums, in the performance of certain kinds of clerical work, and in the more humble employments of cleaning and household service, long-standing cases of dementia præcox in the state of remission are valuable

helpers. In order, however, to insure that they do not desist from their co-operation, it is necessary to apply to the extreme the principle of division of labour.

In some instances these patients may improve so far as to reach a state of partial recovery or of relative sanity, on account of which they are qualified to live regularly outside an asylum, provided they have someone to guide and support them, and to shield them from the buffetings of the world. It is necessary, however, not to be in haste to see such a result achieved in any case, but to wait till the patient has lost every tendency to automatic and sudden impulse.

In the katatonic and hebephrenic forms of dementia præcox that arise suddenly in comparatively young persons, accompanied by symptoms of mental confusion, there should be applied the same principles of treatment as those that have been recommended in amentia, with the addition of confinement in an asylum. In these cases complete recovery may take place.

CHAPTER XXII

SEXUAL PERVERSIONS

IT would be simple to look upon every irregularity of erotic action and desire as an infallible sign of sexual perversion. There are, however, aberrations of the genetic sense of a partial and transient nature that have not the grave significance of an anthropological anomaly, and this chapter is by no means a catalogue of all the wanton fancies that arise in depraved, diseased, immature, decadent, or simply over-excited brains. Love is the least controllable and most free of human passions, because the instinct from which it emanates is blind, imperious, and only slightly conscious, or quite unconscious, of the physiological objective to which it is directed. A problem so indeterminate allows of a certain variety of personal solutions, and in amorous matters every man may be said to have a right to an æsthetic of his own. This right has, however, its limits, and its exercise should not be allowed to result in the natural and advantageous attraction to the opposite sex being displaced by immoral and fruitless tendencies.

For the species and to the philosopher, who studies objectively the laws of the instincts, the purpose and rule of erotic inclinations is procreation; but this rule does not in an absolute way bind the normal individual, who, indeed, ignores it, and who observes it only imperfectly, even when he finds it convenient to respect it. Contact with a woman who is pregnant, or known to be sterile, is neither pathological, repugnant, nor immoral, although unproductive. For the same reason the act or desire that in some way serves for the not exactly normal satisfaction of the genetic instinct may be considered tolerable, even if for once the abstract interest of the species is not heeded. The essential is that this interest be not systematically and irremediably betrayed.

The true perversion occurs only when a false orientation of the genetic function renders normal contact impossible, difficult, or repugnant, whilst it makes abnormal contacts easy, pleasing, or

strongly desired. We should not, therefore, regard as perverses those uncouth, thoughtless, or lascivious persons who, on account of an unconquerable desire to satisfy an instinct that they do not clearly understand, have recourse to inadequate means in the absence of any better. Notwithstanding their transitory aberration, they preserve, at least in the latent state, a practical capacity and theoretical preference for the physiological ritual. Erotic attraction to persons of the same sex is in most instances a manifestation of sexual Daltonism that really depends upon imperfect vision of the object of the amorous passion; it is to be observed in adolescents who live in ecclesiastical seclusion, in persons whose consciousness is clouded by disease and reduced to primitive Daltonism, and in old men damaged by cerebral softening, who sometimes show themselves inclined to display an indistinct and bisexual lust also towards young children of the opposite sex, if opportunity occurs. In these cases of bisexuality the genetic sense is disordered in the direction of excess. The easier conquests are preferred to the more gratifying ones; but the aberration changes in nature, and constitutes a true constitutional anomaly, if, coincident with the early and intense arousal of the sexual instinct, it acquires stability, and throughout life bars the way to the mental habits, and therefore to the physical acts, essential to physiological love. There is then an arrest of the genetic instinct at the infantile stage—an *erotic infantilism*, which does not lessen the strength of sexual attraction, but which prevents it taking a normal direction. The young man who temporarily falls in love with a youth of feminine features does not prove himself effeminate, but *ultra-virile*. The like may be said of the young or adult woman who, through intensity of female passivity, accepts or seeks the ardent caresses of other women; she is *ultra-feminine*. The significance of these aberrations is hyper-physiological rather than para-physiological. True constitutional perversion is, however, reached when the erring adolescent, instead of retracing his steps after the first occasion, continues in the way he has gone, or when, worse still, he enters upon a sort of bisexual vagrancy, and specializes to such an extent as to attain to complete and irremediable inversion. The temporary ideal becomes definite, absorbing, absolute, and monstrous.

The thoughtless eclecticism of early childhood and of dementia, although at variance with strict moral and refined æsthetic codes, is not on that account in open conflict with natural laws; indeed, it shows the strength of one of the most fundamental of instincts. It corresponds to the ethical indifference and æsthetic simplicity of the lower animals, which in regard to such matters are in-

fluenced chiefly by colours and odours, which sometimes, it is true, act as a barrier to sexual contact, but which more commonly favour it by increasing opportunities, destroying subjective impediments, and thus facilitating sexual selection. It would, on the other hand, be impossible to find in the lower animals anything comparable to true sexual inversion. Complete and incurable uranism is a speciality of the human race, and a mark of degeneration. The virago who runs after other women in order to carry out upon them male actions, and who does not feel any pleasure in yielding of herself; the pederast who offers himself in female fashion to the will of low and semi-inverted men, whilst an insuperable misogyny deters him from or makes him feel disgust for aggressive contact, are monstrous and rare exceptions: they are degenerative anomalies. Not only these extreme cases, but all habits of thought which, even though not attended by actions, permanently or irremediably keep the sexes from their natural relations, are constitutional perversions.

Even among persons who are orthodox in their conduct with regard to inter-sexual love there are those who are to be counted as perverts; they are the irreconcilable idealists, the exclusivists, the Utopians, who, in their vain search for a similar, complementary, or perfect soul, practically condemn themselves to chastity. Their orthodox particularism ends in infertility, like the particularism of those perverts who centre all their sexual desires in acts apart from procreative contact, and who are termed by Binet fetichists. Starting from the Catholic preconception in favour of chastity, Raffalovich wrote an *apologia* on behalf of the chaste uranist ("uranist" and "invert" are synonyms); indeed, uranism, he said, because of the dangers to which it exposes the individual in seeking for a partner, of the penal, repressive measures (especially in Germany, Austria, and Great Britain), and of the universal hostility of public opinion, impels prudent persons afflicted by it to that state of chastity that the Catholics consider to be the most perfect and ideal. Ascetic scorn for carnal acts reaches such a degree that continence, the younger sister of chastity, is exalted to the dignity of a theological virtue, if not, indeed, to that of an absolute duty. As a decorous degree of uranism thus predisposes of necessity at least to continence, the position is reached in which uranism is regarded as legitimate, although it may not be perfectly chaste. There is a metaphysic of uranism which dates from the time of Plato. This patriarch of the æsthetic idealists magnifies not only philosophical love between men (pure), but also honourable love—that is to say, love which is enduring, temperate, and serious, but not chaste. The neo-mysticism, with which the views of Raffalovich

are also tinged, suggests other arguments in favour of sterility, and therefore of chastity, of continence, and of its illegal derivatives, of which sexual inversion is one. In the eyes of the religious and of mystics there is nothing in the world that has the same charm as virginity. They believe that they have done an act of the greatest reverence in ascribing it to the Mother of Jesus, even at the cost of creating a situation somewhat compromising for the father. In the eyes of the neo-Christians virginity has also the very modern value of biological utility. They invoke on behalf of social well-being the recognized principle of division of labour; on the one hand, there are the reproducers, selected and limited in number, who will improve the race and restrain the tendency to an excessive population; on the other hand, there are the intellectuals, exonerated from the care of the family, and given to chastity and to homosexual practices (although without offence to the modesty of others), and therefore fitter to cultivate without impediment the arts, science, and philosophy. Among the priests of chastity the militant uranists would form a sort of irregular clergy.

Such an *apologia* does not, however, deprive uranism, however virtuous, of its character of an anomaly. Nor is it deprived of this character by the forced analogy that some have endeavoured to draw between human uranism and the sexual neutrality of some animal species. In order to find a sanction for sterility, and therefore for chastity in the zoological scale, it does not suffice simply to descend; one must go to forms as distant as the arthropods. Chastity is natural only among neutrals, and in the human phylogenetic line there are no neutrals. Aspiration to a kind of sexual neutrality, or to its substitute uranism, is therefore a Utopia of moral metaphysics that can exist only among modern or ancient mystics. Licentiousness, so deprecated by this morality, is, indeed, more physiological, not only than uranism, but even than chastity.

The single plausible cause that can, without outrage to physiological laws, impose chastity or render sexual perversions morally tolerable is altruism. Altruism proscribes violence, seduction, and every danger that jeopardizes the happiness of the person loved. This new moral force, unknown to primitive man and to animals, is a security for liberty and social order, because it forbids every carnal act for which there is not mutual consent. Aberrant actions and those between individuals of the same sex, requiring, like the others, the concurrence of two wills, are eliminated to a greater extent than normal actions, because they obtain less ready sympathy. Only the defective and those that suffer from contagious diseases are condemned with just altruistic

rigor to a hopeless chastity. Other forms of chastity are unphysiological. Equally unphysiological are all constitutional aberrations of the erotic ideals that entail systematic aversion to normal contact, or that compromise the result through a fatal reversion of the sexual attraction to the same sex, or to a purpose anatomically foreign to the process of conception.

SEXUAL INVERSION (URANISM).

Sexual inversion occurs both in men and in women, and sometimes in those of the same family. It is probable, however, that pathological heredity transmits only the nervous or moral degeneration, and that the coincidence of the manifestations in the special form of uranism depends rather upon accident of circumstances or upon similarities of education. We have already pointed out the importance of memory—that is to say, of a function that is pre-eminently symbolic and associative—in clothing the erotic impressions of childhood with an irresistible charm. Just as the Arcadian poet, who is unacquainted with suffering, tends to gather only the images of beauty, and through a kind of blindness to what is ugly erroneously believes that everything is beautiful, and just as the one-sided critic is gifted with a sort of exclusive clairvoyance for ugliness, which renders him incapable of enjoying the beautiful except in theory, so the great majority of men, through an involuntary mnemonic selection, forget the ugly and remember only the beautiful. The man who remembers, remembers only a part; he retains in memory more of the virtues than of the defects of those who are dead; countries through which he once travelled, not without many annoyances, and which seemed at the time but mediocre, present only their grandeur and their sweetness when contemplated in retrospect; of painful and dangerous adventures he recollects the joys rather than the sorrows; the limbo of his childhood appears to him a paradise when it is left behind. Through such errors of perspective we go on the sea again after having experienced how much suffering it can occasion us, and the memory of the first love, or of the last but one, seems in certain respects superior to the voluptuous emotion of the moment, however lively it may be. It is therefore not necessary that the deformity of the erotic ideal should be congenital, as maintained by Uhlrich, who has attributed uranism to the presence of a female soul in a male body, and *vice versa*. There is one element that predisposes to aberrations—namely, precocity—and there is another that conspires to perpetuate them—namely, memory. In early childhood attraction towards the opposite

sex is not yet distinct, and if the genetic instinct is nevertheless awakened, it may take a false path. Such uncertainty of the direction of erotic inclination makes it possible that the person who is precocious (or ignorant) may take the path of perversion, and very often leads to that of uranism. Whilst every other form of perversion is a product of chance conjoined with a certain precocity, uranism is favoured in a special way by school and college life. Memory combines with a life of seclusion and with chance to magnify and perpetuate the first erotic attractions, rendering the correction of them impossible (Schrenck-Notzing).

Sexual inversion, as also the other forms of perversion, does not on this account cease to be a constitutional anomaly, especially when it is complete. The effeminate male, the passive pederast, the man who sexually feels himself to be a woman, and who does not yield himself for gain or because of intimidation, but on account of spontaneous impulse and joyfully, is often an imbecile or a paranoiac; if he practises the profession, he is constitutionally immoral. The woman who is energetically and exclusively active, and who disdains the female part both in relation to men and to the woman she loves, is almost always a grossly immoral person, who shows her profound immorality by indecencies, frauds, and crimes.

The psychology of uranists is extremely varied. Their biographies tell us of the solitary who live chastely, of one man (or woman) bound to another by strong and almost matrimonial ties, and of the deep abyss of homosexual prostitution. From the extreme of chastity and of modesty uranism extends through frivolity, jealousy, infidelity, fickleness, and wantonness, even to cynicism. The homosexual paradox manifests itself in all possible shades. Uranists may be austere, Arcadian, passionate, or shameless, propagandists, libertines, mercenaries, or extortioners. Among the austere there are to be found writers and poets of the first rank. In the chronicles of uranism there are confessions, correspondences, lyrics, idylls, flirtations, nuptial ceremonies, orgies, secret meetings, criminal trials. At Paris, in 1903, there were brought to light the companions of the *Black Mass*; at Naples there were confiscated boxes of confetti that were exchanged by the associates of the homosexual society in celebrating their unions, as in the intersexual world; in London there is still remembered the trial and conviction of the author, Oscar Wilde, who, on account of a too stolid individualism, was led almost to make ostentation of his homosexual libertinism, and to abandon himself to it without restraint.

Every uranist is not strictly homosexual. Some of them make ordinary marriages, either in the expectation that they will be

able to reform, in the hope of being able to hide their special weakness from the public, or with the object of having a family. Sometimes they succeed in their purpose, sometimes they fail; but venereal excitement is produced only rarely, and by the necessary aid of the evocation of homosexual images. At the same time, misogyny and misandry do not prevent the existence of relations of friendship and sympathy with the opposite sex, as between comrades who are drawn to each other by similarity of tastes and habit, but not united by amorous bonds. The innocent effeminate man, who is intelligent, and not troubled by lasciviousness, and who does not see in the woman a co-operator, but one who is similar to himself, takes pleasure in female companionship, in frivolous talk, and in fashions. He is timid and refined. Female inverts delight in cigars, fencing, and sport. Mademoiselle Maupin was a poetic incarnation of chivalrous valour, being kind to her companions in arms, and not altogether unworthy of their impassioned friendship.

The physical appearance of inverts, and especially of those who do not give way to their passion, is almost always quite normal. No one would suspect uranism in certain men of robust figure, in certain women of gentle appearance. Only the professional pederast wears a corset and embroidered drawers, and there are few female inverts who dare or would like to dress themselves as men. Uranic love often breaks down the barriers that exist between the various social classes, and it is no less levelling than normal love. Riches constitute an attraction to the poor invert, and poverty is an encouragement to the wealthy one, who sees his opportunity of bribing with money or dazzling with the prospect of luxury. It is not to be thought that uranism is a refinement of city dwellers, or of the cultured classes. It is possible in every class and in every form or grade of civilization.

Among male uranists sodomy is very rare. As a rule, uranists are only half inverted, and their contacts are reduced to reciprocal, simultaneous, and corresponding gratification. Among women, also, there is commonly only a somewhat simple exchange of caresses, less violent than virile action. Many uranists hold sodomy in horror, and would have it punished as a crime. The identification of male uranism with pederasty is, therefore, a traditional error, from which magistrates and medical men are not exempt, but into which alienists should not fall.

Treatment and Legislation.

Notwithstanding the doubtful success of corrective treatment, I believe that adaptation to normal contact with the opposite sex is the most practicable and salutary objective that one can

suggest to an invert, even if, in order to attain it, he must imperil himself by the depravities of mercenary love. Raffalovich is of opinion that such a novitiate is immoral; that the physical act of generation becomes devoid of gratification, and one might almost say of justification, if it is not accompanied by that subjective and spontaneous intoxication that conceals its brutality; and that the alienist should rather in such cases inculcate the high ideal of chastity. Sexual love is not a thing that can be awakened to order. If it is deprived of its impetus and of the fascination of its spontaneity, it becomes an obscenity; but who can assert that uranists, especially if young and imaginative, are insusceptible of total reformation? Their persistent feeling of repulsion to intersexual relations has often no other cause than a preconceived idea of impotence. Before condemning them to chastity, it is humane to attempt to guide them to the normal exercise in physiological moderation.

Opinions have been expressed in favour of the modification on behalf of uranists of the primitive laws that exist in several European countries, more especially Germany and Austria. Provided that homosexuality is not displayed in public or imposed by acts of coercion and seduction, it is of little use to repress it severely. It would, however, be no less useless and ridiculous to recognize it as a legitimate and legalizable habit, as has been proposed by Uhlich.

FETICHISM.

The name "fetichists" has been aptly applied by Binet to those individuals whose amorous infatuations, instead of being aroused by an æsthetic criterion, consisting of a combination of qualities, or by a broad eclecticism, are inspired only by an elementary and stereotyped impression, still, however, of an æsthetic order. Their erotic ideal is not found in their own sex, as in the case of inverts, but solely in a single feature, which is always the same. It is, therefore, the product of a mental process of *synecdoche*. This process of *synecdoche* is not, indeed, a speciality of morbid eroticism; it constitutes the ordinary form of our thought, whatever may be its subject. Thought is always highly symbolical. Instead of reviving things perceived as they are—that is to say, in their integrity (as can be done by a slight effort)—it prefers, for the sake of brevity, to employ a symbol, a detached element, any feature that serves to recall them and to co-ordinate them; or it substitutes for the partial image of the object something extraneous that corresponds to it, a kind of countersign—for example, a verbal image, its name (see

Chapter V.). In matters of sexual love there are likewise numberless symbolists, particularists, or fetichists, who confine their ideal to a few special elements of human beauty. They delight in these few elements, and seek after them for the full satisfaction of their instinct of generation. This æsthetic enjoyment is the necessary condition, especially in the male sex, for the realization of material contact. Now, a moderate degree of erotic fetichism is perfectly physiological, and psychiatry does not dispute the right of normal persons to it. There are anthropological harmonies of which we are unable to give an exact explanation, but which we perceive by intuition, and which justify our symbolism. As from the appearance we divine, or we imagine that we divine, the moral character and read a thousand virtues in the beautiful face of a woman, so in the excellence of certain bodily requisites we may perceive the æsthetic and moral perfection of the whole. In spite of the diversity of individual tastes, which cause the starting-point to vary in different instances, all men begin to be enamoured of an ideal, and from this partial idealization they gradually go on to that complete and unconditional admiration from which amorous attraction arises.

There is, however, a para-physiological fetichism which is not compatible with normality, and which consists in a blind, exclusive, and incurable idolatry for a single and relatively unimportant part of the body, devoid of any association, either with the sexual act or with the real worth of the person loved on æsthetic grounds. Para-physiological fetichism diverts from the serious act of sexual selection, and places the confirmed fetichist at the mercy of unsuitable and fruitless amours that have nothing in common with generation. Binet describes idolaters of the mouth, hands, feet, neck, hair, breast, voice, etc., who tolerate ugliness of face, body, and mind, provided their special taste is respected, and who in their fetichism display, not a simple predilection, but an absolute exclusiveness. Probably these extreme symbolists complete in fancy the vision of the whole without troubling themselves about its inconsistency with reality. Normal symbolists, on the contrary, demand that to the charm of the pleasing look there shall be added at least a certain harmony of feature and colour. The particularism of fetichists reaches such a degree as even to come, either occasionally or systematically, within the sphere of homosexuality. Thus fetichism is sometimes associated with uranism, of which it redoubles the monstrosity.

A step further, and from para-physiological fetichism anti-physiological fetichism is reached. The erotic ideal is transferred from the extreme confines of the human body to certain

extra-territorial objects—to ornaments, to the dress, or to a part of the dress—for example, to the shoes. These external appendages of the human person are erotogenic coefficients even in normal minds, for, as a matter of fact, they are not devoid of æsthetic significance. Even the clothes have a certain significance, indicating the tastes, social class, inclinations, etc., of the person who wears them. Perfumes are recognized aphrodisiacs, although artificial ones. Yet none of these objects that form no part of the individual, however suggestive they may be, can in themselves absorb all the erotic interest, or arouse venereal excitement, or make one blind to the somatic and psychical personality of the wearer, unless there is a pre-existing degenerative anomaly of intelligence and character. The anti-physiological fetichist leaves out of account the human body. He eats the dish, and thinks nothing of the pudding.

All forms of incorrigible fetichism, if they do not render the normal exercise of the genetic functions actually impossible, at least gravely compromise it, for they leave sexual selection to chance. The sexual love of the fetichist is worse than blind; it is completely led astray by an incongruous attraction that has lost intersexual character, so that the woman is reduced to the position of an automaton, a silent player, a statue without life.

Like sexual inversion, fetichism takes its origin in early adolescence from an erotic image, which presents itself perhaps by chance, and in virtue of priority acquires an enduring supremacy. Between this aphrodisiac image and venereal excitement there is established an obligatory connection, a sort of mental ankylosis, a necessary relation that excludes every other relation. In some instances it is not part of the body or an article of dress, but the imagination of a plastic position, that becomes the symbol of eroticism. In this instance, also, the process is one of erotic symbolism, because a particular stereotyped and symbolic representation maintains a monopoly of sexual excitability. The aphrodisiac representation may refer to a material attitude, or even to a moral position, that symbolizes the relations of the two sexes during copulation, or to a single aspect of these relations. The erotic symbolism is concentrated either on the position of the person himself, or upon that of the partner. All the historical forms of sexual love are reflected in the aphrodisiac representations of these symbolists, including aggression, seduction, and sanguinary subjugation, in their active and passive aspects, from the point of view of the violator and from that of the victim.

Masochism is lust of submission to wounding, defilement, and scourging, even to the assuming of the passive functions of a living urinal. *Sadism* is the lust of violence as the aggressor,

with scenic pretence of violation and mutilation, or with actual outrage and murder. The difficulty in satisfying desires of this nature, which range from the ridiculous to the criminal, necessitates the patients compromising themselves in such a way that their practices ultimately acquire the characters of an irresistible impulse aggravated by delusion of sexual impotence. The theoretical disgust that masochists feel for their indecencies, the moral horror that sadists experience of violence, do not suffice to rob their aphrodisiac representations of their fascination, but serve rather to provoke the feeling of opposition that strengthens doubt, and creates the state of *psychical incoercibility*. Thus sadism and masochism assume the characters of obsession, but in such case they are rarely translated into action. Notorious in judicial annals are the sadistic crimes of Jack the Ripper, of Vacher, and of Verzeni.

The most repugnant variety of sadism, but not the most criminal, is *necrophilia*, or the display of lust upon the dead. This, like other forms of sadism, is manifested in most instances by individuals who are deformed, idiotic, or epileptic, and of very low morality and intelligence. If the intelligence is ordinary or almost normal, then it is usually physical deformity that impels to necrophilia, because the death and unconsciousness of the victim enable these unfortunates to dispense with the hopeless search for consent.

CHAPTER XXIII

CONSTITUTIONAL IMMORALITY

CONSTITUTIONAL immorality is the subject of an obscure and much-discussed chapter in the little understood pathology of the character. The character is the holy ark of free-will; belief in free-will is the soul of punitive justice as to-day constituted, and the guardians of social order do not like to have the existence of this *deus ex machina* called in question, excepting in cases of evident insanity. Now, anomalies of character in general and immorality in particular often escape the notice even of the most expert, unless a series of eccentric or criminal actions happens to reveal them. It is very difficult to perceive the motives of human action, and to prove that they are morbid, if behind the emotional stimulus there is no delusion or intellectual deficiency. According to Mendel and Binswanger, to cite two contemporary alienists, moral insanity is impossible except in persons of weak mind, such as imbeciles and paranoiacs. Nevertheless, the character is a function of the brain, just as the intelligence is, and there is no reason why it cannot be altered partially, or developed unnaturally, from material causes, as clearly happens in cases of constitutional immorality.

Without doubt this affective anomaly often accompanies aberrations and deficiencies of an intellectual nature, but it does not merit special attention and a separate place among mental degenerations, except when it presents itself alone and in a congenital form in individuals of sound and perfect intelligence. It may happen that an imbecile, a paranoiac, a person who suffers from hysteria, an alcoholic, an epileptic, a maniac, a melancholic, a paralytic, a senile dement, or a case of vesania, either because the psychosis is slight or because it has barely begun, preserves a certain lucidity, and yet displays a shocking degree of immorality in his feelings and conduct. In such instances the faults of the character, although out of proportion to the insignificant disorders of the intelligence, are attributed to the intellectual disequilibrium, for diseases of the intelligence,

properly so called, are recognized by all, whilst the question whether immorality of character can of itself be a pathological or degenerative phenomenon is one of those presenting, both in theory and in practice, the greatest difficulties. On the other hand, there is not a single moralist, however antiquated his view may be, who hesitates to recognize extenuating circumstances, and to give a kick to the old fetich of free-will, if there is the pretext of an authoritatively recognized psychosis, or if there is the slightest doubt as to the perfect normality of the intelligence.

Are there, however, anomalies of character pure and simple—that is to say, independent of accompanying morbid states of the intelligence? The public are very ready to cast the stigma of insanity upon anyone who talks foolishly, but hesitate to confer it upon the person who commits foolish acts. An inveterate prejudice attributes to human will a sort of omnipotence, if not over reason (which has the privilege of becoming clouded by disease), at least over the character and conduct, which must conform to the laws and to virtue, excepting in cases in which the reason is disordered. Exception is also made in another instance—namely, when the conduct, provided it is not perverted by delusional auto-suggestions, conflicts with the interest of the individual himself. There are prodigals, unruly and hare-brained fellows, who, without breaking the moral laws, risk fortune, career, and even life without having any other motive than amusement, caprice, or a wager—that is to say, a frivolous and passing satisfaction, the very paltry attractiveness of which they are the first to admit. Law-courts are very reluctant to recognize mental vice in the exploits of these sometimes brilliant idlers, and though they sometimes go so far as to grant interdiction (in the interest of the relatives), they rarely consent to detention in an asylum when the irregularities are excessive, and become, as not infrequently happens, crimes recognized by the penal code.

There is a third case. The anomaly of character does not manifest itself in the least as an alteration in the intelligence, or of the natural egoism, or of the course of conduct, but assumes the special form of constitutional immorality, and results in the suppression of only a lofty sentiment—namely, that of altruism. Yet in this third case there is no one, excepting the defending counsel or the medical expert, who dares to speak of infirmity or of organic degeneration. Society becomes alarmed, and not without reason, at the idea that such individuals ought to be regarded as devoid of penal responsibility. If deficiency of ethical sentiment is a sufficient title to irresponsibility, it may be said that none will be condemned, excepting those who are

indifferent about their acquittal. Deliberate criminals will be declared irresponsible because of constitutional immorality, and impulsive criminals on the ground of a momentary state of unconsciousness. If ever this psychological criterion should prevail, it will be necessary that the provisions of justice be completely reformed and adapted to an entirely new point of view. If this were not done, juries who looked beyond the special case would be slow to admit the irresponsibility of an immoral person, unless they were able to recognize the organic origin of his immorality; less scrupulous juries would behave in an opposite way, especially if the offence was slight, or if the accused was liked, or if his defending counsel was eloquent, and the verdicts would be contradictory to such an extent as to constitute a complete travesty of justice and of social security.

Constitutional immorality is recognized, but with some hesitation, in only one of its varieties—namely, that in which it impels either to great crime, or to repeated and brutal crime, in open and profound antagonism to public sentiment. Public opinion, which is not dismayed by ordinary crimes, and still less by those common misdemeanours to which the law has not assigned a penalty, is horrified at the spectacle of great crimes, such as parricide, cannibalism, armed robbery, and incest. It regards as normal and responsible any person who, whilst committing the most ruthless crimes against the fundamental interests of others, shows concern for his own, and who successfully or unsuccessfully endeavours, not without astuteness, to avoid punishment; but it makes exception in the case of the shrewd and habitual perpetrator of crimes that are absolutely odious. There is a minimum of altruism without which one cannot aspire to the title of a normal person.

The Ethical Criterion in the Diagnosis.

A sincere and intense loathing of criminal action readily leads to the idea of its monstrosity. The Greeks attributed crime to fate, and modern civilization is ready to recognize an anomaly of character as its determining cause. In the perennial harmony of our normality, and even in the intemperate actions to which we perhaps exceptionally abandon ourselves, we feel that we have nothing in common with the great criminals. No internal or external circumstance, except perhaps insanity, could ever suggest to us even the intention of committing a sanguinary, mean, or detestable crime, such as those above mentioned. No recess, however small or remote, of our affective nature would allow itself to be invaded by a whirlwind of crime so contrary to human nature. All the actions of great criminals give one the

impression of a psychological enigma, and a diagnosis of mental anomaly is its only possible solution. Not only the crime in itself, but also the pettiness of the motives, the arrogance of the accused, and his imperviousness to every altruistic feeling, arouse in us a resentful surprise, and dispose us to look upon the great criminal as an anomalous being who feels and acts in a way quite different from others. Whilst the crowd persecutes the great criminal with its hate, the reasonable man approves of his segregation as a social necessity, but does not deny him that tribute of pity without sympathy that is summed up in the commonly used epithet "unfortunate."

In order to experience this loathing, which is a necessary antecedent to the conception of crime as an anomaly, it is necessary, however, that the offence should be monstrous. Before ordinary criminals, the immoral who do not commit actual crime, the vicious, the vulgar, and polyandrous women (with or without discernment), at whom Lombroso shows himself to be so greatly shocked that he compares them to epileptics, we experience, more strongly than horror, a sense of pity, like that which prompted the benevolent words of Christ: "He that is without sin among you, let him first cast a stone." If we wish to judge fairly, it is much more easy to reconstruct the crime, if, instead of accepting as its psychological explanation the formula "anomaly," we take the materials in the depth of our own consciousness, and compare our psychological affinities with the criminal, representing to ourselves the influence of an unjust, cruel, and inexorable environment upon an individual similar to ourselves, but poorer and more imprudent.

Just as in logic we can recognize an error without exalting it to the degree of a pathological phenomenon, so in ethics we can recognize a fault (or the appearance of a fault) without giving it the significance of an anomaly. The average and normal man is not the perfect man. Just as there are various physical statures that do not reach the proportions of giantism, acromegaly, achondroplasia, or rickets, so also there are to be observed individual differences in intellectual and moral stature, and temporary differences of psychical manifestations, reaching even to crime, but which nevertheless are not capable of being classified by the alienist. Only the very grave infractions of logic are denominated delusions, and only the most horrible infractions of morality are recognized as monstrosities. Truth and justice are edifices in construction, which the human race has succeeded in putting together in spite of errors and criticisms, hindrances and intimidations. In order to combat intellectual error, recourse is had to discussion and ridicule; to repress moral faults (genuine

or otherwise), it is customary to inflict temporary deprivation of liberty or fines. Psychiatry only intervenes when there are pathological or teratological phenomena—that is to say, when the error is an indication of insanity, and when the criminal action is an indication of an anomaly. In these circumstances the mission of the alienist is not to confute the error, or to punish the fault, but to give attention to the individual, to take possession of him, to investigate the springs of his mental activities, to isolate him, and to subject him to a corrective regime if he is insane, and so long as he is insane, or to a protective regime if he is a born criminal. The person so classified is placed beyond the power of the common law, and kept against his will in an asylum, prison, or criminal asylum, not on account of any extraordinary or criminal action that he has done, but on account of what he may do again owing to his psychical constitution, provided he is not cured or reformed. The law does not count any more, and the individual is in the power of his custodians, even if he has suffered the punishment to which he has been sentenced.

This kind of martial law, which compels the dangerous lunatic to endure confinement in an asylum, and the anomalous immoral person to undergo a prolonged indefinite period of segregation, could not be applied, without enormous injustice, to all those who reason erroneously, or who behave in a criminal manner. It is necessary to have in mind, in judging of error, dishonesty, and cruelty, the physiological attributes of the human species, and of the average man, who is the representative of them. The law is framed in accordance with these attributes. If in some instances it is too severe, and even in advance of social customs, it is because the legislator does not intend by his unusual severity to do an act of justice, but to satisfy the requirements of social opportunism. Certain laws are only an instrument of domination in favour of a class.

At the same time, in order to have due regard to individual rights, and to avoid placing too much confidence in the infallibility of judges and alienists, it is well that the law should prescribe fixed penalties for each crime. The law, with its impersonal schematism, is the only possible safeguard from abuse of power on the part of the victims and of society in a case of ordinary crime; even an imperfect law is preferable to the caprice of a judge, however learned. In this way the crime is punished in the measure provided by law, and without regard to aggravating circumstances that might possibly affect the culprit, apart from consideration of his legal responsibility. The alienist is not concerned with the question of punishment; his opinion in regard to it is almost never asked, and I think it right not to trouble much

about it. Is the medical alienist called in as arbiter in regard to the false reasoning with which the special sciences, religion, and philosophy are strewn? Of what special competence can the alienist boast when he goes beyond the narrow limits of his clinical experience? And, apart from this experience, what more does he know than the empirical observer with regard to the estimation of the intelligence, and the valuation of the character, and the forecasting of the actions of men who live outside asylums?

According to Ferri, the crime should be punished, not in itself, but in relation to the individuality that commits it. Just as in medicine we study and treat patients, not abstract diseases, so it is desirable to introduce the natural method in the suppression of crimes; they should be prevented by social prophylaxis, and their individual causes should be dealt with in the person of the criminal himself. This idea is excellent and fruitful as regards its first part, and it has led the chief Italian school of legal positivism to happy practical applications. There can be no doubt that the progress of social organization renders many crimes futile, impossible, and unimaginable to such an extent as to constitute a true assemblage of penal substitutes. As for the second part—that is to say, the individual application of the punishment—though justifiable in theory, it is not practicable. It is true that the punishment should always be mitigated if it is certain that the culprit will not repeat the offence; it is true that it ought to be prolonged even beyond the time imposed by the statute if the tendency to relapse has not ceased; and it is true that the law should be silent, and allow the judge to proportion the chastisement to the individuality of the delinquent, and not to inflict it in accordance with schematic and pre-established regulations. What would be thought of a doctor if, having made the diagnosis, he prescribed the same medicine in every case? On the other hand, however, it is useless to think that psychiatry is able in every instance to solve problems so difficult. It is not permissible to place the fate of so many people at the mercy of professional persons devoid of independence, and so poor in practical ideas (not through their own fault, but through force of circumstances) as medical alienists are—at least, in regard to crimes. Until criminals are placed under conditions of restraint similar to those applied to lunatics, there will be neither doctor nor custodian who will be able to understand their feelings, and to appreciate the metamorphoses that these feelings undergo. Such progress would be achieved if these outcasts were to be collected in labour colonies, and placed in a position to manifest, in a regime of activity, of justice, and relative liberty, the profound qualities

of their character. The best solution of the problem would be the agricultural colony under the enlightened supervision of suitable officials ; but, in order that the results should be satisfactory, it would be necessary that the colonies should be organized in such a way as to lighten, and not to aggravate, the difficulties of social life and competition that the convicts have been unable to overcome in the free environment of normal persons. Instead of this we have only the rotten system of enforced residence.

Psychiatry studies and recognizes the extreme pathological and teratological deviations of the human mind that are manifested by evident, gross, and repeated signs in a series of individuals of simple manners, and resembling each other ; it classifies these signs of mental disease and of mental anomaly in a few summary groups, and it recognizes in the groups it has formed the synthetic portrait of the insane and of the genuine anomalies that are met with from time to time ; but among so many minds, honest, dishonest, irritable, variable, and contradictory, that become guilty of the same crime, to estimate the exact psychiatric category to which each pertains, and also the kind and individual amount of the punishment required to effect amendment, is a task beyond the powers of modern psychiatry. Let us not speak of medical jurists, who know still less about the matter, reduced as they are to seeing insanity only in passing on rare occasions, during the legal examination, and without any other instrument of clinical experience than books and the records contained in the journals.

Fortunately, penal law is undergoing improvement from within. In civilized states legislation has become very liberal, and has delegated the judgment in regard to criminal acts, not to fixed magistrates, who do not consider the criminal, but to twelve citizens taken at random, who represent the living currents of popular feeling, with its sympathies and antipathies that are rarely irrational, although instinctive and unreasoned. The jurymen are able to take their inspiration not so much from legal tradition as from the wise indulgence expressed in the sentence : *Nihil humani a me alienum puto*.

A recent and very commendable reform is the institution of conditional sentence or law of pardon. After the sentence has been pronounced, its execution is postponed for a year or longer on the understanding that the punishment will not be inflicted if the culprit behaves himself well during the period of probation. In this case the action of the judge is not guided by the fallacious answer of an oracle, but by a definite psychological criterion, which, though devoid of scientific pretensions, is perfectly sound

—namely, the negative behaviour of the culprit during the prescribed interval. Penal law is thus capable of developing and progressing without any departure from its traditional methods. The old codes have, however, always had their criteria of practical psychology. Offences are divided into categories in accordance with the motives of the offender, and according to their classification the punishment is increased or diminished, and sometimes radically changed. Thus offences may be fraudulent, culpable, or without special qualification; thefts may be with or without house-breaking; crimes may be impulsive, unintentional, premeditated, etc.

The gradual improvement of social conditions will diminish the number of crimes and of criminals, and when criminals become fewer in number it will be possible to carry out a more systematic study of their psychology. Instances of the royal pardon should be codified and explained in each case, and such pardon should be exercised not as an arbitrary corrective of the law, but as an early, inherent, and methodical example of the nature of its future advances.

To these advances in criminal legislation psychiatry is capable of bringing a valuable contribution and of adding its special word, though without raising their level. Unlucky would be the alienist who should attempt to intervene ostentatiously on every occasion, boasting, not only of the empirical psychology that is the possession of every observer, but also of special knowledge of general application and of a clinical experience of which he possesses only the desire. Worse still if his diagnosis should be formed at a distance, like that of the somnambulists from the mere study of a photograph; from the inspection of handwriting; from the hasty consideration of an incident; from the misuse of some anthropological datum that has no meaning; or from the imagined reading upon the brain of the deceased, which does not differ from a thousand others—at least, in appearance—all the psychology of the person's life and crimes.

Constitutional immorality, although considered in its clinical aspect of an anomaly, is always subordinate to a judgment of an ethical nature. Lombroso himself, if he undertakes to diagnose mental degeneration from the presence of certain anthropological stigmata, and epilepsy from the presence of certain clinical symptoms, is obliged to have recourse to ethical considerations in order to separate further the handful of criminals from the degenerates and epileptics (who, according to him, may likewise be honest, abnormally clever, or insane). Thus we arrive at the point from which we started—namely, the moral insanity of the old alienists.

Evolution of the Nosological Conception.

The conception of *moral insanity*, *folie morale*, or *moralisches Irresein*, began to influence psychiatric opinion only about a hundred years ago, and it was at first mingled with the scoria of other mental disorders. Pinel, in France, and Prichard in England, perceived in immorality rather a symptom than a disease, and they were, indeed, far from seeing in it a disease essentially constitutional, or, in other words, an anomaly. Moral insanity was confounded with imbecility, monomania, and even with mania and melancholia. Its terminology and description were repeatedly altered; it was even thrust out of psychiatry, but only to return after some years; it was put to the vote at a congress of Italian alienists, and was passed by a small majority, like the Supreme Being at the Convention of France; it disappeared from German psychiatric literature about the year 1883, and reappeared under the name *Gemüthswahnsinn*, which was quickly abandoned for the old one. Esquirol invented the denomination *folie raisonnante*, adhered to in the writings of Krafft-Ebing, to denote a mild, and one might almost say domestic, variety of moral perversion. This fragmentary immorality, which does not manifest itself in crimes, but in pin-pricks inflicted in the narrow and secret family circle, is a characteristic symptom of the pre-senile psychosis and of senile dementia. Another variety of moral perversion, always, however, occurring in combination with other forms of insanity, is that to which Kahlbaum gave the name of *heboidophrenia*. This is a form of hebephrenia in which there is a predominance of affective symptoms, such as violence, petulance, cynicism, etc. In young people dementia præcox is often preceded by a long period of immorality which cannot be recognized either as a symptom or as a prodroma of true insanity, and even the medical alienist may have great difficulty in determining whether the case is one of a common psychosis in the stage of incubation, one of transitory accentuation of the juvenile character, or one of constitutional immorality beginning to assert itself in an autonomous manner. It would appear that the *heboids* are only in small measure liable to progressive enfeeblement of the intelligence. They have no regard for the Ten Commandments, and especially for the Seventh, and thus *heboidophrenia* is to be regarded as one of the typical forms in the group of constitutional immoralities.

To show how obscure and erroneous were the ideas of alienists regarding the subject of moral insanity, I may allude to a case published by H. Manning in 1882. This author inflicts a diagnosis of moral insanity upon a gentleman tormented by obsession

of assassination, who, in order to prevent himself committing any violence, used to go out without weapons, and even without a stick; but this unfortunate individual did not suffer from hallucinations, and on this account Manning considered he ought to be regarded as a case of moral insanity. At the same time other alienists, especially English ones, such as C. H. Hughes, Hack Tuke, and Savage, had a clear conception of constitutional immorality, and, contrary to Mendel, Binswanger, Hendrie Lloyd, and Workmann, maintained the independence of this anomaly from imbecility and from other forms of intellectual insanity.

A further advance, and a very important one, was effected in 1883. Marro and Lombroso, by means of their excellent and numerous researches carried out upon the pupils of the elementary and charity schools, showed the constancy and strength of the immoral tendencies during early childhood. Hence immorality or moral insanity is only a natural disposition of the human mind—at least, up to a certain age—and its persistence in the adult—that is to say, when it begins to be dangerous and uncontrollable—is only an arrest of psychical development, a case, as it were, of partial infantilism in the sphere of the character. Lombroso subsequently, interpreting this special arrest of psychical development as a form of mental degeneration, endeavoured to find in cases of moral insanity and in criminals the anthropological stigmata of somatic decadence with which to form the framework and the visible evidence of ethical degradation. He rightly grouped together cases of moral insanity and instinctive criminals, and he separated from the instinctive criminals, as outside the field of psychiatry, all impetuous criminals and occasional criminals, and also the passionate and habitual criminals who are led to crime by wholly accidental causes—that is to say, external and social—or even constitutional—that is to say, internal and morbid—but who do not exhibit a true immorality of character. These, not being immoral by nature, do not present signs of degeneration; but their number, which, in my judgment, is very great, is, according to Lombroso, extremely small.

In my opinion, immorality of character, even if it attains to the degree of a constitutional anomaly, is not necessarily associated with the signs of degeneration that Lombroso and his followers have collected and classified with such care. The value of these anthropological signs is somewhat open to question. It is not certain that they are more common in criminals than in other categories of men. Many criminals—indeed, whole classes of criminals, such as the swindlers and the courtesans (whom Lombroso regards as criminals)—are quite devoid of them, and

their physical features are of a quality superior to the ordinary : indeed, very few of these stigmata can be interpreted as of an atavistic nature. What is most atavistic in born criminals is their character ; and the psychical degeneration of these persons, being constant, because it is the necessary and sufficient condition of the anomaly, has greater importance than somatic degeneration.

Somatic degeneration, if it is present, offers, nowever, the advantage of being evident. No judicial argument can weaken its fatality, and medical witnesses make a good impression by invoking it, even when it does not exist, by demonstrating it with the aid of geometrical and numerical data, and entrenching themselves behind the mystery of anthropological technicalities. Thus by the assertion of a somatic degeneration that is often absent they succeed in establishing the existence of a psychical degeneration that is sometimes likewise absent. The judges, who decline to be instructed in regard to matters of moral pathology, yield to anatomical nomenclature, anthropometric instruments, and the precepts of an occult science, of the poverty of which they have no suspicion. Quick and ready to fight for the dogma of free-will against Ferri, Garofalo, and the other distinguished men who endeavour to destroy it by incontrovertible arguments of introspective psychology, and to place penal justice upon a more logical, more modern, and more solid basis, they are unarmed against the declarations of the medical expert, who points out, according to the case, the occurrence of Darwin's ear, plagiocephaly, hexadactylism, or other similar indications of anthropological inferiority, which, even if they always had this significance, would never suffice of themselves to prove the existence of moral degeneration.

This tendency is so strong that Ferri, Garofalo, and other representatives of the modern penal school depend not so much upon their arguments as upon the anthropological evidence collected by medical alienists, and the good coin of their judicial doctrine circulates throughout the world, not so much because of its intrinsic value as on account of the anthropological methods of study, the adoption of which it has almost enforced. Nevertheless, criminal anthropology does not by its results justify the popularity that it enjoys. Not being able to bring any valid contribution to mental medicine for the diagnosis of immorality, it humbly places itself at the service of the police in order to complete the descriptions of suspects, especially of prisoners who are about to be liberated, and who may yet have other accounts to settle with justice. Thus professional criminals cannot escape by changing their appearance, because their identification is

rendered easy, apart from photographs and descriptions, by an ingenious registration of anthropological measurements, which are unalterable and personal—for example, a combined measurement is made, such as that of the length of the foot and the length of the cranium. This expedient is useful, but is only of practical value, and it has nothing whatever to do with psychiatry.

For many years Lombroso has endeavoured to show that a large proportion of crimes are symptoms of mental diseases, and, perhaps perceiving the insufficiency of anthropology, he has been induced to seek other proofs in a field more distinctly pathological—namely, that of clinical medicine. Congenital criminality, he maintains, is no longer to be regarded simply as a degenerative psychosis, but as a variety of epilepsy. To him, of course, as to many other clinicians, epilepsy is a neurosis belonging also to the group of psychical degenerations.

Summing up the generic contribution of somatic degradation and the specific contribution of epilepsy, we may say that, according to these views, instinctive criminals present the following features, in part anthropological and in part clinical, some of which are visible during life, whilst others can be recognized only at the post-mortem table: Heavy body-weight, asymmetry and sclerosis of the skull, occipital depression, small cranial capacity, evidence of meningitis and encephalitis in infancy, prominence of zygomatic arches, excessive development of the frontal sinuses, Darwin's ears, analgesia, left-handedness, Daltonism and dyschromatopsia, anisocoria, exaggerated reflexes, general temperature (apart from fits) between 37.2 and 37.3, tattoo-marks, impulsiveness (replacing the natural emotions), and masculinity of the anthropological type in criminal women.

I am not aware of how this assortment of physiological requisites (such as the weight of the body), of anatomical imperfections (such as the Darwin's ear), of clinical symptoms (such as anisocoria), and of psychical manifestations (such as tattoo-marks), can enable one to establish a diagnosis of epilepsy, and I do not understand how epilepsy can even be suspected in prostitutes, whom Lombroso includes in the ranks of criminals, in order not to leave deserted by them the recruiting-grounds that concern the female sex. To include polyandrous women, whether they practise eroticism as a profession or abandon themselves for pleasure (as do many married women of all social classes), in the ranks of criminality seems to me exaggerated and cruel, although in harmony with certain principles of morality that are not quite modern; but to regard them as actually epileptics seems to me very strange. As a rule, women of easy virtue, whether they

sell or give themselves, enjoy enviable good health, good temper, and an elegance of body which, if not always refined, is in general superior to the common level. Such qualities are not in accord with the presence of a disease, and especially of a disease so grave and sometimes so deforming as epilepsy is.

Moreover, the opinion is daily gaining ground that epilepsy is not a *neurôsis sine materia*, or a kind of degenerative anomaly, but a morbid process of more or less accidental origin, with its material causes and anatomical lesions. Hence the somatic alterations of epileptics have not the degenerative or atavistic character that would justify their being regarded as anthropological features, but a clinical character revealed by pathological manifestations and by lesions of the nervous centres. According to Marie, epilepsy is not hereditary, and never occurs without structural alterations of the encephalon. Very many criminals present neither psychical or vertiginous equivalents of epilepsy, nor the so-called epileptic character; and among prostitutes no one, with some very rare exceptions, deserves the title of epileptic, for the diagnosis is not among those that can be made with ease on the ground of the presence of the deceptive signs of an alleged anthropological degeneration.

When Lombroso and his followers transport the male and female contingent of criminality (and not merely of extraordinary and specially grave criminality) into the clinical field of epilepsy, they have in view an epilepsy of the old stamp—a neurosis without material causes and without precise symptoms, a form of degeneration which in its indefiniteness can include crowds of anomalous persons and multitudes of normal people. One of his pupils, Roncoroni, regards the pathogenesis of epilepsy as consisting in a suspension of inhibitory processes that does not involve any very marked departure from physiological laws, and that has very little resemblance to the coarse mechanism of a true disease. Epilepsy, according to Roncoroni, is wholly an anomaly comparable, for example, to paranoia. It is, indeed, by means of an analogous mechanism that Roncoroni and I have endeavoured for many years past to explain paranoia. As for Lombroso, his latitude of judgment asserts itself also in the estimation of epileptic symptoms. Many vaso-motor phenomena, many acts which are normal, but unusual in respect of their vivacity and suddenness, are by him attributed to epilepsy. In his view, epilepsy serves to explain not only crime, but also prostitution and genius, excesses of egoism, excesses of eroticism, and excesses of intelligence.

Where Lombroso is much more happy is in his description of the psychical qualities of criminals, their vanity, improvidence,

and cynicism, which are manifested in various characteristic ways. The slang of prisoners, their tattooing (Fig. 126), insensibility to physical and moral pain, the courage with which they run the risk of going to prison, the facility with which they adapt themselves to prison life and return to it, and the boast that they make of their crime at the risk of betraying themselves, have all been finely described by those who have devoted themselves to the study of criminal anthropology.

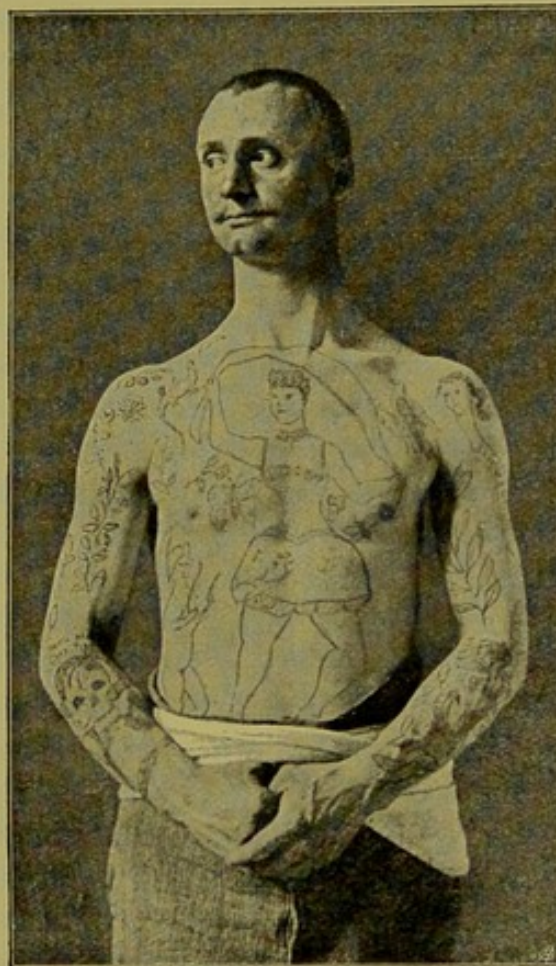


FIG. 126.—AN IMPULSIVE IMMORAL : TATTOOING.

The immoral by birth often become immoral by profession. They associate with one another owing to affinity of tastes and of aims ; they are thrown together in prisons ; they form a society within a society ; they understand each other ; they receive suggestions from one another ; they admire one another ; and they support each other as if they belonged to the same family. Thus there arise the slang, the tattooing, and that spirit of chivalrous solidarity, especially in their conflict with the police, which in Sicily and among those who are members of the *mafia* has been given the name of *omertà*. These signs of active criminality are evidently a manifestation of collective psychology rather than of

individual psychology, and one can understand how they may be wanting in the solitary criminal, as also in the victims of moral insanity, however well marked it may be, who do not become criminals.

Clinical Manifestations.

If we consider the congenitally immoral from the point of view of their immorality, apart from the other anomalies or from the mental diseases with which their immorality may be associated, we readily perceive that they may be divided into two classes :

1. The immoral from impulsiveness, or from excess of egoistic desires, of restlessness, of aggressiveness, or of individualism.

2. The immoral from deficiency of sympathy for others, and therefore, also, of altruism, of sentimental reserve, of solidarity, of compassion, and of regard for public opinion.

Those in the first group are less immoral than those in the second, but owing to the optimistic carelessness with which they act they are more prone to small offences, as well as to grave crimes, and in the end crime becomes to them an unfortunate habit. The violence and urgency of their needs are so intense that they are unable to resist them, and often they have not even sufficient time to think of controlling themselves. It is probable that Lombroso has these impulsive persons in view when he identifies crime with epilepsy. In some instances criminal impulsiveness manifests itself only under the action of special, imperious, and passing needs which cannot be gratified in certain environments. When the obstacles are removed and the environment changed, the discontented, grumbling, and unsociable individual becomes a peaceful and useful member of a wider, freer, and more tolerant society. There are boys who cannot endure the confinement of boarding-schools ; young women who are unable to tolerate the rigour of monastic life ; young men who are rebellious under military discipline ; men and women who, passing from one act of rebellion to another, end by becoming unfit for social life.

Society, instead of allowing these peculiarly exuberant and imprudent persons every possible liberty of action that does not directly conflict with the well-being and liberty of others, exasperates them by ill-judged severity, places them in even more trying environmental conditions, and provokes them to still more impetuous and frequent rebellion. Houses of correction, disciplinary companions, prison, supervision by police, etc., produce the same effect upon them as the strait-jacket upon maniacs. Between these impulsive persons intolerant of restraint and

society intolerant of exceptions there is established a bad understanding, which, gradually becoming aggravated, results in a state of war without quarter. It is, indeed, in this group that the criminals most nearly allied to normal persons are to be found—namely, those who are the least unsociable and the least disagreeable. To these, rather than to the congenitally immoral, reformers should turn their attention, providing by social justice for the prevention of their offences. For these offences it is often society that is responsible; but Italian psychiatry, instead of promoting social amelioration and showing the injustice of so many sentences, distributes—at least, in theory—patents of congenital criminality without hope of redemption, even in cases in which the law overlooks or pardons, and applies to the victims of prostitution as well as to others the criteria of a stern moral code derived from the Pentateuch.

Originally the victim of impulsive immorality is only a fool, a person who fails to be moral. He offends without knowing that he is doing so, and he is not deliberately hostile to society or totally devoid of sympathy for his fellow-men. The severity with which he finds himself treated quickly convinces him, however, that he is neither understood nor tolerated. The offender becomes a victim. He is little inclined to submit to the moral and legal restraints of freedom, and he is incapable of enduring the discipline of the barracks or of the prison. His moral instinct, originally weak, becomes perverted and degenerated, until it leads to a form of active immorality. From incidental and almost unconscious crime he passes to habitual and deliberate crime, and to a chronic and rooted hostility to society.

Among these unthinking offenders there are some who transgress only from excess of a single physiological need. These are the idlers, the sensual, the jealous, the passionate, the gamblers, the ill-tempered, who began their career of crime owing to their inability to bridle desires that are extremely imperious even in normal persons. If they could satisfy these desires without hindrance, or control them by means of a power that did not act too quickly, or get rid of them as a result of gradual, moderate, and benevolent repression on the part of society, these persons would not progress in their path of crime, but would reform. Some of them are not wholly devoid of altruism—indeed, they may be well endowed with it—but the violence and inconstancy with which they abandon themselves even to generous sentiments, such as disdain and love, deprive their conduct of all ethical direction. These passionate persons sacrifice to the ideal of the moment ideals that are much more dutiful and elevated, and their passion, without being ignoble, damages their moral

character. Step by step the offender through passion descends to more and more ephemeral and superficial passionate episodes. He habituates himself to licentiousness ; he loses his moral sense, and listens only to instinct. Often to calm feelings of remorse he has recourse to the narcotic of religion. There is no immoral person who does not—at least, from time to time—profess to be a believer.

We are warranted in making a diagnosis of constitutional immorality only when there is continued and progressive destruction of the moral sense ; but even in such cases there must always remain a doubt—at least, in regard to this class of impulsive criminals—as to whether a better organization of society would have prevented the criminal action or corrected the sentiments from which it proceeded—sentiments that are even more anomalous in their strength than in their nature. The friction of the social environment, added to the anomalies of the individual constitution, increases the sense of ill-being of the impulsive, as well as his restlessness and the violence of his unsatisfied need. He is driven to seek quiet and forgetfulness in alcoholic drinks, and alcoholism, after having temporarily quelled the impulses of the moment, permanently destroys the ethical sense, which, if it could have been reinforced, would have been capable of restraining these impulses.

Among these cases of immorality from restlessness, many are candidates for dementia præcox—or, indeed, they are more than candidates, being already obviously imbecile. In such cases the diagnosis is more easy, because the immorality manifests itself even from infancy in fits of temper, and in excessive reactions to every trifling opposition. It is much more difficult to determine the occurrence of constitutional immorality in the pure state in persons of normal intelligence, although even in them the anomaly begins to manifest itself at an early age. Whilst heboidophrenia, which either occurs as a prelude to dementia præcox, or does not extend beyond the sphere of the affective functions, first manifests itself about the twelfth year, and appears to have a distinct onset, true constitutional immorality is congenital ; it has no distinct onset, and therefore unfolds gradually as a psychical anomaly.

In childhood immorality of the unthinking type displays itself in precocity of the sexual instincts, arrogance, overbearing conduct, lying, scheming, disobedience, running away from school and from home, vagabondage, thirst for adventure, etc. These tendencies become accentuated about the twentieth year, and lead to desertion, sexual offences, quarrelling, swindling, and foolish changes of residence, occupations, and friendships. Thus

out of immorality there is gradually developed criminality, either in specific or generic form. There are specialists in crime—the eclectics, and those who, favoured by birth, can come within an ace of infringing the law without actually doing so, incurring debts, gambling, contracting interested marriages, carrying on fraudulent businesses, devoting themselves to public life, etc. A moderate degree of imbecility does not disturb the programme. In the class of the rich impulsives are to be found the majority of the prodigals.

We have described the group formed by cases of immorality due to excessiveness of needs. Let us see now the other side of immorality—immorality committed deliberately, from want of sympathy, solidarity, and altruism. The character of these persons, who are incorrigible in their immorality, examples of true Daltonism of ethical sentiment, is not impetuous, passionate, choleric, imprudent, and rebellious, but just the contrary—it is calm, frigid, slow, reflective, and, in general, rather particular about legality. In this class of refined and unscrupulous egoists there are to be found more immoral persons than criminals. Their egoism is not a torrent that suddenly overflows and then subsides, but a broad and majestic river that has prudence for an embankment, and goes on its course without disturbance or hindrance. We find among these insensible immoral persons the poisoners, the great swindlers, the hypocrites, the promoters of fraudulent enterprises, the pitiless schemers who enrich themselves at the expense of their collaborators, the usurers, the procurers, the calumniators, the political desperadoes who stop at no trickery, except to clothe it skilfully in legality, and to exhibit it afterwards as a claim to admiration from the foolish. These immoral persons of higher grade, for the very reason that they know how to control themselves, almost always avoid committing actual crimes, and if they do not avoid committing them, they at least succeed in dissimulating them. The absence of altruistic sentiment makes their imagination freer and their action more cynical.

They do not hesitate to use lethal, cruel and terrifying weapons, provided they feel assured that they will not be discovered, and so made to suffer for having recourse to them. Immorality, which is a weakness in the impulsive, is a force in those of the other class. It opposes and subverts plans of reform, expiation, and prudence that smile on the impulsive, whilst it inspires, foment, and sharpens the feelingless work of the insensible, urging without hesitation to a practical and definite aim. Nevertheless, even the Napoleons of deliberate immorality have sometimes to deplore a Waterloo. It is not that impatience to

conquer impels them to inconsiderate action, but that the want of moral restraints, of pity, probity, and sensibility to the reproach of others, leads them to make plans of complicated, continued, and co-ordinated crimes, which, notwithstanding the most skilful calculation, may fail through error in a single detail. It is the abuse of their qualities that sometimes leads to defeat.

Whilst they avoid and dissimulate crime, they do not, however, pass unnoticed by honest and sensible persons. Although the deficiency of altruism manifests itself chiefly in negative form, it is profound and evident, and easily traced from early youth. If there is not great criminality, there is great immorality. In this agenesia of the ethical sentiments there is no place for any tenderness of feeling. Woman is only an instrument of pleasure, the family a means of lordship, the neighbour a stepping-stone to self-enrichment, public life a platform for personal ambition and aggrandisement, and art and science a trade. These are the true immoral persons, those without fineness of feeling, without passion, and without remorse, who go straight to their goal, whilst they follow a peaceful vocation. If they are rich and intelligent they are able to withstand the seduction of crime, or at least to avoid coming into conflict with the law ; if they are poor, or lacking in intelligence, they sooner or later fall into the hands of justice. Even in such an instance, however, the crime is almost always an isolated, striking, and unexpected occurrence, carried out cunningly and callously. Criminals of this kind have no compunction in throwing the blame upon innocent persons. They show themselves capable in defending themselves against imputation ; they prepare an alibi ; in court they explain away or misrepresent the true motives for committing the crime ; in prison they conduct themselves well : they are prudent criminals. During the trial they do not betray their moral poverty, excepting in a negative way, as by absence of distress and by complete inability to feel or to display, not only any tenderness or kindness, but even any respect for their victims or horror for the crime that they have committed. These ruthless scoundrels are more or less deficient—at least, on the affective side—more or less unconscious of what they are doing, and more or less grotesque, and they are extremely repulsive. So long as they have not reached the dock, however, they figure in the view of those at a distance and of the weak as persons of correct, serious, energetic, and respectable character. Their power of suggestion is great ; their rule is firm ; their reputation for probity, although disputed, is unshakable, and in the course of the trial the fanatical witnesses for the defence counter-balance the eager witnesses for the prosecution. The case is the

same if the great criminal does not come into conflict with the law, remaining only a great immoral. To oppose to a thousand detractors he can count upon the imbecile enthusiasm and interested gratitude of a hundred ardent friends. The reason for this is that in a prolonged and consistent exercise of his own egoism the coldly immoral person is constrained to do some kindnesses, to make allies, to ingratiate persons in high places, and to conceal his affective aridity by the ostentation of propriety and by acts of calculated generosity.

Immorality of the second type is, like impulsive immorality, of congenital origin. It is, indeed, more distinctly congenital and less dependent upon pathological and accidental influences capable of favouring or hindering its development. It is more evident from early childhood, because it is more impressing, notwithstanding the negative nature of its manifestations. In youth, these persons who are immoral through deficiency of sensibility show affection for no one. They show no sympathy for their companions, but only desire for dominion. In their amusements they are placid, silent, and cruel. They are often cruel to harmless animals; they never cry; they show no sympathy with the misfortunes of others, and sometimes they find amusement in them. If they contract syphilis, they are happy to diffuse it. They are not mortified by reproof, or humiliated when caught in the act of doing wrong. They know neither disgust, repugnance, nor shame; they show rather curiosity than repugnance, or actual attraction for obscene things. They do not refrain from giving formal examples of their insensibility to disgust, which they mistake for a kind of superiority, which as such is often applauded by their school-fellows and by their elders. They neither value nor understand the generous impulses of others; they are sceptical, distrustful, and malicious; they recognize idols neither in the home nor outside it, and their irreverence does not disappear even before their mother, or in the presence of the heroic benefactor who stirs universal sympathies. As there are dogs without power of scent, and flowers without perfume, so also there are individuals devoid of benevolence and sympathy. Their want of disgust for bodily uncleanness is an index of their insensibility for moral uncleanness. They may be withheld from crime by means of external restraint, but they have within themselves no spontaneous repulsion to it. If the law sleeps, if society abates its vigilance or turns its attention elsewhere, if the proposed victim is unable to defend himself or to avoid the danger, the man who is immoral through lack of affectivity will not hesitate to profit thereby more or less successfully. The slightest occasion will suffice to suggest to him the

means that he will be able to apply with all his skill and without any effort, provided that these means seem devoid of danger and suited to his purpose.

Instead of brutal acts of aggression that are the prerogative of the impulsive immoral, there are to be expected in such cases the slow conquests, the carefully planned crimes, or their lawful and much more profitable equivalents. In some instances these true types of immorality do not come into open conflict with the law until near the close of life, towards the end of their career, and at the height of their fame. Age favours greater boldness in the path of evil, for it exhausts the last residues of kindness and increases the probabilities of the crime remaining unpunished. The aged immoral feel tempted to make improper use of the social position they have attained through concealment of their perversity. In these persons crime, far from being in contradiction to a long and inoffensive life, is its natural epilogue. Proof of this is furnished by their indifference to signs of popular anger, by their unconsciousness of their own baseness, by the cunningness with which they defend themselves, by their cleverness in flight and in recriminating their accusers. Novices in crime, these senile offenders are veterans in immorality.

There is, however, a third type of immoral—namely, the mixed type, consisting of those who combine the impulsiveness of the unthinking immoral with the permanent insensibility of the ruthless immoral. It can be understood that this mixed type must be the most common. Indeed, it may happen that violent fits of egoism and placid deficiency of altruism are associated through a combined vice of moral character. Independently of this double form of congenital immorality, it is, however, certain that the two forms tend to become conjoined. The impulsives, thrown into the abyss of their imprudent actions, inured to prisons and courts of justice, habituated to public execration, disillusioned regarding their social worth, end by losing all ethical sensibility, and in being resigned to playing in the social sphere only the part of harmful parasites. The same circumstances are capable of rendering impulsive—that is to say, prone to commit crime—also the crafty but feelingless immoral man, who for some reason has already been sent to prison, and who, once he has started upon a recognized career of crime, may find it better to persevere in it than to take refuge in the fold of legal immorality. In short, as conviction follows conviction, the impulsive become more and more insensible, and the insensible become more and more impulsive. Both adapt themselves to the consequences of their own moral temperament; they accept philosophically the uncertainties of a hazardous calling, and they become familiarized

with infamy. The impulsive do so because they see the inevitable, the insensible because they learn to take advantage of it. A name that is compromised is a title that is in demand in certain callings and in certain posts.

Treatment of the Immoral.

In the treatment both of the impulsive and of the insensible prophylaxis is more efficacious than repression, but the prophylaxis that is to be advised in the one case is very different from that required in the other. It is necessary to educate, help, and correct the impulsive by acts of prudent rigour, and to render the insensible powerless by a vigilant and relentless warfare.

Let us look first at the impulsives. Intolerance of them by society, and the expression of this intolerance in penal acts, in small measure appropriate to the disposition of the offender, may hinder these persons from reforming, and add fresh fuel to the fire of their intemperances. Houses of correction, disciplinary companions, and supervision by the police, have almost always an effect exactly contrary to what is intended. They irritate instead of quietening, and become incentives to incorrigibility and revolt against discipline, as well as instruments of provocation to fresh crimes. It is vain to attempt to subdue the impulsive by raising them to the level, not of ordinary wisdom, but of an ideal docility scarcely human and bordering upon asceticism. Educationalists imagine that they can instil virtue by sermons at stated hours, by privations, religious exercises, flourishing of trumpets, and enforced menial labour, badly organized, purposeless, and objectionably retributinal. The police, under the same misapprehension, continue their evening visitations, and a thousand vexatious actions that render it impossible for the person supervised to earn his bread, and even to seek work. Those who are corrected, watched, and warned respond only by antipathy and hostility. True educative action is not obtained through the instructor or by regulations made by the authorities, but it comes with irresistible force to such people from the mass of their fellows, who are sympathetic and united under a common yoke. The collective, continuous, and multiform suggestion of equals is much more powerfully operative than the individual, discontinuous, and formal suggestion of superiors. It is the same in colleges and schools. The permanent impressions that mould and give direction to the character do not come so much from the teachers who speak *ex cathedra* as from the companions who express in confidence their hidden thoughts. Therefore, national education, regarded as a scholastic or State function, is a Utopia. It is not in the artificial environment of the school,

but within the domestic walls and by the action of indirect suggestion, without definite programme, and free from ostentation, that the character is moulded—at least, up to a certain point. Example is a hundred times better than precept.

In some instances the impulsive immoral give way to crime, not so much on account of antisocial inclinations as from transitory exuberance of individualism. In the course of a few years they become wiser and more moderate in their actions, provided that their spirit is not rudely crushed and therefore exasperated. It may also happen that they find out some way of lawfully and honestly giving expression to their impulses, and even of taking advantage of them by selecting disagreeable occupations, defying dangers—in short, by utilizing the temerity, ambition, and impatience with which their nature quivers. To submit to the daily mean and thankless tasks of monastic, military, and prison life is difficult for those who have not learned to adapt themselves to the much lighter similar tasks of ordinary life; but it is quite possible that the same individual may be able to overcome unexpected, heroic, and fascinating obstacles that demand liveliness of imagination and warmth of emotion if they are not to act as paralyzing phantoms.

Conditional sentence is a very ingenious, magnanimous, and utilitarian device for the benefit of impulsives. It is magnanimous because it pardons; it is utilitarian because it implies an economic advantage to the society that adopts it, as it results in the saving of the cost of thousands of days of imprisonment; and it is ingenious because it attains two aims so different in nature.

Starting from the idea that moral insanity is strictly hereditary, some have advised that the radical expedient of castration should be adopted against it. Castration has also been advocated as a remedy for other forms of psychical degeneration. In Michigan the sentence takes the form of a Bill, which, however, has never been given effect to, although I understand it has been approved by the Legislative Assembly. According to this enactment, castration was to be inflicted *ex jure* upon all those who committed crime for the third time, as well as upon imbeciles, epileptics, and those guilty of rape. In Europe, Naecke has wisely proposed, but only for criminals, an analogous measure, in which resection of the vas deferens is substituted for castration. As a result of this operation, criminals would become sterile, though not impotent. In Italy the same measure has been advocated by Zuccarelli. In France Servier has also proposed castration, but only as a substitute for decapitation. He anticipates that this mutilation would also effect such a change of character as

to make it possible to liberate the criminal after a time. This sanguine expectation is forcibly contradicted by Naecke. As Lugaro remarks, castration of the adult certainly does not obliterate sexual imaginations; it is a remedy of the irritating class. Moreover, it cannot be applied to persons of tender age before they have given proof that they are incorrigibly immoral.

Although mutilation of the male organs is surgically a very easy matter, and without danger, no surgeon has been found who would dare to carry it out, even in the milder and wiser form proposed by Naecke. Public opinion regards the reproductive function with a kind of veneration that is shared by all concerned. Though custom allows a man to renounce voluntarily and without dishonour the advantages derivable from the exercise of this function by a vow of chastity or by the following of a profession that requires celibacy, it does not allow on any pretext interference with the anatomical capital from which these advantages are derivable. However insignificant the material mutilation may be, the moral mutilation is regarded as immense. It is, therefore, useless to continue to discuss a prophylactic treatment which, notwithstanding its social utility, has not emerged from the domain of theoretical proposals, owing to the fact that there has not been found, and perhaps never will be found, anyone who has the audacity to apply it.

1 A treatment not prophylactic, but corrective, which, however, is also still in the position of a theoretical suggestion, is one which has been proposed by Lugaro, not for all cases of immoral insanity, but only for impulsives. To counteract this kind of anomaly, Lugaro proposes thyroid mutilation. He bases his proposal on the fact of the satisfactory moral character exhibited in cases of hypothyroidism or in cases of myxœdema, and his aim is to correct the moral anomaly of impulsives by conducting them, as it were, to the border of myxœdema without overstepping it. This result can be obtained by partial demolition, the parathyroids especially being spared. The effect can be increased by a second operation, if that of the first is insufficient, and it can be moderated by thyroid treatment if it should prove to be excessive. It is, indeed, undeniable that hyperthyroidism disposes to impulsiveness, and those who suffer from exophthalmic goitre, although affected by a hyperthyroidism that is probably only partial, are subject, if not to a distinct perversion of character, at least to frequent emotional disturbances; and it is equally undeniable that athyroidism tends to calmness, mental balance, and prudence, not unaccompanied by kindness, provided it is kept within fairly moderate bounds, so as not to affect along with the aggressive instincts also the intellectual functions. It

is not, however, to be thought that immoral impulsives are to be regarded as persons suffering from exophthalmic goitre or affected by hyperthyroidism. The important fact is that, apart from the question of any causal antagonism, the myxœdematous person is obviously continually in antagonism of behaviour and of feeling to the impulsive immoral person. It is not, therefore, a question of infusing into the immoral impulsive the ethical characters that he lacks, but one of neutralizing by a moderate degree of intoxication the impulsive tendencies that prevent the patient from behaving himself in a normal way.

A general state that approaches that of myxœdema without reaching its morbid proportions can result in a moderation of the impetuosity of the character without extinguishing tenderness of feeling and without damaging the intelligence. Will a surgeon be found sufficiently sure of himself and of the idea to try the effect of this operation? Before running a risk of this kind it would be necessary for the surgeon to take certain precautions, not merely of a surgical, but also of a legal nature. First of all, the person must be informed of the nature of the operation, and of the risks to which it exposes him. He ought to be induced to face these risks from conviction and sincerity of desire to reform, and not through intimidation or deception. When we think of the unhappy conditions of existence to which an impulsive is doomed when he has lost hope of being able to reform, we should not think it impossible to obtain his deliberate and written consent, which will make the position of the operator perfectly secure. Thus the surgeon will not run the risk of an action for damages, society will succeed in purifying itself without having recourse to cruel punishments, and the criminal has the chance of undergoing a metamorphosis that will probably contribute to his own happiness.

The preventive method is also applicable, but only to a certain extent and in a totally different form, to the insensible immoral, provided they have not actually committed a crime. To apply it effectively and justly, however, society must make up its mind to reform itself by raising the mean level of general morality. The only preventive weapons with which it is possible to combat persons of the calculating immoral type are distrust, aversion, scorn, and the boycott. Public opinion ought to be more courageous and loyal, and less tolerant of deliberately immoral persons, who are often feared, respected, and influential. It ought neither to fear, respect, nor tolerate them. In particular it should not take them as models. The modern worship of the hero, who has become the extreme expression of the literary and political snob, tends to the glorification of the wild individualist

and the bandit, but especially of the tyrant, who is regarded as a pattern by a crowd of needy persons who seek favours from him. This detestable veneration of influential individuals has corrupted not only customs, but in no less measure even the laws.

Why should we hesitate to deprive of civil liberty the domestic tyrant, the miser, or the pervert, who, though he conducts himself lawfully, tramples underfoot the legitimate sensibilities of his wife and children? Why does the practice of a shady profession, a judicial sentence, the carrying out of a transaction that is legal, but plainly immoral, or habitual and shameless drunkenness, involve limitation neither of political power nor of other civil rights?

Up to the present, especially in certain countries, the immoral man, provided he knows how to avoid the gaol, enjoys not only his full civil rights, but also the respect, the esteem, and the votes of the electors, if he should desire them. The fear he arouses is converted more easily into admiration than into hate. When a man of this kind commits a crime, society should not allow the opportunity of convicting him to escape. If kindness of heart is an extenuating circumstance that allows of mitigation of the punishment, why should not insensibility to every emotion—hardness of heart, systematic arrogance, unfaithfulness in friendship, and lack of respect for women, be officially recognized as aggravating circumstances justifying, when they have been proved in court, increase of punishment?

The punishments prescribed by the law are a very excellent social preservative, and it would be very unfortunate if punishments were not so prescribed. By the repression of one criminal act many others are prevented. Although repression, however severe, does not restrain all impulsives from repeating the crime, and though fear of repression is not an effectual deterrent to first offenders, who transgress in a moment of passion or forgetfulness, no one can dispute the obvious utility of the penal code in regard to the crowd of sufficiently well-balanced ordinary people and the smaller bands of insensible though sane immoral persons. At the same time, in order that the punishment may be sanctioned by public opinion, and that it may not be difficult of application, it must appear just. Political repressions, for the very reason that they are almost always unjust, exaggerated, and inspired by an excess of collective egoism, have never been effectual. Excessive and unjust punishments sooner or later provoke a reaction of popular feeling in favour of the persons convicted and against the authority that has punished them, especially if the excess and the injustice have been dictated by

prejudices or by class interests. It is also necessary to guard against the arousal of a blind and angry hatred of the insensible immoral. In origin the want of moral sensibility is an anomaly like any other, and it would be foolish as well as unjust to hate the victims of this anomaly, although they can be, and ought to be, repulsive to others.

Apart, however, from the dangers incurred through popular hatred and every useless sharpening of punishment, which is its echo, for the sake of the protection of society it is necessary that criminals should be supervised and placed in security. This applies to criminals through constitutional immorality, as well as, and even more than, to others. The former are neither less dangerous nor less culpable than ordinary criminals, and there is no injustice in placing them together in prisons or elsewhere. It is true that their crime has as a necessary coefficient an anomaly, for which the unfortunate who is afflicted with it is not responsible; but all crimes—indeed, all human actions, even the most meritorious—have an analogous genesis, because they proceed from, besides the environment, a psychical structure that we receive as an inheritance without the advantage of an inventory. We are not free to select a calm and sociable character, or to purchase at the market the will that we require. We have, therefore, no right to invoke for one particular purpose the law of determinism, as if it were the speciality of the anomalous immoral, and to conceal hypocritically the fact that it is really valid for all. If we have not the courage to combat the dogma of free-will in open field, we will end by abandoning to the rigours of the penal courts the less undeserving criminals—that is to say, those who have been driven to crime by external and passing, though equally fatal, circumstances.

As criminal asylums exist, however, it would be well to restrict them to their original function—namely, that of serving as retreats exclusively for lucid and anomalous criminals. On the one hand, these patients, although anomalous, are intolerable in hospitals for the insane, in which they create disorder. They are as wolves in the midst of sheep, seers among the blind, anomalous persons among those who are ill (all anomalous subjects, including paranoiacs, homosexual individuals, and imbeciles, are uncomfortable in ordinary asylums). On the other hand, to mingle with persons who are supposed to be capable of reform, and who, immediately they have undergone their sentence, have the right to re-enter society, is not suitable for congenital criminals, who are actuated by internal motive forces. If collected in criminal asylums, but grouped according to psychological criteria in harmony with the peculiarities of

their character, the congenital immoral could be studied, restrained, utilized, and in some cases even liberated after a long trial of their docility, without the whole period of their seclusion necessarily corresponding to the sentence pronounced by the judge. A sojourn so prolonged, a study so arduous, and a series of decisions so important, demand, however, that in the criminal asylum there should be the administrative, disciplinary, and technical conditions of a first-class asylum for the insane, and not those of a very bad prison. The work of the inmates should be organized with aims more educative than utilitarian; their capacity for the enjoyment of freedom should be tested by allowing them a certain degree of liberty within the closed grounds of the institution; vigilance should be exercised in order to prevent the worst of them adopting the methods of the *camorra* and tyrannizing over the weak; lying should be repressed and loyalty encouraged; conditional parole should be granted; and, in the case of a limited number of persons psychologically very simple and well understood, those measures that Ferri has suggested as a radical reform of punitive justice should be put in operation.

At present criminal asylums serve neither for this nor for any other purpose. They collect a somewhat mixed company—persons who have been guilty of thefts, rape, stabbing, murders, etc., in a state of morbid unconsciousness, and who have not even the appearance of criminals; convicts who, whilst undergoing sentence, have become insane, and have ceased to be dangerous, but who disturb the quiet of the prison; accused awaiting trial, and suspected to be insane. The moral insane are there in a minority, and many persons of this kind are always to be found in the prisons—which is the smaller evil—or in the ordinary asylums, from which they are able to get out with the greatest facility. Indeed, it is natural that the superintendent of an asylum, having to decide between the introduction of a revolution owing to the presence of a heterogeneous element among more or less unconscious patients and the letting loose upon civil society a dangerous being, should adopt the latter alternative. His chief duty is to preserve order in the institution of which he is responsible director. As for social order, it is the responsibility of the community, not of the single citizen, to provide for its maintenance in the best way possible. The mistake should not be committed of sending among insane patients criminals who have been selected on account of deficiency of ethical feeling, moral imbecility, or moral insanity. If these lucid but morally imperfect amphibians are not to be interned in criminal asylums, which seem to have been created precisely for them, they may as well be left in prison,

as they once were, on the ground of the denial of their more than doubtful irresponsibility. To the existing uncertainty of judiciary criteria the suggestion of ambiguous terms in large part contributes—as, for example, those of moral imbecility and moral insanity, which apply badly to persons who are only to a slight extent imbecile, quite different from the insane, and not at all moral. For this reason, also—namely, that of not increasing confusion in the courts of justice—it seems to me well to adopt the expressions “constitutional immorality” and “immoral by nature,” which imply the criminality in action of instinctive criminals and the potential criminality of the insensible, who are obsequious to the laws, and so do not become criminals. If alienists would be firm and unanimous in declaring that congenital immorality is an anomaly, and not a disease, legislators and magistrates would also be more precise and unanimous in assigning to the immoral by nature a treatment that would reassure society, and still be in accord with justice and prudence.

CHAPTER XXIV

PARANOIA

PARANOIA is a very rare constitutional anomaly, which remains latent for many years, and manifests itself in mature age in a partial but most persistent delusion, which is only the slow and permanent triumph of a *preconception*. The paranoiacal preconception gradually conquers all evidence to the contrary, and in spite of reality, public opinion, and common sense, it becomes organized into a co-ordinated system of errors, which become the tyrants of the intellectual personality, and remove it by degrees outside the bounds of normality. On the other hand, however, the presence of a circumscribed delusion does not disturb the individual's judgment in regard to certain general questions or events of everyday life, and paranoiacs, even of long standing, lose nothing of their habitual lucidity. Indeed, the singularity of their position, in constant conflict with incredulity or contradiction, compels them to sharpen their weapons of argument, and thus they are sometimes able to overcome sane persons of mediocre intelligence.

Very different from the extravagant and ridiculous ideas of paranoid dementia, and even more so from the delusions of melancholia, progressive paralysis, amentia, and dementia, which are unstable and disconnected, the delusion of genuine paranoiacs is plausible, unyielding, and nourished by a perverted but robust and irreversible logic. It often resembles in its content the religious, political, and scientific aberrations with which the path of history is strewn, but always differs from them in its origin. Such aberrations are the result of a reciprocal, widespread, and continuous suggestion, which renders them excusable and inevitable so long as a new current of thought does not arise and assume the ascendancy. For these historical errors the entire race is responsible, and not the isolated individual, but it is the individual alone who is responsible for paranoiacal error.

The themes underlying paranoiacal delusions are few in number. The ancient tales of romantic intrigue are applied by the paranoiac

to himself. He even becomes the chief actor in them, and ends by believing them to be true. These stories of romance are inspired by an egotistical and overpowering sense of fear, or avarice, or vanity, which conquers reason, and even employs it as its servant. From timidity spring delusions of persecution; from avarice, which is timidity in the economic field, there arise querulous delusions; and from vanity, which is idealized egotism, erotic and ambitious delusions.

The original preconceptions may, however, have their origin in altruism, and may assume a more or less disinterested form, translating themselves into *impersonal theories*. These altruistic delusions of philosophical or pseudo-scientific character are not devoid of a tinge of vanity, which generally is not even concealed, but, unlike egocentric delusions, they do not involve the paranoiac in open conflict with society, and they often even contain some good and generous idea which saves their originator from the stigma of insanity, and gives him the benefit of extenuating circumstances, punishing him only with the title of *mattoïd*. In any case, whether it assumes the character of some chimerical theory, or becomes a fabulous autobiography, the paranoiacal delusion always arises from an individual preconception. Therefore, in contrast with the Utopias of healthy-minded people, it is never taken seriously either by contemporaries or by posterity. Thus paranoiacs may be classified, according to the delusion which they exhibit, into two categories:

1. Paranoiacs with an abstract delusion—*mattoïds*.
2. Paranoiacs with an egocentric delusion—*querelants, the persecuted, the erotic, the ambitious*.

True paranoiacs, with a few exceptions, do not suffer from *hallucinations*. Among *mattoïd*, *querelant*, and *erotic* cases, which constitute the most typical varieties of paranoia, hallucinations are quite unknown. *Persecuted* cases suffer from them, but only rarely. Only among *ambitious* paranoiacs who have delusions of prophecy can there sometimes be discovered one who hears the voice of God, or is subject to heavenly visions, if, indeed, he does not gratuitously parade them, through auto-suggestion, or even in bad faith, and purely for purposes of propaganda. Further, the hallucinations are solitary, infrequent, and produced essentially as a consequence of some intense emotion, as in normal and in hysterical persons; they may occur exceptionally through fear, or fanaticism, or as an effect of expectant attention, or in the silence of the night. Paranoiacal hallucinations have thus very little in common with those of the psychoses, properly so called, including paranoid dementia. Whilst in paranoia hallucinations are rare (they may be limited to a single appearance

in a lifetime), and become assimilated with a coherent delusion, in the acute psychoses and in dementia præcox there is nearly always an hallucinatory state which is the inexhaustible source of varied and transitory errors, which by their numbers obscure the perception of external realities, sometimes to such an extent as to produce unconsciousness, or else they pervert it even to absurdity, depriving the patients of any lucidity of mind.

Paranoiacs, on the contrary, conduct themselves as persons of sound mind, and, except in the matter of their delusion, reason with good sense. Their power of reflection, self-esteem, and dignity are never diminished; there is never occasion to record in them either a morbid tempest of passion, an eclipse of consciousness, or a general upheaval of their whole being. The paranoiacal delusion is, therefore, not the common expression of a morbid disturbance, but is the product of a monstrosity of the intellect, which exists first in germ, and inevitably matures in the full vigour of health and age; it does not arise by revolution, but by evolution; it is not a disease, but an anomaly, or, more correctly, the indicator of an anomaly. Owing to their lucidity of intellect and coherence of conduct, paranoiacs form the aristocracy of asylums; indeed, the majority of them have little difficulty in avoiding confinement in them.

Even in normal persons the feeling of certainty which invests their ideas with the character of convictions is almost never, as it ought to be, the laborious, rigorous, and dispassionate result of internal debate. We adopt a number of opinions without ever having considered the different aspects of the problems involved, and are far from taking into temperate consideration all their possible solutions. By the great majority of men the rules of logic are broken a hundred times a day, not purposely, but through laziness, pride, or passion. Laziness leads to the avoidance of complete reasonings, and causes ordinary persons—that is to say, the majority—to accept without much criticism formulæ that have been hastily served up to them by tradition. Pride permits and provokes more original judgments, but, inasmuch as it is inseparable from an excessive degree of self-confidence, it leads to precipitate conclusions, and hinders their revision. Passion, as a rule, suggests solutions which are defective because one-sided. In fact, the more complex, lofty, and impassioning problems that present themselves in social and individual life are solved with exactitude only exceptionally. Every man carries about with him a load of errors and half-errors, for often he adds to inherited preconceptions others of his own, and logic exercises its absolute sway only in simple matters, or in those which,

though not simple, leave the mind indifferent, as is the case with pure mathematics, and, up to a certain point, with the exact sciences.

Religions supply human credulity with ingeniously codified systems of errors which are true challenges to logic, the boldest and most successful that are known. The logical powers of a modern child would be sufficient to destroy any religious edifice, without exception, if it could be judged with an open mind, as happens when we examine the lowly faith of some ancient people. Traditional errors are, however, kept alight among nations at a thousand separate fires—that is to say, by the thousand individual preconceptions of primitive beings. The simple soul of primitive man feels the overpowering necessity of explaining in some manner the cause of different phenomena ; it is by nature mystical. Civilization supervenes ; theology ennobles superstitions on behalf of morality ; history, under the guise of narrating them, embellishes them and commends them to the admiration of scholars, orators, and poets ; and time itself, by transforming them into symbols, hides more completely their faulty origin, and thus serves to confirm, instead of to correct, them. Civilized nations thus accumulate, treasure up, and in their turn transmit atavistic errors which they would undoubtedly reject if presented to them for the first time without the passport of tradition. Preconceptions flourish in the social atmosphere, and individual judgment cannot entirely free itself from them. If pure logic succeeds in gaining some partial victory, it owes its success to rationalism, or, in other words, to the slow development of a modern tradition, which is timidly setting itself up against the ancient, but which is without effect upon isolated individuals, except by means of collective and repeated efforts—that is to say, by becoming ancient in its turn.

As to the dialectical powers of the normal and modern individual, it is true that they are incapable of eliminating all the traditional prejudices with which we are overburdened and, so to speak, supersaturated. They are, however, always more than sufficient to direct the spontaneous and really original part of our thought towards the truth. If they cannot liberate us from all our old hereditary errors, they can at least preserve us from committing new errors on our own account. Thus, though believers are still to be found among persons of intellect and culture, it is difficult for anyone of more than average intelligence to accept, for example, such a doctrine as that of the Trinity or the Devil. Belief in the supernatural no longer admits miracles except in a retrospective form. Religions have lost their power to develop in a mystical direction, and are changing only to become

fused in a sort of religious morality which betokens their decline. At any rate, they are now far removed from their primitive forms. Only in Russia—and in that country because of an arrest of social development which has left certain remote populations in a state of mental childhood—is the creation still possible of new and mystical faiths which have power to extend epidemically over areas into which modern ideas have not yet penetrated, or in which they have never been understood. The people in such districts live in the historical atmosphere of our remote ancestors, and repeat their errors physiologically. They are the primitive men of our age.

In 1897 twenty-eight persons were known to have buried themselves alive at Tiraspol in order to escape the census. The sect of the *Khisty* (flagellants) and that of the *Skoptzy* (castrated) flourish in the north and east of Russia, and not a year passes without legal measures being taken against new centres of these strange religions.

Paul Jacoby, the physician-superintendent of the provincial asylum at Orel, deserves the gratitude of humanity and psychiatry for his self-imposed endeavour to educate the magistrates and public opinion regarding the paranoiacal origin of so many religions that have been cruelly and needlessly repressed by the Russian authorities. In 1902, says Jacoby, the population of a large country town was suddenly seized by religious fanaticism, and rushed into the church, destroying everything, and crying, "*The truth is coming!*" They placed on the altar one of their own number, a man of no worth, whom some passer-by had invested with Divine powers. The offenders were condemned to hard labour; the stranger who was the instigator of the movement was identified as a certain Mosè Theodossenko, a lunatic who had been for a long time in an asylum, and had been liberated because he was harmless. Petition for an inquiry as to his mental state was fruitless. The Court of Appeal of Kharkow refused every such request, and would not even listen to the medical officer of the prison.

The sect of the *flagellants* is scattered in more or less considerable colonies over an immense area of territory, and is persecuted with cruel ferocity. Its adherents meet for common worship in the greatest secrecy, and after sentinels have been posted. They lead a sober life, do not eat flesh, abstain from wine and strong spirits, take no part in revels or festivals, do not swear, treat their animals well, have all things in common, and are more wealthy than the orthodox population. Their doctrines and rites are of extraordinary interest. For the personal God of Christianity they have substituted a vague anonymous *spirit*, without attri-

butes, which may be drawn to the earth by *treachery* and *violence*, becoming the master of the person into whom it has entered, who in his turn becomes a sacred and uncontrollable automaton. The flagellants profess abhorrence of marriage and any system of sexual relationship, looking upon these as obscene, disgraceful, and criminal in the sight of God and man; but they practise religious coitus between the *brothers* and *sisters* of the sect, possibly without any distinctions, and with the greatest complacency, this taking place in the dark as soon as the high-priest has given the signal and extinguished the light. This anonymous and obligatory intercourse does not stop short even of incest. The great principle of the sect is universal fraternity, which suppresses any egoism of the individual or of the family, annuls the close ties of relationship, and prohibits jealousy as contrary to the general interest. Woe, however, to the woman who gives herself to a stranger!

We thus arrive at marriage in common or consecrated prostitution, the social state described by Bachofen, Giraud-Teulon, and MacLennan, or *gynecocrazia* (Jacoby). Such aberrations may also assume other characters, but their origin is always the same. A paranoiac proclaims himself to be a prophet, or Jesus, or the Holy Spirit: he expounds the sacred writings with rhymes and assonances more or less foolish, and he finds enthusiastic proselytes in a crowd of people whose ignorance borders on the confines of imbecility. In 1891 Sapojnikow was able to collect accurate data regarding more than 10,000 persons who had caused their own death by voluntarily throwing themselves into the flames. In the religious epidemic of Tiraspol collective suicide took a still more horrible form, as has been mentioned. It appears, indeed, that historical examples of such aberrations are not wanting, and they may therefore be looked upon as having an atavistic character. A whole race—the Tchouds—used to practise, as their national form of worship, death by premature burial; they dug a deep trench, covered it with a roof of earth, which was held in position by wooden posts, and then descended into the trench and struck away the posts. In the North of Russia and in Western Siberia the graves of the Tchouds may still be seen, and the legend exists that they are due to this strange variety of religious rite.

Another psychologist, Nina-Rodrigues, described in 1898 an epidemic of religious psychoses among the mulattoes of Brazil, and at the same time combated the atavistic theory of paranoia; but, as was shown by Paul Jacoby, his subsequent investigations into the animism of the negroes of Bahia controverted him. Atavism manifests itself much more clearly in paranoia than in

constitutional immorality, because ideas change in more precise and visible ways than sentiments do. Though we may hesitate to assert that the men of to-day are morally superior to those of ancient times, hardly anyone would venture to deny that they are more intelligent.

Among primitive men mysticism was the rule, but it is the exception, though not rare, among moderns. The fables that slumber in our civilized brains, where they are in process of being eradicated, formed so great a part of ancient thought that they occupied in its scheme the place of logic, satisfying every inquiry, conquering every doubt, and animating every object. The studies of Tylor, Lubbock, and Spencer render it possible for us, thanks to the observations and investigations of missionaries and explorers in different parts of the globe, to reconstruct the moral character of primitive man from our knowledge of the savage races of to-day. The intelligence of primitive men was induced to create myths, not so much by a super-excitation of feeling as by the regular employment of an imagination left entirely to itself. The imagination, which ought to be the modest handmaid of reason, becomes its representative, its factotum, its chief agent, whenever reason becomes slothful or poorer than it, even though the imagination is not specially fervid.

Day and night, rain, clouds, mist, wind, mirage, the growth of plants and of animated beings, their birth and their death, the metamorphoses of insects, the flame that blazes and ends in nothing, constitute, says Spencer, so many mysteries that inevitably present themselves to the consciousness of primitive man, but which his reason is as yet incapable of solving in a logical way. Many facts and many observations full of suggestive force lead him, on the contrary, to solve them mystically. The shadow of his body—that intangible and diaphanous shadow that follows his footsteps and reproduces his gestures, that vibrates, shortens, elongates, darkens, hides, and disappears—is to him a soul, a second edition of himself, the same soul that leaves him when he sleeps and wanders when he dreams. Not only living creatures, however, but also lifeless objects have a shadow, and this shadow is likewise a sort of soul—an incorporeal repetition of the object that appears and disappears at will.

To us, instructed by a secular education, there is nothing marvellous in the images that are reflected by the surface of a limpid pool of water, or in the sounds that return as an echo; but to the savage, who is tardy in making their discovery, they confirm or suggest the possibility of a double, which must appear to him as a portent explaining a fact observed. To this hidden virtue of reduplication there is added another—that

of transformation. Ice changes into water ; two pieces of wood rubbed together are converted into flames, and then into ashes ; the flower becomes a fruit. By analogy, a stone might be transformed into gold or food, and a living creature into a statue of chalk or of salt. Where is the physical or chemical idea that might warn the savage of his mistake ? It has not yet been proclaimed, and the myth which usurps its place is essentially, when we consider the ignorance of the thinker, only a form, but a very obvious and legitimate one, of reasoning. On the mountains there are often to be seen vast dark areas that advance, the shadows of distant clouds, so distant that they are not observed, and may be thought to be absent. The soul of the sleeper always separates itself from his body ; sometimes there come to visit us in dreams the souls of the dead who have quitted their tombs. Therefore, concludes the primitive man, there are souls of the dead, spirits of the living, shadows of distant and unknown things, that are freed from their material shapes, and may move freely on their own account. There is an invisible or semi-visible world that is more populous, more varied, and more powerful than that in which we live and which we see.

Now we are on the back of the fairy steed of the savage mind. We can give him rein, and explore without fatigue the whole labyrinth of primitive mysticism. Do we wish to ascertain the mental genesis of fetichism ? It is very simple. The negro who is preparing himself for some dangerous undertaking, and fears the enmity or treachery of the spirits who swarm in the earth and in the air, is prone to interpret as a challenge any impression that strikes him more than another : a pebble that is smoother or rounder than usual, a thorn that has chanced to prick him, becomes the fetich that he will take care to propitiate by bowings, genuflexions, prayers, vows, or threats. In New Zealand there are to be seen groups of stones standing upright in circles, and painted red (the sacred colour), which are *tabu*—that is to say, fetiches into which a protective virtue has been artificially infused by manipulations or incantations. Mysticism at this stage has been raised one step : it becomes priesthood, or, at least, witchcraft.

A more intellectual and also more theatrical form of mysticism is represented by the *totem*. The divinity, which is worshipped with regular rites, instead of being hidden away in small insignificant objects, has a permanent and not undignified abode in trees, lakes, or animals. A step farther, and we arrive at *polytheism* : the lesser gods subject to the greater, one and all of them similar to men, but in general more powerful. Comparable to the gods, and sometimes competing with them, are kings, warriors,

magicians, famous ancestors, strangers distinguished by their conquests or as peaceful leaders of civilization. It is only after a long interval that we arrive at those philosophical religions that constitute a cosmogonic but always mystical synthesis, in which an immortal and omnipotent being represents the origin and the reason of the entire creation.

So exalted a conception, which, unfortunately, can be assimilated only by the few, is, however, absolutely a dead-letter for the masses. These are pre-Christian in Europe, as they are pre-Buddhistic in Asia, and, though they scarcely know it, remain faithful to polytheism. They are at least bi-religious : under the cloak of monotheism there is visible the old lining of paganism ; beneath the teaching of the schools or the churches are the superstitions of a sentimental nature. Angels are a residuum, a survival ; saints are a partial return, a revival, of paganism. Though dogmas are renewed and clothed in modern guise, ritual remains, and still immutably preserves the imprint of primitive mysticism.

The natives of Tahiti believe that not only the trees and the fruits, but even the stones that roll down from the mountains and do them injury, have a soul. The Chinese child does not dare to enter the temples alone, because he believes that they are inhabited by ghosts with outthrust tongues, staring eyes, and threatening faces. The negro pictures Nature to himself as a mysterious dance of fetiches that are the cause of all its phenomena and cataclysms. The Red Indians associate every event with the image of a *manitou* which produces it. The god *Horey* roars in the woods of Senegambia, seeking victims, and from the thickets is heard the wailing voice of *Wili*. The Kalmucks hear the dragon *Lun Chan* yelling in the air. In the Netherlands, among the rural population, and like a memory of other times, there is still the superstition that the sun, the moon, and the wind are evil spirits that devour the Christians (J. Vinson). The peasant people of Brittany listen with terror to ghost stories (Sébillot). In France there is still the *moine bourru*, in Italy the *babau* and the *befana*, which fly through the streets and the houses, cutting the heads off naughty children, and especially those who lean too far out of the windows, or distributing rewards. The folklore of every country is a mine of myths. The souls of beheaded bodies, spirits, and those possessed by spirits, the dead, the Devil, witches, fairies, magicians, sirens of the sea, dwarfs, the werewolf, and many other mythological entities, still live and palpitate in the thought of the inhabitants of Sicily (Pitré). Orthodox Russians believe not only in Jesus and the Madonna, but also in the *vodiany*, or spirit of the waters ; the *rousalka*, a

sort of mermaid or national siren ; the *léchii*, or spirits of the wood ; and the *domovoi*, the guardian of the domestic hearth. Belief in evil spirits is still general among the Ashantees (R. Hartmann), and was so common, so long established, and so invincible, even among civilized nations, that Augustine, in his "De Civitate Dei," discusses it without having the courage to deny it ; and Lipsius, in the seventeenth century, stated that such spirits were very numerous (E. Tylor).

In the Middle Ages *satanism* made its appearance. The whole of Nature was infected by it. The monk, says Arthur Graf, who lived encircled by the walls of his monastery as in a fortress, regarded Nature with a vague sense of terror, and seemed to see in it the encampment of the innumerable hosts of his enemies. The deep and darkening woods, the frowning crests of the mountains, a dark and awe-inspiring valley, a motionless lake in the midst of a desert plain, a torrent that leaps foaming and thundering amongst piled-up rocks—all these were to him like the views of some portentous scene, behind which was maturing an immense and formidable treachery, and out of which, every now and then, there burst forth and penetrated even into the cell of the ascetic the impetuous powers of evil.

In our own days, in spite of the repressive influence of governments, there is every now and again a revival of religious mysticism. If, as we have mentioned, there are in Russia entire populations which, with a fervour that opposition only redoubles, embrace new and original religions, full of vitality, that are constantly being transformed, and that drive their converts to seclusion, isolation, flight into desert places, mutilations, suicide by starvation, baptism by fire or blood (Leroy-Beaulieu), there are not wanting less heroic manifestations of mysticism even among civilized nations. The *medium*, the revolving tables, the transmission of thought, *clairvoyance*, the action of drugs at a distance, etc., complete and perpetuate, though in a superficial manner, and with the semblance of science, the ridiculous and sad carnival of savage mysticism, and constitute an attenuated form of aristocratic neo-mysticism.

Myths, therefore, do not have their origin, as is asserted by Max Müller, in allegories that are not understood, or in metaphors taken literally, or, in short, in a *quid pro quo* of words, but in errors and simplicity of thought : they are a mode of thought. The same legends make their appearance, as if they constituted a necessary stage in human evolution, among peoples between whom there has never been the slightest intercourse—for example, among those of Greece, Egypt, Samoa, and the islands of the Pacific. They appear, not because they have been whispered

from frontier to frontier like a refrain or countersign, but because they constitute an inevitable stage in the laborious development of human intelligence. To the need of knowing the cause of things there is opposed the instinct to accept with a minimum of effort the most simple interpretations and ready-made solutions, and to insist that they are the only true ones. The primitive man, the adolescent, and the modern adult but weak-brained man are incapable of tolerating the psychical state of *scientific doubt*. They gladly assuage their thirst for knowledge in draughts of mysticism, which intoxicate them. In this way originate the explanations by analogy, the personification of the world and of its phenomena, and the representation of Nature as an anthropomorphic assemblage of puppets, little and big, grotesque and terrible, pigmies and giants, devils and guardian angels, that swarm everywhere, constantly active, doing good or evil, taking part in our life; seating themselves at our tables, inflicting torments, scattering favours, sometimes at strife with one another, more often organized against men in a sort of invisible but incessant brigandage, which it is easier to avoid by paying tribute than to resist with force.

Paranoiacs are as mystical as the common people and savage races; they are, indeed, even more mystical than these or any other persons, for their mysticism arises, develops, and persists in spite of their surroundings. The manifestations of paranoiacal mysticism are, at any rate, qualitatively similar to those of primitive mysticism; the only difference is that of the historical circumstances in which they originate. Primitive men are the sons of their time; paranoiacs are *living anachronisms*. The mysticism of primitive peoples is the humble, quiet, and collective manifestation of an imperfect idea which is in process of development, but the mysticism of paranoiacs is the arrogant, violent, and personal explosion of a regressive and anticivic thought.

The clinical histories of paranoiacs of all times and countries seem to be so many rather monotonous editions of the same story. Since paranoia is a developmental anomaly that embraces the entire life of a man, these clinical histories are complete biographies, from which it would almost seem as if paranoiacs possessed an accurate knowledge of the psychology of primitive peoples, and deliberately set themselves to imitate them. To them, also, the world seems to be swarming with invisible powers and persons, malignant and proteiform, leagued in that villainy, sometimes horrible, sometimes even comic, which afflicts or excites, but at least disturbs the simple mind of the savage. With them, also, the *something* becomes the *someone*, and good and evil, but especially evil, are the constant objects of symbolical personifica-

tions. In the delusions of paranoia, and in those systematized delusions which, though not constitutional, simulate for a time the fanciful ideas of paranoia, agents of different natures and powers are encountered which whisper in the ears of the patient, attract his attention by moving a table or chair, by turning over the pages of his books, upsetting an inkpot, turning a portrait, rummaging in his drawers, putting out lights, sprinkling the sheets with powder, appearing in his dreams as nightmares, infecting his food, etc., thus repeating in modern shapes and with new names that constant coming and going of destructive or malignant forces which produced consternation in the timid mind of primitive man. Then slowly and gradually the powers and spirits of earth assume human shapes and tendencies; they become persecutors who are no longer anonymous or impersonal, but definite and individual, who stab, defile, poison, send to sleep, calumniate, corrupt, steal thoughts by means of the breath, the evil eye, physics, hermeneutics, etc., employing in a series of cruel inventions all the base practices which are the subject-matter of the different delusions of persecution.

Thus the long-abandoned mythology of primitive man is mobilized like an army ready to assail the paranoiac, who, without having ever read one word of Spencer, Lubbock, Tylor, or Bastian, ends by creating for himself a sort of personal religion which is not very different from the religions of primitive man, and which also passes through its own phases of indistinct animism to monotheism—that is to say, to belief in a single, invisible, and omnipotent being, either persecutor or protector. In fact, just as in the course of history the terrifying forms of idolatry are succeeded by equally vain but more highly developed and peaceful forms of worship, with beneficent beings as their deities, so in the clinical biography of paranoiacs delusions of persecution or offence are generally followed, and in some cases accompanied, by delusions of grandeur and defence. Instead of believing himself to be surrounded by treacherous and hostile spirits, the paranoiac with delusions of ambition is comforted by the presence of fetiches and guardian angels, who, through supernatural means, are maintained in close relation to him. Sometimes they are human creatures, but of higher rank; sometimes superhuman spirits, and even God Almighty in person. In the mind of the paranoiac inanimate bodies, living creatures, the universe itself, but, above all, the *ego*, reacquire the symbolical nature which they possessed in the consciousness of primitive man.

Paranoiacs are thus capable of a double manner of existence, a real and a mystical. The humble agricultural labourer, without

leaving his hoe and his plough, is endowed with sovereign rank ; his spirit (his shadow) seems to exercise rule over or receive homage from innumerable subjects in a distant and symbolic kingdom, while his body has to submit to the hard necessities of domestic reality. The illiterate peasant-woman is united by the bonds of a mystic marriage to a fabulous prince, and her humble relatives, who have to contend with the misery and pettiness of a squalid life, are princes of the blood enjoying the same powers of self-duplication.

In this manner arise the prophets and apostles who, believing themselves to be entrusted with a divine mission, live an exemplary life, and in some cases devote to the service of their illusions a will-power which is so strong as to gain them followers. On account of the mysticism by which it is pervaded and the faith by which it is animated, paranoia rises to the level of an *individual religion*. Since they exhibit similar characteristics, religions, historically regarded, are only *collective paranoias*. Their persistence, when they have been freed from mysticism, among civilized and healthy-minded peoples, may therefore be readily understood when we consider the social functions that they exercise in their most highly developed phases.

Not only in its general outlines, but also in its most intimate details, paranoia corresponds with marvellous exactitude to the picture of primitive mysticism. In Friesland there are families reputed to possess magical powers who are regarded as being able to turn any mouthful of food into something harmful ; the Egyptian hides from a stranger the food that he has procured ; the Ovampo overturn it in the sight of water in order that they may not be contaminated by it ; the inhabitants of the Hebrides do not sit down to eat, even in summer, if the fire has not been kindled, and very similar customs prevail among the Maldives, the Balondi, the Eskimos, the Indians, the negroes, and the islanders of Polynesia. Who can fail to recognize the identity of these barbarian customs with the *delusions of poisoning* which occur sporadically among the paranoiacs of our own country, and which are so powerful as to lead them to make prolonged fasts, to adopt elaborate precautions and incantations, and even to commit suicide by starvation ?

The analogies are continued and strengthened in the more cheerful and garrulous sphere of erotic paranoia. In their fatuity of conduct, amorous paranoiacs exhibit distinct and constant resemblances to the knight-errants whose first and most bounden duty was to decline possession of their lady, to pay her feudal obedience, and then to marry someone else. Geoffrey Rudel, the Provençal poet, became ardently enamoured

of the Countess of Tripoli without ever having seen her, and was approved and admired. Modern paranoiacs languish without disquietude for far-away and sometimes aged or even non-existent princesses, and believe their passion to be returned through the simple cabala of allegorical symbolism, and thus they live in an atmosphere of sentimental beatitude resembling religious ecstasy.

It may be said that erotic sentimentalism is an isolated product of the Christian Middle Ages, and that it is due to the momentary aberration of an infantile literature, and not to a fundamental tendency of human thought. This is not correct. To yearn for a great and powerful being who will lift us out of our misery, deliver us from our troubles, console us, and take us to his heart, to await faithfully his arrival, and to imagine that the first comer is he—is not this an epitome of every erotic romance? Is it not also the canvas upon which religious mysticism has at all times embroidered its legends? Egyptians, Greeks, Indians, Persians, and Germans have all been in agreement in regard to these vague expectations which mysticism has attempted to realize in its own manner. It is an active or passive aspiration towards a sort of protectorate which, having changed its centre of gravity from religious sentimentalism to erotic sentiment, from a collective consciousness to the individual consciousness, transforms the Redeemer into a symbolic bridegroom, Jesus into Lohengrin, but preserves for them the same mystical and delicate lineaments, the same nebulous and benevolent personality.

It is well known that the thought of paranoiacs is sometimes, even frequently, condensed into a neologism. It is a true worship of the *word*, a *logolatry*, of which paranoiacs give proof. Such a logolatry flourishes also among people in a primitive state. The gipsies, when they become ill, copy the formula of the remedy from the magic book; but instead of taking it to the chemist to have the prescription made up, they make a mouthful of it and swallow it. *Auto-denominations*, as we shall see, are of common occurrence among paranoiacal neologisms. Now, the Kaffirs also frequently change their names, in the belief that to a great extent their fate depends upon their name. The inhabitants of Samoa give a new name to youths at the time of puberty, and in Polynesia they change their names with each new treaty of friendship.

It would be easy to continue at great length, multiplying the points of contact between the paranoiac and the primitive man, and showing their relation to the idolatry, invocations, magic, astrology, *iettatura*, chiromancy, alchemy, exorcisms, terrifying

illusions, proud delusions, symbolical gestures, and to all those beliefs, arts, stratagems, procedures, rites, and mental anomalies connected with the pursuit of unattainable ends by puerile, enigmatical, or supernatural means. What has already been said is, however, sufficient to enable one to understand the reason for the resemblances, and also for the differences that there are between the paranoiac and the primitive man. Both are excessively mystical, but the primitive man abandons himself to mysticism through ignorance, or tradition, or historical necessity, whereas the paranoiac dedicates himself to it from passion, contrary to the current of public opinion, and through atavism. In his attitude towards common superstitions the paranoiac is not less advanced than his time, and sometimes he is even in advance of it, and is regarded by the common people as its spirit of progress. He would perhaps be sceptical and hypercritical did not some defect of character, some partial weakness, cloud his intelligence and make him a mystic. Fear, by throwing him into the arms of mysticism, makes him one of the *persecuted*; ambition, making him a prey to the same infatuation, turns him into a *megalomaniac propagandist* or an *amorous suitor*; presumption renders him a *mattoïd*, an *asylum inventor*, an extravagant and solitary *philosopher*; avarice makes him a *querelant*.

It is certain that for civilized races myths are but as paper toys that must soon be thrown aside. It is only in the case of paranoiacs, these spurious contemporaries, that we see mysticism reappearing from the ruins like one who rises from defeat. Though absolute sovereign over the mind of primitive man, mysticism, so far as concerns the normal man of our own time, is a king in exile and without authority. It survives from long habit, but lies concealed in some remote corner of the brain, whence it can exercise only a remnant of its ancient power, having lost the capacity to develop new and renovating influences. In the paranoiac, however, mysticism finds conditions favourable to the resumption of its rule, but as it exercises only a partial sway, the paranoiac comes to be a living contradiction, not only of his normal contemporaries, but also of himself.

On account of these internal and external contradictions that distinguish his psychical personality, though examples of them also occur in normal and almost normal individuals, the paranoiac is an anomalous being, but he is not a lunatic in the common meaning of the term. Paranoia is to be regarded as a simple *developmental anomaly*, the product of a passionate temperament and a methodical and pedantic mind. It will be still better understood if its main stem is freed from the extraneous branches

of *paranoid delusions* and all those more or less coherent delusions that are associated with other psychoses, but which represent a transitory disturbance of intelligence, not an abnormal and spontaneous manner of psychical development. When restricted within these limits paranoia gains in simplicity what it loses in extent. There remain to paranoia only a few delusions, reasonable in appearance, of slow formation and extreme stability, which shade off into eccentricity, and are therefore not very far removed from the normal. All the delusions that are systematized but unreasonable, rapid in their development, frivolous, curable or alterable, which Kraepelin calls fantastic, must be ascribed to true mental diseases, and particularly to *dementia præcox*. The paranoiacal delusion, on the contrary, is not a *symptom*, but is a mode of thought, an *opinion*, which, however much it may be marred by preconceptions, has its roots in a special structure of the mind, in the *paranoiacal constitution*. It is the fantastic product of an egocentric but lucid spirit, which abandons itself without restraint to the mysticism of primitive man.

Clinical Manifestations of Paranoia.

The most prominent of all the clinical manifestations of paranoia is *delusion*, which gradually becomes organized out of a mass of original and co-ordinated, but erroneous convictions. There is not even a shadow of mental confusion in the delusions of paranoia, because they are based upon persuasion, which involves lucidity and coherence. Therefore the paranoiac bears no resemblance to the person suffering from amentia, febrile delirium, or progressive paralysis with transitory and disconnected delusions; and in general he is not like any true lunatic. Since the paranoiacal delusion is not a symptom which manifests itself suddenly, but a mental product which *grows*, we can distinguish in it the following processes or periods, which impart to paranoia a certain element of variety, and give to it the semblance of a *course*, as in the case of the true psychoses, although a much more gradual and indefinite one.

1. Period of formation or *systematization*.
2. Period (not essential) of *transformation*, which leads either to the substitution of one delusion for another, or even to the fusion of two or more successive delusions.
3. Period (not constant, even rare) of disorganization, during which the paranoiacal delusions, in some cases permanently, in others temporarily, disappear or become latent, or circumscribed to a few ideas with no active manifestation.

The systematization of the delusion is an obscure and complicated process which does not always become complete. Not

all paranoiacs are delusional. There are some paranoiacs who are continually on the verge of one or more delusions, but escape falling into them, and give evidence only of a *paranoiacal constitution*. The delusion is, at any rate, reached only through doubts, hesitations, and retractions. Paranoiacs who have already reached the stage of delusion do not usually speak of this wearisome elaboration, because their pride makes them unwilling to reveal the imperfect shadows of their peculiar faith, or they fail to remember them; but an observer who has been able (though it is not easy) to follow through many years the course of a paranoiacal delusion in process of formation sometimes perceives how long it is, and how liable to changes.

When once the delusion is systematized, it is quite exceptional for it not to undergo some alteration after a time. Years may, however, be required—in some cases half a lifetime. Persecuted paranoiacs end by believing themselves to be great, and acquire delusions of grandeur; the bridge between the delusion of persecution and that of ambition may be constituted by a *delusion of defence* (see Chapter V.). The erotic and ambitious meet with obstacles which form the subject of secondary delusions of persecution. There is no paranoiac who, in consequence of having been confined in an asylum, does not pay his tribute to *querelant delusion*. Even the harmless *mattoids*, applying to themselves the dictum of misunderstood geniuses that *no man is a prophet in his own country*, develop delusions of persecution. Thus, in addition to the central delusion, there appear at least indications of other subordinate delusions; in every paranoiac there is represented in germ the persecuted, the ambitious, the erotic, the querelant, and the mattoid type.

Changes in the theme of delusion tend rather to multiply than to reduce the aberrations of the paranoiac mind, for the new delusion does not always drive out the old, but more commonly becomes associated with it and enriches it. The psychical resemblance between the paranoiac and primitive man is thus complete. Indeed, however limited may be the recognized list of his delusional convictions, the paranoiac reveals from time to time, independently thereof, *superstitions*, *preconceptions*, *mystical tendencies*, *rash generalizations*, *pedantry*, and incredible *obduracy* to confutation, all of which are contrary to the ordinary teaching of his fellows, as well as to his own. The expression of any opinion of a progressive or modern character, which paranoiacs may parade for their own convenience or through imitation, ought not to deceive us as to their habitual mode of thought, which, in its truly spontaneous portions, is modelled, without their knowing it, upon the credulity of primitive man. It is

futile for the paranoiac to profess himself to be of liberal mind, an innovator, or an agnostic ; he is always and essentially a mystic.

Nevertheless, whether from mental enfeeblement, practical opportunism, or that abandonment of all initiative which is sometimes to be observed even in normal persons, especially when they are ill or growing old, it sometimes happens that the paranoiacal delusion undergoes a sort of involution. It is a recovery obtained at the expense of something—it may be of intellectual energy, of a theoretical ideality, or of physical strength. The paranoiac does not really recover, he disarms. But, in compensation for this, he never sinks into obvious dementia. The psychical deterioration which follows certain systematized delusions is not a possible termination of paranoia, but the common epilogue of *dementia præcox* in its paranoid varieties. Even the cases of *apparent dementia* with mutacism, katatonia, mannerisms of gesture and pronunciation, but with the maintenance of general lucidity, and the persistence of a partial delusion, belong rather to these paranoid forms of insanity than to true paranoia.

Delusion of Persecution.—In the struggle for existence the paranoiac who is led astray by his ambition is little disposed to ascribe his defeats to himself. Instead of lamenting his own inadaptability, he blames the malevolence of other men. Thus arise his pessimism and the delusion that leads him to look upon life as a conspiracy of all against one. Delusion of persecution is the product of pride, sometimes unconscious, rather than of fear, and this is why it is so often mingled with delusion of grandeur, or preceded by it. The persecutors are represented by Jesuits, Freemasons, doctors, Socialists, lords, unbelievers, atheists, cabmen, newsvendors, etc. ; by societies, sects, social classes, or even by isolated and particular individuals. When the persecutors are numerous and not well defined, the delusion, being enveloped in mystery, remains uncorrected by the patient's weak critical faculty, and may become an article of faith even for men of fair intelligence. In some cases the persecutors have a leader, who may be a real or imaginary personage. In others it is the heads of the administrative department, of the asylum, or of the Government, who are guilty of the treacherous conduct from which the paranoiac suffers, and of which he complains. The persecutor may also be one individual alone, but this is perhaps least commonly the case.

With regard to the persecution, in some instances it is of rather a futile character. It may consist in changes produced in the person's food, the production of disagreeable odours, various annoyances, injury to the digestion or respiration, weakening of

the muscles, luminous and acoustic tricks, invisible contacts, the inducement of somnolence ; removal of cards, books, pens, combs, slippers, and other small objects of everyday use ; satirical allusions by means of gestures and words, notices in the newspapers, etc. The next-door neighbour has put on a red neck-tie, the head official is wearing black trousers, the prefect's daughter has changed her head-dress, in order respectively to show the paranoiac that he is accused of anarchy, that his death has been decreed, and that people look on him as a fop. In other cases the persecution is of a much more serious character : the paranoiac is threatened with poison, is being atrociously slandered ; others are attempting to make him appear insane ; his house is to be attacked and burned ; his sons are in danger of their lives ; someone is trying to corrupt them and to turn them against him ; their rebellion is already accomplished ; perhaps they have, by mysterious and criminal means, been changed in some material manner ; perhaps they are not his sons ; there is a universal deception which changes people and things, and alters the relations between them. Through the work of his enemies the paranoiac is subject to *drowsiness* of thought ; by the means of wireless telegraphy, *secondary speech* is produced in him, and the police employ him as their spy and medium of information ; fumes and imperceptible powders, skilfully manipulated, cause him annoyance and distress, but do not succeed in perverting his will. When he reconstructs the past the paranoiac discovers the traces of a continuous, widespread, and insuperable treachery even in the smallest misfortunes of childhood—in an unmerited punishment, in a toy that was spoiled as soon as bought, in a drink that was too hot, in an act of favouritism, in the place he was given in his class at school. He conjures up imaginary assassins, coachmen paid to upset his carriage, nocturnal ambushes, *cocottes*, servants, beggars in the pay of his enemies for the purpose of studying his habits. The half-drawn blinds of the house opposite mean, "Mind your own business ; we are not your friends." The glossy shoes placed in the window of the boot-shop at the corner of the street whisper to him in meretricious accents : "Thou art a passive pederast." It is a secret but far from incomprehensible language which scatters calumnies broadcast and communicates threats. To the paranoiac not only does his own personal and temporary position in the world, but also the whole world itself, appear like some tragedy of the arena, with blows and deaths, victims and tyrants, persecutors and persecuted.

E. S. is an old man, aged eighty-two, who has lost neither the capacity nor the energy to remember, understand, feel, and will. His delusion of persecution, if the account which he himself gives can be accepted,

goes back as far as 1834. Apart from its actual first appearance, however, it manifested itself prominently when a young and attractive sister of E. S. became the wife of a gentleman belonging to a very religious family. From that moment E. S. imagined that his new relations, in league with the *Jesuits*, were planning measures for his physical and moral ruin. Several times they tried to poison him by mixing harmful substances with his food and drink, to attack him by paid assassins, or to trip him up by stretching a wire along the street he had to cross. Prayers and protests and appeals to the police were of no use. "I am kept in life," reasoned the unfortunate man, "because Providence is on my side, and desires me to be spared for the good of my fellows. Perhaps," he added, "I am destined to carry out the experiment which will show the utmost degree of tolerance to which man can attain in face of the greatest infamies that are committed on earth." The police officers were the acolytes of the *black sect*. With the Jesuits were allied the *Austriophils* (non-existent in Italy for the last forty years). They formed a powerful league, composed of feelingless persons of many varieties, which never showed itself in full strength. Even when presenting themselves a few at a time, its members avoided putting on ecclesiastical dress, disguised themselves, were lavish with bribes, and possessed an incredible degree of patience in the execution of their plans. His wife, once loving and beloved, who had borne him two daughters, and had many times informed him of conspiracies directed against them both by the demons, and who, indeed, had on several occasions foiled their schemes, had finally yielded to the strangers' gold and betrayed him. For the last twenty years they have lived apart. He believed his house had become a shelter for all the conspirators, and that they had even ventured to construct in the centre of the room a small chapel, which they used for their secret meetings. A cousin and one of his two daughters died: they were the only persons who had loved him, and they died by poison. His other daughter, who had been a good and affectionate child, had allowed herself to be beguiled by her mother, who openly boasted that she was on her side. Betrayed and persecuted in this manner, he had to choose between two possible solutions—either to kill his wife and spend the rest of his life in prison, or to flee far from Florence in search of peace.

As an honourable and not yet *apathetic* man, he chose the latter course. He went to Venice, obtained a commercial post, lost it, and wandered for twenty years in Austria, Turkey, and Egypt. The Jesuits always succeeded, however, in tracing his steps, and sometimes even preceded him. His health suffered greatly in consequence. Eczema, asthma, narrowing of the oesophagus, senile phthisis, etc., made him weak, and took away his appetite. *Spiritualistic* and *chemical* influences co-operated in the production of these results, always by the agency of the league. By his good-fortune (and here emerged a new delusion, partly ambitious and partly pseudo-scientific), E. S. had, however, inherited from one of his ancestors, Paolo Mascagni, great medical talents, and had also gained many ideas from a court-physician with whom he had lived for three years. "*Tantum diximus*," he would say, "*quantum ad memoriam mandavimus*," and by his knowledge of these arts he was able to foil the attacks of his enemies, and to find antidotes to their poisons and counter-currents to their electricity.

For many years, alone and in open rupture with his wife and daughter,

he lived in a dirty state in a dark and poorly furnished room. He took his meals in eating-houses with the lowest of the low, going to a new one every evening for fear of poison. He received no visitors. He was brought to the asylum, where he occupies a large and bright room, from which he can see Fiesole, and is carefully looked after. He is straightforward enough to recognize the benefits he derives from residence here; he has also given us his approbation because we have not poisoned him, but he deploras having lost his liberty; he declares he has been robbed of his money, and that we have purloined his writings. Among these writings there is the copy of a memorial addressed to the deceased Ministers Urbano Rattazzi and Marco Minghetti, asserting that they have appropriated his financial ideas, and thus acquired for themselves the reputation of statesmen which belongs, not to them, but to him. Though now satisfied that the poisoning has ceased, he still believes that the other infamies practised by the demons are continued. The doctors are the chief demons; the rooms, spiritualistically prepared, conceal in their walls instruments to collect his words and observe his gestures; the medicines contain corrosive substances which make his teeth fall out, close up his œsophagus, and will ultimately choke him. He says he will be happy only when he has regained his liberty and recovered a *large inheritance* abandoned through the folly of his relatives; and thus, after having shown himself to be a paranoiac of the ambitious and persecuted types, he also proclaims himself one of the querelant variety. When a new attendant, or a doctor not known to him, appears before him for the first time, he demands a written declaration in proof of his qualifications and rights to attend or interrogate him.

This patient, who even at so advanced an age presents no sign of senile dementia, has never suffered from hallucinations.

Ambitious Delusion.—This is the fundamental delusion of paranoiacs, since it epitomizes, even better than the persecutory, their incorrigible egocentricism. The ambition of paranoiacs shows itself also in their pseudo-scientific, religious, and erotic delusions, which are always distinctly haughty, and which may change their names, but not their nature, in assuming their special titles. We may accordingly designate more especially as ambitious those systems of delusion that have pride as their base, but the theme of which is neither pseudo-scientific, nor religious, nor erotic. There thus remain in the category of ambitious delusions those cases of a genealogical, political or romantic nature, in which the protagonist believes that he was changed in the cradle, that he is the natural son of a prince, honoured by high authorities, a prisoner of state, a distant descendant of the Bourbons, a foster-brother or cousin of the Archduke Maximilian, of Giovanni Orth, or of Casimir Périer.

Figure 127 is the self-executed portrait of an asylum Napoleon who was confined, but for only two years, in the asylum of Florence. He was a pensioned servant, the son of a monk, who afterwards married, and a lady of Arezzo (at least, so it was said), by whom he had been brought up and carefully educated. He was born in 1810, or 1811,

was a sickly child in the earliest years of his life, quietly grew up in the service of a wealthy family, gradually became stronger, and read many books of a frivolous kind. His favourite reading was the "History of Napoleon I." That romantic life-history kept him awake at night, and engaged his thoughts through the day. The favour of his masters, who appreciated the gentleness of the young servant and treated him almost as one of the family; the jealousy of the other servants; the mystery of his birth; the historical relationship between



FIG. 127.—DRAWING OF HIMSELF BY A PARANOID WITH NAPOLEONIC DELUSION.

Below, to the right, is seen the symbol of his imperial origin; in the middle, and towards the left, that of his confinement in the asylum; above and to the right that of his future apotheosis. This patient lived for many years in Florence in quietness and peace, being confined in the asylum for a short time. He was always lucid and dignified, coherent in his delusion, and wrote autobiographical verses and records.

Tuscany and Bonaparte; and, above all, the paranoiacal constitution of his own mind, led him to the belief that he was the Duke of Reichstadt, King of Rome, and son of Napoleon I. He had been born in the same year, perhaps on the same day. His brow was lofty and his nose aquiline, and he said that Francis I. of Austria, his father, in order to preserve him from every danger, had entrusted him to Ferdinand III. of Tuscany, from whose hands he had been transferred to those of the monk, his presumed father. Meanwhile the son of the monk had been substituted for him in the royal palace

at Paris, and subsequently at Vienna, living and dying under the false title of Napoleon II.

Dominated by this persuasion, C. F. travelled all over the world, requested audiences, compiled appeals, histories, and protests, and behaved in such a way that he required to be placed in an asylum. This occurred on October 26, 1856, when he was forty-five years old, and when his patroness or mother, whichever she was, being dead, he had for long enjoyed an independent position, thanks to a legacy which had been bequeathed to him by the generous lady. In the asylum he showed himself to be convinced of his imperial origin, was coherent in his account of it, and irreproachable in his conduct; so irreproachable was he, indeed, that he was liberated from the institution, and did not again enter it. He never renounced his delusion, however. After his return to ordinary life he never ceased for a moment to assert his rights. He wrote to the French Senate, to Louis Bonaparte, and to all those political personages whom he thought to be in a position to exercise a decisive influence upon the destinies of France and Italy. The *coup d'état* of December 2 occurred, and then the war of 1859, and in these events his paranoiacal imagination saw consequences and proofs, direct or indirect, inevitable or voluntary, glorious or painful, of the dynastic intrigue, which had been the cause of the falsification of his own personal identity. His correspondence increased enormously. He always signed himself "Napoleon II., Bonaparte, born King of Rome, sacrificed under the name of F. C." In a public letter to the Legislative Chamber of France he made the demand that a temple should be erected in Saint Helena in memory of Napoleon I., that every visitor to it should receive a gift, and that the gift should consist of a bronze medal with two short inscriptions. In 1859 Professor Bini, who was then superintendent of the asylum, met him as he was going, with a roll of papers under his arm and punctiliously dressed, to the residence of Prince Jerome Bonaparte, commander of an army corps that had marched into Lombardy. He wished to have Italy for himself, or at least Tuscany, leaving France to Napoleon III. With all these aspirations, which were expressed by written protests, symbolical charts, and fantastic self-identifications, he lived long and quietly in obscurity. His ambitious dream cost him only the price of some stamps, and gave annoyance to no one. When Napoleon III. died, C. F. was seen in the streets of Florence clothed in the deepest mourning. The black band was so high that it reached over the top of his hat. I do not know when or how he died. There are drawings, with pieces of poetry and autobiography, remaining in the asylum which show the paranoiacal inflexibility of this dreamer, who had substituted for reality the products of his own imagination; and yet his eyes were open and his mind was awake, though fortune was against him.

Religious Delusion.—The religious delusion is only a variety of the ambitious. The paranoiacs who become delusional in the matter of religion are always at the top, never at the bottom, of the sacerdotal hierarchy. They are prophets, saints, and mediators between man and God, and even in some cases openly attribute to themselves Divine dignity and power. Every asylum has its saints and madonnas, who, however, are decreasing in number, and giving place to more modern paranoiacs with less

improbable delusions. Indeed, the greater number of these delusional manifestations that spring from a boundless and puerile ambition belong rather to progressive paralysis or dementia præcox than to paranoia. Paranoiacs never abrogate their human nature. As for delusions inspired by feelings of humility, contrition, or religious fear, they are of a nature wholly opposed to the paranoiacal character, and their presence excludes at once a diagnosis of paranoia. In the case of a patient with a religious but depressing and pessimistic delusion—for example, that of damnation—the most probable diagnosis is that of melancholia; and if the delusion of damnation or eternal punishment is chronic, the case is one of dementia præcox, not of paranoia. The religious delusions of the paranoiac, on account of a certain attractiveness that they possess, may be communicated, and may spread in an endemic or epidemic form.

A classical type of the religious paranoiac is presented by Davide Lazzaretti. Born in the solitary and pleasant village of Arcidosso, at the foot of Mount Amiata, of humble parents, he enrolled as a volunteer under Garibaldi, and had experience of fighting. After his return to the country he resumed his work as a carter, and carried yellow earth from the mountain to Florence and elsewhere, assisted by his brothers, with whom he was on the best of terms. In these days he was somewhat of an unbeliever, and was not innocent of swearing, which is habitual among these peasants, and especially among carters. One day he disappeared, and it seems that he went to Marseilles. There he remained for two years, read much, learned French, and did several kinds of work. He then returned to his own country again, well up in years, and possessing a certain amount of education, and began to profess himself converted, and a believer, and to argue, teach, and make converts. His preaching was logical, and went to the heart of his hearers, for it brought a solution to the doubts and most pressing needs of the common people to whom it was addressed. He had a religious creed, consisting of twenty-four articles, for the innermost ideals of the soul, and a practical programme for the functional necessities of the body. In the winter of 1870 Lazzaretti went to live in the grotto of Monte Cristo, the little island in the Mediterranean rendered famous by Dumas, père, in quest of inspiration upon the great mission he believed it to be his task to fulfil on earth. He remained there for forty days, living on a little dry bread, in constant prayer, and writing many verses, in which his original religious and political radicalism were displayed. He returned to his fellow-countrymen and co-religionists with a more resplendent halo of inspiration, and recounted how in the grotto of San Mamiliano he had heard the words of God out of His very mouth—*words uttered slowly and pronounced in musical tones, amid the noise of the whirlwind and the fearful trembling of the whole island* (C. Paladini).

Lazzaretti was a handsome man, with intelligent features and expression (Fig. 128). His forehead was large, his beard was long and soft, his walk was stately, and he spoke well. His conversion appeared to be a miracle, as also his education, which was so late, sudden, and brilliant. His style, both in speaking and in writing, overflowed with

metaphors and neologisms, but was not devoid of either nobility or clearness. His undertakings, conceived with ambition and audacity, were smiled upon by fortune. He wished to found a *co-operative bank*, and obtained the funds for it in the country, and, it is said, also in France, in larger amount than he had expected. He wished to build a tower, the *Turris davidica*, as a symbol of the new religion, and succeeded in doing so. His religion was a neo-Christianity impregnated by communism, but neither very different from, nor less coherent than, that which was preached by Jesus himself, and Lazzaretti did not hesitate to proclaim himself prophet, saint, and redeemer. He was listened to and believed in by his own brothers, his former fellow-workmen, men and women, and, lastly, by priests and friars. He was excommunicated by the Papal Chancery. The Government even interfered and imprisoned him, but in the proselytizing of Laz-

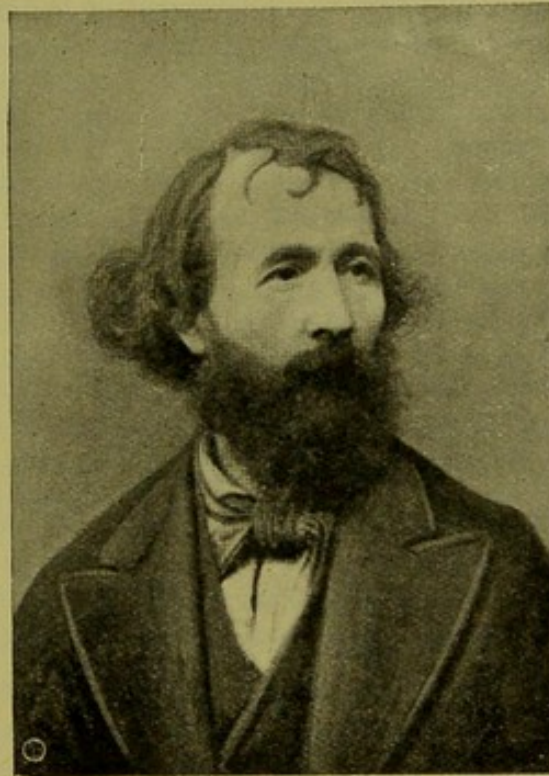


FIG. 128.—DAVIDE LAZZARETTI OF ARCIDOSO.

zaretti there was neither violence nor fraud, and he had to be liberated. The twofold martyrdom increased the ardour of his disciples, and in a short time all the country-side flocked around him, and the world came to possess, and still has, one more religion. The doctrines of the new religion were printed; the various ecclesiastical posts were allotted; a friar accepted the office of preacher; rites were celebrated and solemn processions held, and Lazzaretti even ventured into the region of prophecy and prevision. One day, by means of *telepathy* (?), he thought, and said in public, that an accident would befall his brother, who was going with his cart to Florence, and, more precisely, that the cart would be precipitated into a ravine. This actually occurred at the time and place indicated, in conformity with the telæsthetic presentiment of the prophet. It was not, however, excluded that the two brothers might have been in collusion. But Lazzaretti made another prophecy which was fulfilled exactly—namely, that of his

own martyrdom. Mount Amiata had rivalled Sinai, and it rivalled Calvary when, in 1878, a Government force, surprising the procession of peasant men and women (at the head of which marched Lazzaretti with a diadem on his head, medals on his breast, and a large red mantle on his shoulders), levelled their guns and fired. The prophet fell, struck by a ball in the forehead, and died in a few seconds, pronouncing the last solemn words which did not belie his former life. A few Lazzarettists still survive at Arcidosso, and the people still speak with veneration of their prophet. Not so, however, the well-to-do, who always looked upon him as a charlatan, and persecuted him with deadly hatred. It was the ignorant fear of him by the rich that misled the political authorities and drove them to his senseless murder. Hate (or perhaps jealousy of the power which Lazzaretti had gained over the multitude) inspired libels and satirical verses and other outbursts of rancour, which were as mean as they were futile.

In the religion of Lazzaretti the *Sacrament of Pardon* was instituted in place of auricular confession, which was declared to be unworthy and displeasing to God; to Paradise and Purgatory was added the *Kingdom of Hope* for just persons not Catholics; the Inferno, from being an eternal prison, was transformed into a place of temporary repentance; the Devil was abolished. Evil was made to consist only in the impure passions of men; it was only the negation of humanity, and at the same time its complete redemption. Lazzarettism was only a modification of Christianity. Here is the last article of the creed: "We therefore firmly believe that our founder, Davide Lazzaretti, the anointed of the Lord, judged and condemned by the Curia Romana, is truly the Christ, leader and judge in the true and living figure of the second coming of Jesus Christ into the world as the Son of man, to bring fulfilment to the copious redemption for all the human race, in virtue of the third Divine law of right and general reform of the Holy Spirit, which is to reunite all men to the faith of Christ in the bosom of the Catholic Church in one worship and one law, in fulfilment of the Divine promises as contained in Article X. of this *symbol* of the human and superhuman belief professed by us."

Erotic Delusion.—The erotic delusion is another variety of the ambitious, and is characterized by certain essential features which render its diagnosis unmistakable. An unnatural passion does not stamp a person a paranoiac, and the paranoiac may fall in love like any normal person without manifesting the specific anomaly of erotic delusion. The features that characterize the erotic delusion of the paranoiac are the following: In the first place, the paranoiac is chaste, chivalrous, and devoid of any material aim. Very often he considers himself bound by a mystic marriage, which has no need of legal, religious, or carnal consecration; which has been celebrated at a distance; which will be consummated in an indefinite future; and which he considers as entirely regular, even though subject to perpetual separation from board and bed. To believe themselves requited in their love, paranoiacs make no pretence of promises, or legal deeds, or amorous declarations, but are contented with some allegorical sign, such as a fan rapidly moved by the hand of the adored one,

or a flower in the buttonhole of his coat, if the subject is a woman and the beloved object a man. The conviction of the reciprocity of their love is unshakable : if the man or woman who has the misfortune to kindle this paranoiacal love should happen to meet the unknown *innamorato* or *innamorata*, and evince indifference or antipathy or disdain, the paranoiac is never offended or dismayed. He has always ready some explanation that leaves him satisfied in his imperturbable serenity : the unpleasant scene is the result of some calumny which will soon be exposed, or it is a rascally imposition, or it is only a deception which is necessary in order to avoid a quarrel with some jealous person.

In short, if things are not progressing favourably, it is always the relatives or the wickedness of the world that are to blame, never the *sleeping beauty* or the *mysterious prince*, who, to the imagination of the paranoiac, are always presented as agreeable, frank, and enthusiastic. Further, the adored ones are always persons in high social position, and inaccessible ; sometimes they are not free as regards their civil status ; sometimes they have never been seen ; and they may even not exist at all. Old age or physical ugliness does not present any obstacles ; paranoiacal love is in itself anaphrodisiacal, and sexual feeling has little to do with it. Paranoiacal eroticism recalls the gay science, the courts of love, and the psychology, more subtle than impassioned, of the *cavalieri serventi* ; it employs, with unconscious plagiarism, their florid and affected language, their elegant images, and their poetic metre. A rude peasant rises on the wings of erotic paranoia till he breaks into amorous sonnets ; a commercial traveller in wine copies out and despatches to his adored one verses, in the absence of better, from Metastasio or Alfred de Musset. Thus the paranoiac with erotic delusions is happy, because he knows neither failure, nor disillusion, nor the sting of jealousy, nor the bitterness of the first conjugal discord.

The erotic delusion is frequently combined with other systems of paranoiacal delusion. Postponement of the marriage, absence of explicit replies, the repulses to which they are exposed, etc., produce in some paranoiacs, in spite of their Don Juan-like boastfulness, a tendency to delusions of persecution. Sometimes they lose their calm, and yield to violence, which, however, is always directed against some third person, never against the adored one. A paranoiac known to me, who paid court to an old French lady of an ascetic rule of life, fired two revolver-shots at the major-domo of her household, whom he believed to be hostile to his projects. He has now been in the asylum for fifteen years, is perfectly lucid, but has not ceased to cherish his dream, and still attempts to correspond secretly with the old lady. He is about sixty years

old, handsome in appearance, but without culture, and of humble origin. His delusion of persecution is now referred to the doctors of the asylum instead of to the major-domo, and he believes that they are in the pay of a supposed rival. Another paranoiac, aged twenty, a servant, a robust and gay youth, aspired to marry the sixteen-year-old daughter of the Prince, his employer. He had never ventured to address her directly, although he had written amorous epistles to her, which he did not sign. When dismissed from the house, he sent a challenge to the young lady's father. A third paranoiac, an impenitent erotomaniac like the other two, combines to an unusual degree the qualities of the complete paranoiac.

E. C. is a man of fifty, of aristocratic descent, average height, good health, and plain features. The paranoia shows itself not so much in his speech as in his small hat with invisible brim, his high and long-pointed collar, the wide opening of his shirt-front, his quiet necktie, and his bell-shaped trousers of pale coffee colour, which flap about his legs and conceal his feet. This antiquated style of dress, his upright carriage, ecstatic appearance, smiling countenance, and hurried step, attract the ironical attention of passers-by, and poor E. C. is an anonymous but well-known character in the streets of Florence. In his youth, desiring to enter the diplomatic service, he travelled through Europe, studied modern languages, and spent much of his time in libraries. In all his travels, however, he only succeeded in learning French, and he was unable to avoid Monte Carlo, where, it seems, he lost his entire patrimony of 400,000 lire (£16,000). His relatives then provided him with the modest sum of five lire per diem, the remittance being made fortnightly. With his five lire E. C. leads a regular and quiet life, never runs into debt, is on intimate terms with no one, takes his meals in popular but respectable restaurants, is sober, spends five or six hours of each day at the *Circolo Vieusseux*, the historical reading-room, and preserves in his furnished apartment, rented at forty lire per month, a collection of dress-coats, smoking-caps, and silk-hats, the remaining special mementoes of his diplomatic ambitions.

Beneath all these quiet habits of studious leisure, and disciplined by inflexible rules of living, there smoulders constantly, but without eruption, the volcano of an amorous passion that has lasted for twenty years. Our unsuccessful diplomat aspires to the hand of an old marchesa, single and very wealthy, and a member of one of the most distinguished families of Italy. He used to see this austere lady frequently at the *Circolo Vieusseux*, where she went to return books, hastily consulted the catalogue, and selected other volumes, immediately afterwards going off in her carriage. These brief appearances were to E. C. equivalent to so many actual meetings. If the marchesa had on a new dress, if she exchanged a few words with the librarian, or took two volumes instead of three, he saw in these insignificant acts a thousand allusions, promises, and categorical replies to the proposals of marriage which he ceaselessly formulated in letters which were always returned, or in unheeded confidences whispered beneath the windows of her palace. A lamp lit in the middle of the night, an open Venetian blind, or a displaced curtain, was regarded as a sign of

affectionate consent. If from the silent and uniform façade of the palace not even one of these supposed signs was given, E. C. ascribed their absence to the malignity of the servants, and arming himself with a pebble, he threw it from the deserted street at the closed shutters, and thus gave a noisy, though harmless, announcement of his presence. On one occasion he happened to break a window, and the next day . . . he made my acquaintance.

His amorous correspondence is interminable. There was given to me by the police a bundle of unopened letters which presented several points of interest. The writer assumes in them an almost paternal attitude of protection; he speaks to the marchesa as if she were an inexperienced, credulous, and simple-minded girl; he gives her advice, encouragement, and a little gentle reproof; he addresses her "Thou"; he puts her on her guard against the *Jesuits* and the other rogues who are masquerading in the guise of *footmen*, *pages*, *ecclesiastics*, *invalids*, etc., and who surround her under the pretext of serving her, or entice her into borrowed hovels under the pretence of doing charity. It is necessary, he warns her, to overcome resistance, hostility, and intrigue, and to meet cunning with sagacity, violence with firmness. E. C. had become accustomed to this sort of warfare in the early years of his youth, when the *Jesuits* persecuted him through all Europe, prevented his entrance upon a diplomatic career, and subsequently poisoned the mind of his prospective father-in-law against him, and set a trap for him at Monte Carlo by bribing a croupier to ruin him.

The handwriting of E. C. presents several peculiarities. The letter *t* is constantly represented by a Greek ψ ; instead of *p* there is always a μ ; as regards *m*, it is indicated by an original graphic sign—namely, an *n* the descending limbs of which are separated by a space twice the usual width. Every now and then there are words repeated three times in succession, and to the triple series of words there is immediately added a triple series of circumflex accents, placed along the line, and taking the place of points of punctuation. With the exception of this partial aberration the handwriting of E. C. is perfectly correct, and the subject-matter of his correspondence is not at all insane.

This knight-errant of paranoia, who for twenty years has tilted at the windmills of Jesuitism, and worshipped the climacteric charms of an unapproachable Dulcinea, has never been guilty of any meanness, or violence, or impatience. Though twice brought to the asylum, he left it in a short time, so great were his lucidity of mind and dignity of conduct, and so efficacious his efforts to regain his freedom, which, be it said to his honour, he had never greatly abused. It is three years since he was liberated, and he has resumed his reading and gallant correspondence, and again donned the little hat with the microscopic brim—a veteran of the *Circolo Vieusseux* and of erotic delusion, an example of disinterested loyalty to an ideal.

Querelant Delusion.—Active querelant delusions, which manifest themselves transitorily in many paranoiacs (and also in some cases of *periodic mania*, but only periodically), assume an alarming and characteristic form only in those paranoiacs who dwell upon them continuously, and weave them into their very life. The querelant, to begin with, is only avaricious, but the paranoiacal vice of preconception makes the bold vindication of his

avarice appear to him legitimate and reasonable. These amateurs of the law make free with the statute-book, for they do not understand the right, except from their own point of view. In the provisions of the law they do not see protection for all, but only for themselves. In this respect the paranoiac litigant does not differ greatly from primitive man, whose conception of legality is that of a collection of concessions for himself and prohibitions for others. With such maxims, which he professes without knowing it, the paranoiacal processomaniac starts from an imagined right, and ends by patching together a case which is not devoid of certain appearances of legality. Some slight alteration in the particulars of a deed, the elasticity of the law, the greed of unscrupulous advocates, or the diligent study of legal procedure and other favourable circumstances, may open to the querelant the path of justice, which is so often closed to the poor who are in the right, but who are not assisted by a paranoiacal faith in their own cause. Early failures do not suffice to shake this faith. On the contrary, the payment of expenses to which he has been found liable, the triumph of his adversary, and the indifference of his advocate, redouble the energy of the litigant, who takes his case to the Court of Appeal, to the Court of Cassation, to the National Parliament, or to the Sovereign himself. In spite of the advice of his friends, the warning of his counsel, the alienation of the sympathy of his wife, the protests of his sons, the querelant continues intrepidly his struggle for his rights. Subsequent and more serious defeats brought upon him by his obstinacy only serve to harden him still more against his fortunate opponent, his incapable lawyers, the corrupt judges, his ignorant wife, and his craven-hearted sons. In some cases the delusion is communicated to the family of the querelant. Only in rare cases and after years of persistent misfortune does the critical *quart d'heure* arrive, when financial difficulties, the expenses of his counsel, and judicial fines make him lose his head. Then the litigant, though a master in procedure, is betrayed into the expression of threats, which convey him summarily from the civil court to the criminal, and the unrepentant pursuer becomes the defendant, unless, indeed, the asylum has become his refuge.

R. D. is a tall, well-made man, in the best of health. While at his work as a railway porter he broke his leg, and he afterwards remained slightly lame. On this account he was retired with a pension of 700 lire per annum. According to his story, the computation of his pension was incorrect, so that he was deprived of at least 40 or 50 lire that were due to him. He protested and threatened and besieged the officials of the railway company, by whom he was one day persuaded to sign a paper stating that he was perfectly satisfied. It was his only act of lucidity—and of weakness. He immediately

repented of his declaration, consulted in succession no fewer than twenty advocates with the intention of raising an action which, independently of his deed of renunciation, had no basis. Three years passed before so great a number of legal authorities could listen to him, study his case, and finally refuse to take it up. The poor retired porter journeyed from one lawyer's office to another, and spent his days in the waiting-rooms of advocates, not one of whom was willing to undertake the conduct of a hopeless, unwarranted, and expensive suit, of no distinct advantage to the pursuer even in the improbable event of a victory. Then R. D., far from resigning himself, armed himself anew with the weapons of law and violence, turning them directly against the railway company. His importunities became so excessive that the ex-porter was sent to the asylum. His wife, a woman of giant stature, but of small mind, was half convinced that he was right. In the asylum he was kept for a long time under observation, after which he was discharged, as he was considered to be harmless. Two more years passed without R. D. renouncing his delusion. His conduct was honourable and exemplary, just as his behaviour in the asylum had been correct. He lived a peaceable life, like a good father of a family, on the proceeds of his pension. The day came, however, when he could no longer repress his feelings, his recriminations exceeded the legal limits, and in one of the railway company's rooms, with a well-directed blow, he broke a mirror of some value. He was tried, and found to be insane. From that day R. D., who might otherwise have peacefully enjoyed a happy old age, has been an inmate of the asylum, and although he is always lucid and self-controlled, I do not know when he will leave it.

Impersonal Delusions.—Abstract delusions, which have as their subject, not the person of the paranoiac, but philosophy, poetry, science, or humanity, may be associated in complete harmony with the preceding delusions; but more frequently they occur in isolated form, without disturbing the relations of the paranoiac with the rest of the world, without obviously deranging his estimate of himself, or precluding him from the wise and profitable exercise of a profession sometimes brilliant and eminent. Among the paranoiacs devoted to poetry, metaphysics, sociology, mechanical inventions, etc., there are many cultured and intelligent persons who, in their dealings with men and the administration of their own affairs, are not deficient in common sense. They are the *mattoids* of Lombroso. Certain of them succeed in being regarded as scholars, or hermits, or thinkers, instead of as insane. These harmless *mattoids* are, however, the slaves of a preconception, like all other paranoiacs. Like them, they are fond of symbols, neologisms, and dogmatism, and although they are not subject to personal delusions, they are continually fluctuating between a dissembled ambition and an incipient tendency to believe themselves persecuted, even if admired.

All *mattoids* are writers, publicists, polemists, polygraphists.

A homogeneous and highly interesting library might be formed of their works. Their books may be recognized at once by a number of external and internal evidences. Among the former are the portrait of the author in an inspired pose, a secret edition, a very prolix title, a series of dedications which follow and contradict each other, quotations from other *mattoïd* authors, an extreme variety of typographical characters, the admixture of prose and verse, grotesque illustrations, the want of an index, the ridiculous price of the volume, etc. Among the essential or internal evidences of these books the following are worthy of notice: their uselessness, the transcendental character of the subject, absurdity of argument by means of geometrical formulæ, historical parallels, etymological derivations in inquiries of an abstract nature, the creation of false and contradictory axioms, a profusion of commonplaces vaunted as new ideas, obscurity and magniloquence of style, profusion of metaphors, neologisms, symbols, and mysticism, and the general puerility of the whole matter of the book.

Tito Livio Cianchettini, who died a few years ago in a state of honourable poverty and peaceful old age, was a *mattoïd* celebrated throughout all Italy. It was in 1871 that he scattered through the streets of Milan the first number of his *Travaso delle Idee*, the cause and origin of his fame. I can remember him yet, as he stood at the entrance to the Lyceum Parini, where I was a pupil, awaiting the arrival of the troops of boys early in the morning. Tall, thin, silent, reserved, never importunate, never annoyed, never discourteous, he seemed rather to be a kindly-natured ascetic than a news-crier. He was certainly a news-crier *d'élite*. His paper cost only two *centesimi*, and there was no danger that Cianchettini would not return the change to anyone who gave him a *soldo* (five *centesimi*) or more. Even if a gift was offered to him in a kindly manner, he would not take it, but would decline it politely and simply. His seriousness of conduct disarmed ridicule, and Cianchettini was always respected.

The *Travaso delle Idee* was a journal of *political metaphysics*, of small size, and hand-printed. On the margin of every page, top and bottom and both sides, there was a border of aphorisms, for the most part original, and not devoid of wisdom. This border formed what Cianchettini modestly called the *rim of the dish*. Seller, business manager, printer, compositor, and editor of the *Travaso* were all combined in the single personality of Tito Livio Cianchettini. Who was this man? What was his aim? How did he propose to gain it? Tito Livio Cianchettini had been a poor apprentice baker; he had taught himself; he had enlisted under Garibaldi. He lived with an elderly, unmarried sister of quiet disposition like himself, in a little room in the Corso Garibaldi, the most plebeian quarter of Milan. His opinions were strongly imbued with communism, but they soared so high into the regions of metaphysics that one hardly perceived their subversive tendency. The pages of the *Travaso* were full of obscure propositions. Like Jesus, Tito Livio Cianchettini frequently taught in *parables*. He showed little mercy to the great, and called them the *wolves*: the poor were the *sheep*. Between these wolves and sheep interesting scenes

and curious dialogues took place, the mysterious significance of which it was often impossible to grasp. He had a great liking for riddles and contrasts. Along with somewhat simple and rather trivial satirical anecdote he scattered the flowers of a classic style, inspired by a spiritualistic and confused idealism that had no practical application. Although not devoid of acumen and ill-arranged knowledge, the founder of the *Travaso* remained an ignorant man, and made many mistakes in grammar. His ideas, if taken separately, were not devoid of a certain degree of philosophical refinement, and they were sometimes well and clearly expressed, but they lacked co-ordination. He jumped from one subject to another, and it was sometimes impossible to understand his meaning.

The most striking fact about his life was his constancy. A true Don Quixote of journalism in the midst of the severest straits, he persevered in the publication of his *Travaso* for twenty-five consecutive years. He became ill, his sister died, he was several times penniless, and the *Travaso* was silent for a time, but it survived all its crises, and only died with him. A few years before his death—I think about 1893—Cianchettini, then an old and poor man, had had the courage to transfer his undertaking to Rome. In the capital the *Travaso* was to attain success, and find authority for its diffusion throughout Italy. But the venture was not successful; no one read the *Travaso*; a few bought it out of pity. Nevertheless, everyone knew it at least by report, and the proprietors of a Roman comic journal conceived the idea of adopting its title. Thus it happened that Tito Livio Cianchettini died in the hospital forgotten, and that the *Travaso* also died, mingling its ruins with those of *political metaphysics*, but the name of the *Travaso* survives in the daily journalism of immortal Rome.

The intellectual ability of *mattoids*, the subject of their ideas, their education, and the amount of credit which they enjoy in the world, vary in different cases. For two or three years subsequent to 1870, Francesco Coccapieller, a typical *mattoide*, was the idol of the people of Rome. The son of a member of the Papal Swiss Guard, he was riding-master, self-instructor, inventor of a patent brake for carriages, publicist, and founder of the *Carro di Checco*, a daily newspaper. During one Parliament he was, to the creation of a grave scandal, the deputy for Trastevere. He died in poverty. Lombroso compared him to Cola da Rienzi. There have been *mattoids* in University chairs and in the Senate; there is always a certain number of them in the ranks of the medical profession. The Mazzoni who published a volume upon "Synthetic Physics," and believed that he had discovered the *gastro-thermic clepsydra*, was a doctor. Another doctor, his admirer and follower, repeatedly quotes him in his "Guide to Medical Practice," in which he advocates the binomial designation of diseases, and teaches that they should be considered as varieties and degrees of *luminous disturbances*. This audacious innovator, who called nephritis *spleno-parettama*, was not without clients in the higher circles of society. A colleague of these two, who practised his profession with approbation in the province of

Udine, and who was frequently consulted in matters of public health, attributed pellagra to the action of poisonous fungi accumulated in the ceilings of peasants' huts, and in support of this theory he wrote books and articles in medical and political journals. Near Bologna there lived for a long time a Count Mattei who founded the *Institutions of Vegetable Electricity*. He sold new medicines, and made so much money out of them that he died a millionaire. These *mattoids* in high social position were described with courage and truth, and no compliments, by Cesare Lombroso.

Many years ago Sanichelli, a publisher, offered to the public a work with the promising title "Light and Brain," which dealt with "anthropophotology" and "theophotology." In this book every phenomenon in the universe was reduced to a manifestation of light. There was thus formed the nucleus of a new science—*psychography*—which had been the subject of a preceding publication praised by the effusions of amateur philosophers (metaphysicians, every one of them). The various states of the soul were depicted in symbolical drawings added to the text, which constituted the *symbology*; the soul was a virgin with a star on her brow, and might be seen on her feet or in bed, with eyes open or closed, in different attitudes, according to time and place.

The similarity of idea in the pantophotology of the philosopher and the luminous disturbances of the doctor is worthy of notice. There is a resemblance none the less extraordinary between the theories of two neo-chemists who made themselves famous in Italy, but in different provinces and at different times, through the real ingenuity of their industrial inventions. One of them—a certain Cavalier M.—pretended that he could *metallize* organic bodies (leaves, skin, hair, etc.), or convert them into metals; whereas by means of an effective process of electro-plating he merely coated their surfaces. After this discovery, the value of which was foolishly exaggerated, his death was deplored by all the newspapers of Italy, which blamed the Government and the nation for their desertion of an inventor of so much genius. The other neo-chemist—a precursor of the Cavalier—was the famous Segato, who believed that he could petrify pieces of flesh. His skill was only that of an embalmer; but there are still English and American visitors to Florence who are interested in his useless preparations, and go and admire them in the museums. The body of Segato was buried in the cloisters of Santa Croce, and an apologetic epitaph in excellent Latin was placed over his tomb.

From such coincidences of thought, from the praise that *mattoids* bestow upon each other, and from the irrepressible tendency which compels them to introduce mathematics into

psychology, mechanics into moral science, and metaphysics everywhere, it might almost be believed that there is a paranoiactal school of philosophy—a school which is somewhat unstable and uncertain, but which is not without traditions and character, and which only needs an historian.

Neologisms.—The neologisms of paranoiacs are fairly distinct, not only from those of normal persons, but also from the verbal inventions of neurasthenics and of the insane properly so called. They therefore enable us to make not only a general diagnosis of insanity, but also a differential diagnosis. Among insane patients, the most untiring fabricators of new words are those suffering from dementia præcox; but their neologisms are very numerous, sometimes even constituting a sort of individual slang, and are often frivolous, formless, and foolish, since they are applied to things which have no objective or subjective importance, and which, accordingly, have no need, even in the eyes of the patient, of a special baptism. The paranoiac, on the contrary, invents, as a rule, only one single word, and this word stands as the visible symbol of the paranoiactal anomaly, because it contains the synthesis of the delusional system. It is only logical that things which are new, or seem to be new, should have new names assigned to them, and the neologism of the paranoiac is only the expression of this necessity. There are very few paranoiacs who, feeling themselves to be so different from others, have not also felt the need of proclaiming the difference to the world, and of inventing their neologism, which is great, incapable of being forgotten, and original, like the delusion to which it corresponds.

In the paranoiactal neologism there is declared at once the theme round which the delusion revolves. To classify the neologisms is equivalent to classifying the delusions. An inquiry carried out in different Italian asylums has convinced me that among the most common neologisms of chronic delusional cases (paranoiactal and paranoid) six categories of words may be distinguished:

1. Names referring to persons or creatures, real or imaginary, probable or supernatural, single or associated, malevolent or kindly.
2. Words indicating physical agents, mysterious influences, metamorphoses, physiological states, modes of thought and being.
3. Auto-denominations, almost always ambitious.
4. Pseudo-philosophical and pseudo-scientific terms.
5. Conjurations.
6. Sounds without any meaning.

The neologisms of paranoiacal manufacture are represented in the first four classes, although neologisms of paranoid origin are also contained in them. Those of the last two classes are distinguished by a more gross extravagance and by multiplicity. Conjurations and meaningless verbal sounds are a speciality of dementia præcox.

Hallucinations.—Though uncommon and isolated, hallucinations of a more or less systematic character are not exceptional among cases of genuine paranoia. They are never so plentiful and confused as in amentia, nor so continuous as in dementia præcox, in which they more often assume the character of *imperative images* or pseudo-hallucinations. The sense principally affected is that of hearing. Although Kraepelin's assertion that paranoiacs are not subject to hallucinations may be exaggerated, I think I have been able to determine that at least 80 per cent. of such patients are not so affected. It is to be understood that in making this estimate I have eliminated all cases of dementia præcox with paranoid delusions.

Behaviour of Paranoiacs.—The paranoiac is not always a man of action, but he is always a man of character. By his unshaken loyalty to his preconception he wins respect, and impresses others with a certain degree of authority, even within the walls of the asylum. By the inexhaustible energy of execution with which in some cases he translates his delusion into a programme of practical life, the paranoiac may become dangerous, and impose his will upon others. Persecuted persecutors, querelants, and ambitious paranoiacs with mystical delusions, have a tendency to acts of violence, lawsuits, and propagandism. Mattoids may become annoying. In the natural evolution of paranoia there also exist, however, and frequently develop with happy results, the peace-making elements of repentance—or, at least, of dissimulation and quietness. Pure and simple quietness is only resignation to fate, and does not imply that the paranoiac has renounced his delusional convictions; or it may even be the result of a metamorphosis of the delusion by which the idea of *defence* becomes associated with the idea of persecution, and the paranoiac feels himself safe, not because there is no treachery, but because protectors are present who counterbalance it. Dissimulation is an act of opportunism which the astute paranoiac employs in order to obtain his release from the asylum or to avoid interdiction. Paranoiacs frequently spend time and money in world-wide but harmless travels. Abjuration of a delusion is rare, but not impossible. As the result of senile weakness, intercurrent disease, serious and unexpected events, radical modification of dietetic, sexual, and professional habits, moral

disasters, spontaneous processes of involution, etc., the system of delusional ideas becomes disintegrated, and only the paranoiacal constitution remains ; or, in consequence of disappointments, disillusion, and new experiences of the commonplaces of real life, the paranoiac loses even the imprint of his special psychical constitution, and from being a mystic becomes a sceptic or agnostic, without being conscious of the change.

G. L., a carpenter, aged sixty-three, a very skilful workman at his trade, active and honest, was married at the age of thirty. From the first day of his marriage he was acutely jealous. He imagined his betrayal in the most improbable of ways, and kept watch day and night. He searched for his rivals beneath the bed, he counted them by scores, and neither their old age nor physical deformity served to disarm his suspicions. This unhappy state of affairs lasted for several months. G. L. gathered together a few hundred lire, deserted his wife, and set sail for Egypt. On the voyage he impulsively, as was his nature, let himself be persuaded by two emigrants to lend them all his money, and his suddenly made friends, profiting by a stop at Messina, went ashore, and did not return to the ship. The steamer proceeded with two passengers less, and G. L. continued his voyage, but without a farthing. He wandered in different places, and was repatriated at the expense of the Italian Government. He believed that the trick played upon him had been planned by his wife, or, rather, by her lovers, who from that day seemed to his imagination to be the agents in various cruel and more and more cunning acts of persecution. The wretched man took to drink, and became subject to hallucinations. At night he was afraid of being attacked by enemies ; by day he believed that they laughed at him in the street. Sometimes he imagined that he had caught the most audacious of them in the act, and became violent towards them. He was sent to the asylum. For many years he looked upon the doctors and attendants with suspicion, but then, as people and things began to change, he began to recognize his error. He employed himself in the work of the institution, and obtained certain rewards and small privileges, which flattered his *amour propre*. From that time he did his best to control himself. He became a convert to anti-alcoholism, ceased to attack his imaginary enemies during his nocturnal vigils, and became fond of the asylum. Finally, after several months of probation, he requested his liberty, and also a promise that he should be employed in the institution as a carpenter. His request was granted. G. L. is free ; he does not know where his wife finally went to ; he never gets drunk, and is an excellent workman. There is now no trace of his delusions of jealousy and persecution, and since G. L. is neither diffident nor conceited, it may be concluded that he has no wish to adopt them again.

The life of a paranoiac, instead of developing as a progressive series of foolish actions with a tragic epilogue, may thus run a pacific course, with periods of indifference or of remission, and may terminate in the twilight of a permanent amendment.

Treatment of Paranoia.

Since paranoia is not a true disease, but is an intellectual anomaly, it is the duty of the doctor to avoid giving, so far as is possible, any justification for, or *pabulum* to, the delusions of the patient by needless alarms. The asylum does not provide an environment suitable for the paranoiac ; in his lucidity of mind he feels all the great distance that divides him intellectually from the insane. The alienist who takes no account of this incompatibility places himself beneath the level of the paranoiac. Nevertheless, in some cases, in order to protect his family from the consequences of his folly, it is necessary to have recourse to the asylum, in the absence of something better, and thus paranoiacs become the ornament and distinction of that part of the asylum which is reserved for the best conducted, most composed, and most lucid of its patients. The attempt may be made to convert them by frank but considerate argument. A successful result will, however, be obtained only by the man who can wait patiently, and who can act humbly when opposed by the haughtiness of the paranoiac. If his conversion is impossible, it may be possible to teach the paranoiac *dissimulation*, under the guise of friendly counsel, pointing out to him its practical advantages. In some cases the paranoiac follows his doctor's advice without telling him, and he may follow it so well that the doctor believes there is realization of error where there is only clever dissimulation. What does that matter, however, so long as the dissimulation continues ?

CHAPTER XXV

IMBECILITY

ACCORDING to an older psychiatry, imbecility was the younger sister of idiocy. Each expressed merely a different degree of the same psychopathy, and their common basis was a *spontaneous insufficiency* of mental development. It was admitted that in some instances, as an exception—not, however, of more frequent occurrence in idiots than in imbeciles—this agenesis, instead of being hereditary, might have been determined by traumatic or other personal and definable causes, which produced the same results whether they acted in early infancy or during foetal life. Idiots, not so much handicapped by external causes as unfit on their own account to enter into normal relations with society, without speech, lowest representatives of human intelligence, were condemned in advance to a vegetative existence, with only a rudimentary consciousness to guide them; while imbeciles, more highly placed on the scale, and endowed with more or less complete powers of speech, stood at the penultimate stage of degeneration, but on the same perspective plane, and without discontinuity of symptoms or of pathogenesis.

To-day, however, clinical psychiatry, through the work of Voisin, Morselli, Sollier, Bourneville, König, and De Sanctis, by investigating cases of mental deficiency more thoroughly, and from a point of view superior to that of pure psychological empiricism, has destroyed this artificial unity. The conception of a uniform and spontaneous aplasia as the result of hereditary degenerative tendency is applicable only to a small number of generally very mild cases, in which the mental deficiency is accompanied by a certain degree of perversion. If we utilize the old nomenclature, we may keep for these cases of deficiency the old title *imbeciles*, provided they do not present even the traces of a former cerebropathy. The term *idiot* we may then reserve for all those cases of deficiency that do not present the clinical picture of mental degeneration, but that of the infantile cerebropathies, notwithstanding the occasionally very slight degree of their deficiency.

A.D.

- 1811 ANTHONY TODD THOMSON, M.D. *The London Dispensatory*. Lond. 1811. 8vo.—9th ed. 1837.—10th ed. 1844.
- 1813 JOHN THOMSON, M.D. *The Edinburgh New Dispensatory*. Edinb. 1813. 8vo.
- 1815 S. ROOTSEY. *General Dispensatory*. 12mo. Brist.
- 1824 THOMAS COX, M.D. *New London Dispensatory*. Lond. 1824. 8vo.
- 1842 ROBERT CHRISTISON, M.D. *A Dispensatory, or a Commentary on the Pharmacopæias of Great Britain*. Edinb. 1842. 8vo.—2nd edit. Edinb. 1848. American edition by R. E. Griffith, Phila. 1848.
- 1852 THOMSON'S *Conspectus of the British Pharmacopæia*. By E. L. BIRKETT, 16th ed. 1852.
- *London Dispensatory*. Revised by A. B. GARROD. 11th ed. 8vo. 1852.
- 1853 BRANSTON, T. F. *Druggists' Hand Book of Practical Receipts*. 1853.
- CHAPMAN, E. *Manual of Materia Medica, Pharmacology, Toxicology*. 2d ed. 1853.
- 1854 GARROD, A. B. *Essentials of Materia Medica for the Use of Students*. 1854.
- 1856 ROYLE'S *Manual of Materia Medica, &c.* 3rd ed. 12mo. 1856.

National Pharmacopæias.

- 1618—1836 *Pharmacopæia Londinensis*. (The first edition of this work appeared in 1618. Subsequently numerous reprints and editions have been published; viz. in 1621, 1627, 1632, 1639, 1650, 1651, 1677, 1678, 1682, 1699, 1720, 1721, 1722, 1724, 1731, 1736, 1745, 1746, 1747, 1748, 1757, 1762, 1763, 1771, 1786, 1787, 1788, 1809, 1815, 1824, 1836, and 1851.)

* * Numerous translations and criticisms of these various editions have from time to time been published. The following require to be specially noticed:—

- 1691 Dr. G. BATE. *Pharmacopæia Bateana*, by Fuller. 12mo.
- 1809 R. POWELL, M.D. *The Pharmacopæia of the Royal College of Physicians of London*, 1809. Translated with notes. Lond. 1809. 8vo.
- 1810 J. BOSTOCK, M.D. *Remarks on the Nomenclature of the New London Pharmacopæia*. Liverpool, 1810. 8vo.
- 1811 R. PHILLIPS. *An Experimental Examination of the last edition of the Pharmacopæia Londinensis, and of Dr. Powell's translation*. Lond. 1811. 8vo.
- 1818 GRAY'S *Supplement to the Pharmacopæias*. 3rd ed. 1824.—4th ed. by Theophilus Redwood. Lond. 1848. 8vo. (pp. 1070.)
- 1824 R. PHILLIPS. *A Translation of the Pharmacopæia of the Royal College of Physicians of London*, 1824. With notes and illustrations. Lond. 1824. 8vo. Lond. 1836. 8vo.—3rd ed. 1838.—4th ed. 1841.—5th. 1848.—6th. 1851.
- 1826 J. RENNIE. *New Supplem. to the Pharmacopæias*. 8vo. 4th ed. 1837.
- 1830 F. BARKER, M.D., and W. F. MONTGOMERY, A.M., M.D. *Observations, Chemical and Practical, on the Dublin Pharmacopæia, with a Translation annexed*. 8vo. Dubl. 1830.
- 1837 G. F. COLLIER, M.D. *A Translation of the New Pharmacopæia of the Royal College of Physicians in London. With notes and criticisms*. Lond. 1837. royal 8vo.—3rd ed. 1844.
- 1839 G. F. COLLIER, M.D. *Companion to the London Pharmacopæia*. Lond. 1839. Royal 8vo.
- 1721—1841 *Pharmacopæia Edinburgensis*. (The first edition of this work appeared in 1699, and subsequent ones in 1721, 1722, 1727, 1735, 1744, 1756, 1774, 1783, 1784, 1788, 1792, 1803, 1804, 1806, 1813, 1817, 1839, and 1841.)
- 1846 R. PHILLIPS. *Observations on the Edinburgh Pharmacopæia* (from the *Medical Gazette*, *Pharmaceutical Journal*, and *Medico-Chirurgical Review*.) Lond. 1846. 8vo.
- 1848 THEOPHILUS REDWOOD. *Gray's Supplement to the Pharmacopæia*. 2nd edition.
- 1849 MOHR and REDWOOD. *Practical Pharmacy*.
- 1807—1850 *Pharmacopæia Dublinensis*. (A specimen Pharmacopæia was circulated among the members of the Dublin College of Physicians in 1794, and another in 1805. The first published Pharmacopæia appeared in 1807. A new edition was published in 1826, and the last edition, revised and considerably altered, was published in 1850.)
- 1851 *A Translation of the New London Pharmacopæia; including also the New Dublin and Edinburgh Pharmacopæias; forming a complete Materia Medica*. By J. B. NEVINS, M.D., London. Lond. 1851. Demy 8vo. (pp. 780.)

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- 1851 J. B. NEVINS. *A Translation of the New London Pharmacopæia*. 2d edit.
 1851 PETER SQUIRE. *The New London Pharmacopæia, translated and arranged in a tabular form with the Edinburgh and Dublin Pharmacopæias*.
 1852 *Conspectus of the London Pharmacopæias*, by A. T. THOMSON, M.D., and E. L. BIRKETT, M.D.
- Materia Medica and Therapeutics.*
- 1562 WILLIAM BULLEYNE. *The Booke of Simples*. The first part of his *Bulwarke of defence against all sickness*. Lond. 1562. fol. (woodcuts.)
 1659—1665 ROBERT LOVELL. Παυβοτανολογία, or a compleat Herball. Oxford, 1659. 12mo.—1665. 8vo.—Πανζωορυκτολογία, sive panzoologico-mineralogia, or a compleat History of Animals and Plants. Oxford. 1661. 8vo.
 1674 THOS. WILLIS, M.D. *Pharmaceutica Rationalis, sive Diatriba de Medicamentorum operationibus in humano corpore*. Oxon. 1674.—Ed. 3tia. Oxon. 1679. 8vo.
 1683 WALTER HARRIS, M.D. *Pharmacologia Anti-Empirica, or a Rational Discourse of Remedies both Chymical and Galenical*. Lond. 1683. 8vo.
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an anomaly of distinctly pathological origin, and its presence, far from sanctioning a diagnosis of imbecility, ought to suggest the possibility of an acquired idiocy—that is to say, of an early cerebropathic process. Rickets, achondroplasia, and hereditary syphilis, which so frequently produce ugliness of body without affecting the intelligence, may certainly be found associated with imbecility, but merely as an accidental combination.

Among the visible physical anomalies in imbecility the following are truly degenerative and fairly common: low and receding forehead (Figs. 129, 130), very prominent frontal sinuses, and small eyes. Prognathism, progeneism, dental anomalies, smallness of stature, and pithecoïd hands, are not common.



FIG. 129.—IMBECILE WITH FULL POWER OF SPEECH, OF NORMAL HEIGHT, WITH SMALL HEAD, RECEDING BROW, AND FACE EXPRESSIVE OF AMAZEMENT AT THE MYSTERY OF THE PHOTOGRAPHIC CAMERA.

Perception.—The attention of imbeciles is easily distracted, and their perception of external impressions is prompt. Their rapidity of perception is the result of passive attention, which is watchful and delicate, as in the lower animals, but poorly adapted for transformation into continued and voluntary attention directed towards a fixed objective. This quickness of perception is more harmful than advantageous to imbeciles, resulting in hasty resolutions, imprudent remarks, erroneous conclusions, and an immoderate idea of their own personality. In psychometrical experiments imbeciles sometimes take a very high place; their personal equation exhibits a rapidity of reaction which is superior to that of normal persons.

Sensibility.—I believe that the most remarkable phenomenon of insensibility that occurs in imbeciles is *lack of modesty*. This they have in common with the congenitally immoral, and, like the immoral, they make a boast of it, or employ it to their profit. Absence of modesty rather than lustful desire renders them an easy prey to the arts of seduction, and not a few among the lowest class of prostitutes are imbeciles of a mild grade, with no taint of epilepsy or criminality. The same may be said of certain passive pederasts.

A more difficult subject of inquiry is that of hypoalgesia. In spite of the shrieks with which imbeciles respond to a slightly

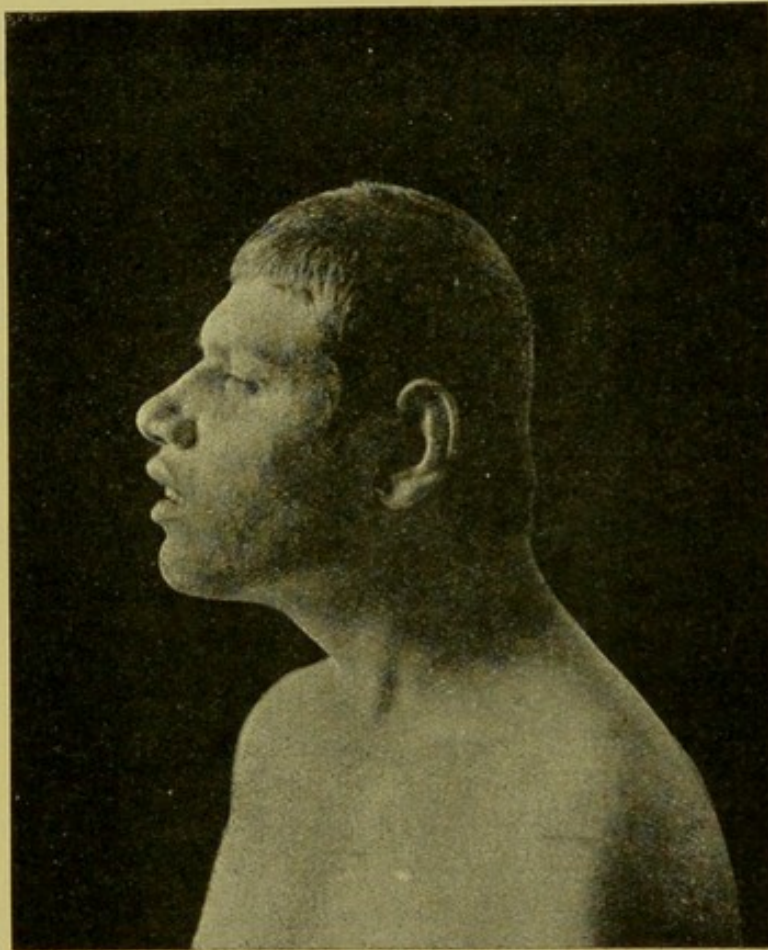


FIG. 130.—SUBMICROCEPHALIC IMBECILE WITH GOOD BODILY DEVELOPMENT, WELL-FORMED SKELETON, AND NO SIGN OF CEREBROPLEGIA.

painful stimulus, it appears that they are more subject to hypoalgesia than is any other class of anomalous persons. A faradic current more powerful than that which is sufficient to cause pain and muscular contraction in normal persons is required, in the case of imbeciles, to produce not only the subjective fact of pain, but also the objective fact of muscular contraction. The immoral of the insensible type are not always so constant in their reaction to painful stimuli. The palm of analgesia must, however, be awarded to cerebropathic idiots, and not to imbeciles. Imbeciles

feel acutely both hunger and thirst. With regard to the various forms of special sensibility, they leave nothing to be desired. In these respects they resemble savages and children.

Affectivity.—The character of imbeciles is that of boys. *Cet âge est sans pitié.* Whistling into the ears of a dog, tying a tin can to the tail of a cat, or tearing off the legs of an insect, are amusements much appreciated by the imbecile, who, nevertheless, can be kind to the family dog or cat, may show skill and care in the rearing of canaries and marmots, and spend days in the stable or byre, as if among comrades. The cruelty of imbeciles is, therefore, only a proof of their weak-mindedness. They do not show any better behaviour in the narrow circle of the family; they laugh if the old grandfather falls and hurts himself, look with mingled curiosity and complacency at the small brother who is crying, exhibit the most unfeeling resignation on the departure or the death of their parents, and do not draw the line at murderous tricks, calumnies and revenges, if opportunity for them should occur without involving premeditation or effort. At the same time they are tender, caressing, and flattering when seeking gifts or praise. Their *puerility* of affection does not cease with the passing of years. Imbeciles, like children, are keenly sensitive to jealousy, which leads them into wrong-doing, but also to *amour propre*, which is the healthy side of jealousy, and which, if rightly cultivated, may direct them into well-doing.

The *amour propre* of imbeciles often borders upon *vanity*, which in normal persons makes an ephemeral appearance between the ages of twelve and fifteen, but which becomes transformed, or is successfully concealed, after puberty, and does not appear at all in infancy. Whereas the congenitally immoral person of any age makes ostentation of a disdainful and manly indifference both to the applause and the censure of the ruling authorities, the imbecile is unable to repress a smile of delight, a look of triumph, or a desire to rub his hands when he hears the murmur of kindly or ironical admiration that his remarks have called forth. Intoxicated by his scholastic successes, and stimulated by the example of normal persons, he aspires to a life of fame, even though more than twenty years of age, either by means of *impertinence*, *stereotyped buffoonery*, or *examples of mimicry*, for which, not uncommonly, the imbecile exhibits a certain talent. All such tendencies belong to the psychology of childhood, and their persistence in adult age is a sure sign of partial *immaturity*.

His talent for imitation, his fondness for theatrical display, and his ambition to excel, at least in comedy, often induce the imbecile to essay the performance of a prominent rôle. It is

a real game to which he abandons himself with all the energy of his feeble fancy, cherishing the illusion that he has actually become the person he represents. In the same way the normal child, as he wheels himself round the room in a chair, imagines he is riding on horseback. The imbecile, convinced, or half convinced, of his own importance, severely scrutinizes the passers-by with brief and resolute gestures, permits or forbids their approach, and dramatically provides for contingencies, but not before others have made full provision for them. He is the man of order and routine, the sentinel of the establishment, the director, the inspector, the head of the department. Sometimes his acting is characterized by the most vivid realism. There are imbeciles who feel the pulse of a true invalid with the most portentous gravity; who, in the garb or office of a cleric, dispense benedictions with episcopal melliflence; who wait on review grounds for regiments of soldiers, whose movements they command with unseen glances full of martial spirit; who, with excited gesticulation, drive into the single room the furious patient who has caused a commotion in the ward, and is already in the arms of two attendants. It is the imbecile who gives the signal that the doctor's visit has begun, who gives the word to raise a load, to set the table, or to move the company into the garden. Often such individuals, though they cannot read, keep their eyes fixed upon a newspaper or book, the pages of which they regularly turn in order to be admired by those about them. An imbecile who had lived in an institution during his adolescent period, and who believed that he was its very soul, was so imbued with his illusion that one day he presented himself at the door of a college where a lad of his acquaintance was lying ill, represented that he was a confidential medical attendant sent by the family, and succeeded in passing himself off as recently qualified—indeed, as one of the assistants of the said institution. He did not, however, abuse his deception, limiting himself to the prescription of a purgative, which, perhaps, was not out of place.

Anger is not uncommon in imbeciles, and shows itself in grotesque threats and childish spite, and also in acts of incredible fury or refined cruelty. Imbeciles who are no longer young, and who are powerless to retaliate in a more effective way, may be seen to throw themselves upon the ground, howling and spitting and kicking their legs in the air. Imbeciles are not devoid of *eroticism*; they even show that they possess selective judgment, and often honour with their unrequited predilection the most beautiful girl in the district, or, if they are women, the most handsome and wealthy youth; they do not refrain from amorous declarations, violence, and proffering of their own person. Their

love is always devoid of true feeling, being marked by vanity and absence of shame rather than tenderness.

The sense of *wonder* is often depicted in the faces of imbeciles, but they reserve it for the simplest objects, and know how to repress it—at least, up to a certain point—in order not to appear simple. The half-opened mouth is a classical feature of these defectives (Figs. 129, 130). In the presence of the truly marvellous the imbecile remains, on the contrary, impassive, either because he does not understand, or because he is afraid of losing his prestige, or because he thinks the occasion a good one for exhibiting his superiority to others. The same contradictions are to be observed in that variety of wonder which constitutes *terror*. An imbecile who would not take one step in the dark may be present at or callously take part in some scene of horror and bloodshed.

Two opposite sentiments are common among imbeciles—namely, *credulity* and *distrust*. When closely examined, however, the inconsistency is only seeming: on account of their lack of critical faculty imbeciles readily fall into the error of believing in what is false and distrusting what is true. Desire for gain, the hope of being considered clever, the expedients they adopt, and their incapability for reflection, often cause them to compromise their own interests; they never know when they ought to accord their confidence or when they ought to withhold it. An imbecile girl who had refused a kiss to a relative allowed herself to be dishonoured for two *soldi* by an entire stranger. A suspicious imbecile who believes in fairies and speaking mice will not admit the existence of micro-organisms because he does not see them, and the microscope is only a mystification to him. This lack of critical faculty renders imbeciles very accessible to any sort of suggestion, to communicated insanity, and to systematized delusions. Their credulity makes them prone to delusions of grandeur, and their distrust to delusions of persecution. Thus anomaly of feeling and deficiency of mind combine to produce the phenomena of true insanity.

Similarly, the emotional state of imbeciles is not always uniform, regular, and somewhat hilarious, as might be supposed *a priori*. Their life for the most part runs its course without joys or sorrows or great surprises, but it is not immune from disturbances that may assume the proportions of a *state of depression* or of *exaltation* of more or less gravity. Further, such variations in the sentimental tone are not impossible even in the most profound dementia. They are due, not to external circumstances, but to strictly organic causes which alter the *cœnesthesis*. It even seems to be the case that imbeciles, with their indifference to

external events, may be more liable to suffer on account of internal disturbances that act with special readiness upon a brain devoid of psychical activity. A slight catarrh of the stomach may permanently disturb the serenity of a previously happy imbecile.

Attacks of *depression* and of *exaltation* are specially common in imbecility, and their brevity is particularly characteristic. It is also not exceptional to meet with true periodic and circular psychoses which do not differ symptomatically from the affective crises of non-imbecile patients, except in their duration, which is often very brief.

Whilst the unstable equilibrium of their affective faculties sometimes leads imbeciles to the threshold, or over the threshold, of melancholia, mania, or the circular psychoses, the poverty of their altruistic sentiments not infrequently converts them into true and actual cases of congenital immorality. It has for long been a subject of debate whether there is such a thing as constitutional immorality without at least a shade of imbecility. It is my belief that deficiency in altruism has no need to be allied with deficiency of judgment in order to become a clinical entity. Apart, however, from the already recognized (Chapter XXIII.) autonomy of constitutional immorality or moral insanity, it cannot be denied that many of the cases that exhibit this anomaly are derived from the ranks of imbeciles. Imbeciles in the sphere of intellect often are imbeciles in the sphere of the moral and social sentiments. Many criminals and prostitutes are pure and simple imbeciles who have been lost among the shallows of antisocial careers through want of any power of discernment and the fault of their environment. Some of them, however, have entered upon such careers by their own choice and will, through a true perversion of the affective faculties parallel to intellectual deficiency.

The moral degradation of imbeciles receives further proof from their tendency to *lying*. In addition to occasional lying, they resort to habitual lying, but they sometimes end by believing in the truth of what they have invented through boastfulness or self-interest. Another, but certainly very superficial, indication of immorality is to be found in the readiness with which such persons give way to *coprolalia*, *swearing*, and *vulgar abuse*; but these affective aberrations also, in the majority of cases, are only the result of a pernicious system of education. It must also be admitted that imbeciles are more ready to learn evil than good (Sollier).

Intelligence.—Of the intellectual qualities, *memory* is that which is most highly developed in imbeciles. Marvellous accounts

have been given of their mnemonic talents, especially in regard to names and numbers. In addition to being one-sided, however, the memory of imbeciles is profitless. As a rule they can only learn to recite automatically a number of verses, all the paragraphs of an Act, passages from books, etc., and are incapable of utilizing individual portions of them, and of quoting aptly a verse, a legal opinion, or a sentence. This store of unserviceable records may perhaps be valuable because it is rare, but it has no capital value because it gives no return. The imbecile *calculators* are an exception, but only up to a certain point. They make use of two sorts of memory—the immediate memory of the figures given to them, and the memory capitalized from the abacus which they successfully apply to the solution of any problem in arithmetic. Beyond the numbers, however, they do not see the things, and they cannot state the problem that they have solved.

The same may be said of *musical* imbeciles: eager to give a parrot-like repetition of marches, dances, and melodies with time well accentuated, they possess neither musical taste nor ability to compose. The archives of intellect are for them only the archives of memory. However much they may rise in fame and skill, it would be foolish to seek among these disinherited beings a mathematician or an artist.

With these exceptions, the great majority of imbeciles possess no aptitude either for arithmetic or music. I know imbeciles who have been able to complete their term of military service, to marry, and to follow regular employment as peasants, and who cannot count up to ten. Other imbeciles can recite from memory the multiplication table, but cannot number the objects they see beyond a certain point. For one imbecile who is moderately musical there are at least ten who are not musical at all. The hypermnesic faculties of imbeciles are not only unilateral, fruitless, and somewhat rare, but they are not always of long duration. Disuse makes the traces of their records disappear very soon, and it is vain to attempt to revive them when old age is approaching.

Intellectual deficiency persists because of the impossibility of exercising any discipline upon *attention*. Imbeciles are incapable of inhibiting the passive attention which external events are continually exciting to the detriment of internal thought. However much they may be interested in the book or drawing or object before their eyes, they cannot refrain from listening to the slightest interruption from without. From this want, or rather volubility, of voluntary attention results their incapacity for *continued observation*. The ideas of imbeciles are nearly all derived from without: their brain is a storehouse, not a work-

shop, but it is a disordered and half-empty storehouse of incomplete, precipitate, and imperfectly understood ideas.

The *general ideas* that might serve as a rule and guide for the intelligence are also in a state of simple verbal possession. The imbecile is unable to utilize them either for the creation of new ideas or the integration of fragments of knowledge that he already possesses. If the direct observation of real objects is weak and poorly sustained, the association of symbolical images is weaker still and more impotent. Imbeciles do not think. Each event is to them a new occurrence, because they cannot recognize its analogies with preceding occurrences, or because they believe that they recognize them and so err fundamentally. Reasoning at random, they are more likely to choose erroneous solutions, the number of which is indefinite, than the single correct solution. Imbeciles are prone to resort to the easy expedient of accepting the first solution that presents itself to their mind. Even when given an arithmetical problem, they write down rapidly any result, but are not aware of its absurdity, and remain fully satisfied with it. It is rare for them to confess that they have no opinions, even on the most difficult subjects, and they do not hesitate to air their views upon questions of philosophy, politics, and theology. The few propositions that they are acquainted with in these branches of study give them courage to speak and take sides, and the most bitter partisans are sometimes to be found among imbeciles.

If the intelligence is extremely weak, it remains unproductive in every respect, and these lowest imbeciles, owing to insufficiency of inventive faculty, are not even capable of becoming delusional. If, however, the intellectual powers are but slightly inferior to the average of normal persons, as not infrequently happens, such higher imbeciles are predisposed to *systematized delusions*, and more particularly to *communicated insanity*. Imbeciles are the near neighbours of paranoiacs, and are apt to pay tribute to them by blindly professing their delusions on the occurrence of the slightest opportunity. When a paranoiac is a propagandist of mystical ideas, and reigns as a sovereign or high-priest, it is the imbeciles who compose his court, and form the majority of his subjects (Jacoby). The contagion is favoured by the affinity of tendencies in paranoiacs and imbeciles: every paranoiac is mildly imbecile, and every imbecile is at least a candidate for *endemic paranoia* if he lives in isolated and fanatical surroundings—as, for example, in a province of Eastern Russia. In contrast to paranoiacs, however, imbeciles are prone to apostasies; they renounce a faith adopted through pure imitation, and repudiate their leaders as soon as they are parted from them. In epidemics

of religious and political delusion, it is among imbeciles that spies and traitors are most easily to be found. Their want of critical power, their fickleness of character, and the servility that drives them to become the apostles and slaves of paranoiacs whose ideas they do not understand, lead them also to surrender when intimidated by warnings, flattery, and threats. Their intelligence is equally incapable either of originating a delusion or of spontaneously correcting a delusion; but it is accessible to the positive and negative suggestions of others, and does not appreciate how compromising it is suddenly to abandon a principle.

The immediate cause of this intellectual passivity is the *want of imagination*. If one of these mentally defective subjects is requested to compose a design, invent a story, describe some probable occurrence, etc., the product of his fancy is always poor, incomplete, puerile, and foolish. By taxing their memory, they succeed in producing something more coherent than would result from the exercise of their intelligence (Fig. 132). The extravagant nature of their artistic and literary fragments must not be taken as a proof of imaginative faculty. At an examination in an elementary school the following was given as a theme for an essay: "Marius appeared full of smiles and happy in the presence of his mother, but in the solitude of his own room he wept bitterly." One scholar quickly composed his essay, relating that Marius had gone to look for his dear cousins to play with them in the field; that, having quarrelled with them, *he had killed one of them*; that he went to his mother, and was smiling and cheerful, but then retired to his room, etc., as in the text. I do not know if the author of this tragic story was an imbecile, but it is certainly in this manner that imbeciles think when they are obliged to go beyond the limits of what they have been taught, and to appeal to an imaginative faculty that they do not possess. They do not really create, but only apply ineptly some reminiscence. To prove this, it would be sufficient to gather together ten imbeciles and ten intelligent boys, and to observe how they develop any prescribed theme of a fanciful character. It would be seen that of the ten imbeciles, some do not succeed in doing anything; others suddenly set themselves to work, write a few lines without hesitation or erasure, and at the end of a few minutes hand over to the teacher their hasty production. The former do not possess ideas; the latter have only one idea, and do not even imagine that they might discover other and better ideas.

The imagination is the most calumniated of the intellectual qualities. Pedants regard it as a minor requirement of artists and commonplace poets; the aged speak of it as a great endowment in youth; the learned who are devoid of it warn others not

to abuse it. These believe that an excess of imagination tends to produce monstrous aberrations of art, dreams, and insanity; whereas the vagaries of art, dreams, and psychopathies are always due to poverty of imagination. The man who can picture a scene, a theory, or a personality in all its details, and who is able to impart to the fiction of his mind a variety of aspect, a naturalness of movement, and an inevitableness of issue in such a manner as to emulate truth, which is always complex, coherent and logical, proves that he possesses a vein of imagination much richer than that of those artists, dreamers, and lunatics who are accustomed to exaggerate grotesquely one side only of reality.

If the higher-grade imbeciles lack imagination in their scientific and artistic productions (in science they are always the opponents of hypotheses), the lower-grade imbeciles are devoid of it, even in their outlook upon the affairs of everyday life. This deficiency is proved by their indifference to public affairs, and by the carelessness with which they face the future, even in regard to their own personal interests. They are careless for the future, because they are incapable of picturing it. The inevitable death of parents who provide for their support, their own failure in every career, the prospect of poverty, the impossibility of founding a family, the spectre of old age in a house of charity, etc., are all eventualities to which the imbecile pays no attention, because he does not think of them. His horizon is bounded by yesterday and to-morrow. It is only necessary to question an imbecile, even one of the most intelligent, as to his plans, his preparations, and his hopes, to ascertain that he does not possess any. If, indeed, he does possess a programme, he has only one, and it is difficult of realization, ill-defined, and very childish, such as to amuse himself, to incur debts, or to continue in the even tenor of the life which, half through obedience and half through choice, he has hitherto followed.

This blindness as to the future converts the imbecile, if he has been born among the wealthy, and lives in the society of those who simply amuse themselves, into a reckless destroyer of patrimonies. This is not always the case, however. There are imbeciles, parsimonious, misanthropic, and fanatical, who accumulate their savings and leave colossal fortunes for the benefit of those who know how to secure them. In these cases, also, poverty of imagination excludes from their thought any programme beyond that imposed by circumstances, and any suggestion of something different from their uniform daily routine. One of these careful imbeciles called upon me because he wished to provide in his will for a hospital to be built in his castle, but without endowing it with any fixed revenue or indicating how it was

to be managed ; a legacy of 1,000 lire was to suffice to meet the expenses of an international competition between sculptors, with the award of a prize, under the auspices of the syndic of Rome, to the competitor who had most successfully copied in marble the head of Christ painted by Leonardo—a subject which is distinctly unsuited to serve as a model for sculptors, being in bad preservation. The successful exhibit was destined for the decoration of the mausoleum of the testator. I refused to give the certificate of mental integrity that was requested of me as a precaution, although I knew that the man, in order to save money, lived alone and frugally, so that there had never been any occasion to interdict him or to incapacitate him.

It is probable, however, that his will, if arranged in somewhat better terms, might have gained the official collaboration of a lawyer and the preventive *nulla osta* of some other medical man.

The law, in fact, respects in civil matters the liberties of all, even of imbeciles, so long as they are neither delusional nor criminal, nor insanely spendthrift. The imbecile is entitled to spend his wealth as he pleases, provided that he does not intentionally touch his capital. He can exercise the authority of a husband or a father in the most foolish manner possible, so long as he does not offend against the very broad decrees of the penal code. The law does not forbid the imbecile to marry, although he may be able, through the tempting bait of wealth, to espouse a gentle and intelligent girl, to tyrannize over her, suppress her initiative, shut up his sons in sectarian educational institutes, and for trivial and selfish reasons prevent his daughters from marrying or from educating themselves. Provided that in the upkeep of the household the expenditure is less than the income, as it may easily be in the case of the wealthy who are frugal or miserly, the civil capacity of the imbecile is unimpeachable.

A very slight degree of intellectual deficiency may lead to that relative invalidity that Tonnini has aptly termed *social imbecility*. The social imbecile, who in the life of the common country people or in the environment of the well-to-do citizens might pass for normal, finds himself unequal to the struggles, fatigues, and the difficulties entailed by competition, is unable to master the trade, however humble, that is necessary to keep him from starvation, or is unable to maintain his place in it, and thus becomes a contented parasite on his family or public charity.

Movements.—Whilst no movement is materially interfered with in imbeciles, their nervous paths being intact and unimpeded throughout their whole extent, their *gait* is devoid of sprightliness, and sometimes rather slow and goose-like (Morselli and Tamburini). It is very rare for one of these defectives, even though

endowed with great strength and muscular endurance, to show ability in running, swimming, dancing, fencing, gymnastics, manual exercises, and singing. From the way in which he walks, holds his stick, raises his hat, runs, stops, gazes ecstatically at a window, turns over the pages of a book with his nose in the air, takes umbrage at a passer-by who has jostled him, or asks to be directed to a street, always halting between timidity and presumption, it is not a difficult matter to recognize the imbecile at sight. The pickpockets know him. His actions, like those of children, bear the stamp of a perpetual novitiate; they have not yet been emancipated from the guidance (more embarrassing than helpful) of consciousness, and they never acquire the certainty, the rapidity, and the co-ordination that accompany automatic movement. In the co-ordinated and complicated movements of the imbecile may be seen the hesitancies, the imperfections, and the incoherencies that make country-bred recruits so clumsy, though only for a few days and as the result of a reasonable diffidence.

Pronunciation, Intonation, Language, and Writing.—The defective nature of this mental anomaly reveals itself, as it does in the gait, very frequently also in the *pronunciation*. On account of insufficiency, not so much of education as of muscular and nervous educability, the articulation of certain sounds is incomplete and faulty as in children. The sounds principally affected are the letters *r, s, f, z* (see p. 251). *Stammering* is not uncommon. Childhood is the period of *tics*, and stammering, which is a verbal tic, instead of being cured as adolescence supervenes, may become crystallized in the adult imbecile through a partial arrest of psycho-motor innervation. These defects of pronunciation, which are common also among cerebropathics, may be corrected by the application of pedagogic methods, but their correction is easier in cerebropathic idiots, even of profound degree, than in imbeciles, who, as a rule, are inattentive, undisciplined, and forgetful (Sollier).

The *inflection of the voice* is often puerile and scholar-like. In order to ascertain this, it will generally be sufficient to question the imbecile upon some subject of a moral, religious, or historical character; if not, it may be necessary to obtain further evidence by asking the patient to read aloud. The sentences are read disjointedly, with great precipitancy, and with short pauses for breath that do not agree well with the meaning. The intelligence is occupied wholly with the act of reading, and is quite incapable, when the book has been closed, of summarizing even a very small portion of what has been^r read. The singing of imbeciles also is puerile in character; it^{is} may be in tune and in perfect time, but it frequently assumes a *semi-spoken* character, as in a melody

or recitative, and does not reach that fulness of musical tone that is to be found in adult, intelligent, and sympathetic singers. In other words, imbeciles are capable of only an inferior quality of inexpressive singing, in the intermediate phase between singing and musical declamation; their intonation is correct, but timid, awkward, and wanting in emphasis.

The *language* of imbeciles is more or less simple, and is sometimes incomplete, owing to extensive and serious defects. Abstract expressions, learned or refined words, and original metaphors are absent, or their use is avoided, and this characteristic serves to distinguish the imbecile from the dement, the maniac, and the paranoiac, whose speech sometimes attains to excellence. Even if he labours under a systematized delusion, the imbecile never makes use of original neologisms, and when he professes a collective delusion, he is ashamed to employ the endemic neologisms of the delusional community. From the formal point of view there is in some cases absolute *agrammatism*, but more frequently there is a certain looseness of syntax that corresponds to the simplicity and lack of precision of thought of the imbecile. The imbecile shows little familiarity with the *subjunctive* mood, and, like a good positivist who has no love for hypotheses or oblique thoughts, he always speaks in the *indicative*. His propositions succeed each other on terms of equality without interpenetration; they are rarely joined by means of a modest and monotonous conjunction, or of an adverb (*and then . . .*), and are almost never subordinate. The style shows little imagination, and is chiefly narrative in character. Imbeciles are epic rather than lyric, but their stories are short, simple, and plain, without exhibiting any great degree of sequence or clearness. Though capable of relating more or less correctly facts of which they have been witnesses, they are altogether incompetent to express sentiments, for the very good reason that they do not possess them. Grave family disasters, the commission of a crime, a generous pardon, an unexpected pleasure, etc., traverse their minds without suggesting to them either a sympathetic expression or a happy remark. The temperament of the imbecile is the negation of poetry, and would be the negation of speech if verbal education were not assisted by the intervention of memory.

The *writing* also remains of the puerile type, although the imbecile may have reached a fairly high level of education. As a rule, it is macrographic, irregular, simple, and reminiscent of a school copy-book, but a pedagogic effort may so change and improve it that it may touch the highest summits of calligraphy. A diagnosis of imbecility based on the character of the handwriting alone would be rash.

Clinical Varieties.

Imbecility represents a terminal stage of degeneration. In addition to its own proper manifestations, it accordingly contains, more or less obscured, owing to the vacuous state of the intelligence, the signs characteristic of other psychopathies and particularly of other degenerative states that have an autonomous existence, and that would require, in order to assume a definite character, a less defective intellectual development. Imbeciles possess a true predisposition to melancholia, mania, and dementia præcox; they readily become alcoholics, and they are often paranoiacal or constitutionally immoral.

The attacks of melancholia and mania reveal, even in cases where the anamnesis is unknown, the constitutional basis of imbecility; they are distinguished by their brevity. In some cases, as has been said, they develop in a few days or in a week, and with the exception of this peculiarity they tend to repeat themselves as in persons whose individuality is fully developed. The melancholia frequently runs its course, and is recovered from without the imbecile being aware of the illness from which he has suffered, even when he has regained the small degree of lucidity of which he is capable. The same happens, with greater reason, in the case of mania, which is imperfectly remembered and hardly recognized after recovery even by persons of robust intelligence.

It has not been shown in what manner imbecility predisposes to melancholia and mania. If, on the one hand, it is impossible to deny this predisposition on account of the frequency with which affective psychopathic attacks occur in imbeciles (and not in cerebropathics), on the other hand, the short duration of the attacks in congenital imbeciles, and their non-occurrence in cerebropathic idiots, who, indeed, seem to be actually immune from them, incline one to believe that a certain degree of mental deficiency constitutes a preservative. Perhaps the poverty of ideas takes away their raw material from the affective changes, which lose their power when they are not fed by the representational elements. It is evident, *a priori*, that there must be incompatibility between an affective state, whatever it may be, and total anideism, and it is obvious that melancholia and mania are not even possible in infants at the breast, exceptional in children, and slight and of short duration in the mentally deficient, however much predisposed. We must not forget that the probable cause of the affective psychopathies is to be looked for not so much in a strictly psychical predisposition as in an organic diathesis that does not bear any relation to the intellectual

structure of the individual. This circumstance permits us to believe that imbeciles, similarly to and even more readily than intelligent individuals, may be affected by mania or melancholia, but that, at the same time, they also possess in themselves a greater tendency (in this case of psychical nature) to rapid recovery.

Much more intimate are the associations that imbecility contracts, on the one hand with constitutional immorality, and on the other with paranoia. We have already said that the germs of these two anomalies are with difficulty to be distinguished from imbecility of slight degree; sometimes, indeed, their co-existence is so fundamental that it is possible to speak of a double and simultaneous anomaly. Cases are known even of triple anomaly—immorality, paranoia, and imbecility united in the same individual. Naturally in such cases it is the imbecility that is the predominant factor, because it exercises an influence upon the other anomalies, and possesses characteristics that are more obvious, especially to the eyes of the lay public. Similar complications are never met with in the case of cerebropathic subjects, who display a gentle and modest character, and are correct in their judgments when they enjoy a certain degree of intelligence; they are amoral rather than immoral, and defective rather than delusional, when they are complete idiots.

Simple Imbecility of Mild Degree, Restlessness, Prodigality.—Frederick is a cheerful, stupid youth, of a wealthy patrician family that has had its own historian. His figure is slender and youthful; his health is excellent; his features are regular; his expression is lively, jovial, insinuating, but fatuous; there is no sign of somatic degeneration; he had been a fair-haired, gentle, and much-admired child. In the ancestry of Frederick legendary examples are recorded of eccentricity, dissipation, unsettledness, and insanity, especially on the maternal side. The paternal side is not free from them, but is less well known. The paternal grandmother, a Scotswoman, of most exalted lineage, was eccentric. One of her sons, an uncle of Frederick, was a patient in three asylums, and died by suicide. Another son was the father of Frederick, died when a youth, and was immoderately addicted to sport. The mother of Frederick is a morphinist, and has descended even to kleptomania, and has on this account received judicial warning. Her father was an amiable gentleman who, in a few years, devoured a patrimony of 7,000,000 lire, and died a beggar, separated from his wife, leaving to her the property untouched. His wife is the maternal grandmother of Frederick, and is the descendant of a powerful and haughty race, who ruled for two centuries over a beautiful and historic city of Tuscany, torn by factions.

Throughout this stock mental anomalies may be traced, but in somewhat mild forms, and without much continuity. Those who are affected by them are very few in comparison with those who are spared, as always happens, whatever the Jeremiahs of degeneration may declare to the contrary. A very remote ancestor of Frederick in the sixteenth century committed suicide by throwing himself into

a well, after having lived in an odour of heresy, although an ecclesiastic. He was a member of the Crusca, and had been supervised by a friar because he was affected by *phrenesia* (melancholia?). Another but less remote ancestor exceeded all bounds in his conduct, was domineering, extravagant, and eccentric. He lived in banishment on his own lands by the order of the Grand Duke, and one day, not to contravene the decree of banishment, he caused himself to be carried to the Palazzo Pitti, the residence of this ruler, upon a cart loaded with soil taken from his own farms, from which he overwhelmed with insults the Grand Duke. He was detained as insane, and was confined for several months in the Mastio di Volterra, the Bastille of Tuscany. He returned to his house, however, and died, says the historian of the family, hated alike by strangers and his own family. His wife was a Spanish lady, of princely family, and died insane. Her brother was an imbecile, and wasted his life in France, where he had been forced to marry an adventuress. After a trial that lasted for more than thirty years, his will was disannulled on account of mental incapacity. Of this Italian-Spanish union of ancestors there were born two sons of sound mind, who died of apoplexy about their sixtieth year, and one daughter, who became insane; and in the third generation the great-grandfather of Frederick, healthy and munificent, who died at the age of eighty-six. His daughter, the grandmother of Frederick, already mentioned, had a brother, the grand-uncle of Frederick, who lived in America. He was dull, frivolous, devoid of education, originality, or will, and became in his later years quite demented. He abandoned his wife in Florence, and, while she was still living, succeeded in marrying another woman, an American, legitimately, having succeeded in proclaiming himself the widower of a third woman, who had lived with him as his wife in the interval. A brother of Frederick, younger and more intelligent, abandoned himself to a career of most amazing prodigality.

Deprived by death of his father at the age of eight, and in possession of a large fortune, Frederick was educated with all possible care. His mind was, however, averse to study, open to every kind of distraction, and directed exclusively towards the more vulgar kinds of enjoyment. He cannot remember a single word of English, a language that was spoken in his father's house, and had sounded in his ears till he was eight years old. He does not know French. He is incapable of writing a letter in Italian, except for the purpose of asking for pennies or sending commonplace congratulations. For several years, however, he has made use only of the telegraph and the telephone.

On one occasion, being anxious to obtain pardon for a serious escapade, he caused to be sent to his grandmother a letter dictated by a friend, which was quickly recognized to be apocryphal from the unusual correctness of its style. This ingenuous error in tactics was repeated on other occasions. The only thing of his own in it was the writing, which was macrographic, asymmetrical, and puerile. Frederick possesses one accomplishment only—that of riding, but is foolhardy rather than skilful. On one occasion he tried to jump a railing, was thrown from the saddle, and the horse was spiked. On another occasion he went to sleep without having put out the light, and ran the risk of being burned, the sheets having caught fire.

Frederick's boldness is only the expression of his thoughtlessness. It is not the product of courage, or generosity, or desire for praise. He once, not without danger to himself, saved the life of a lady who

was drowning at the seaside, and of whom he was enamoured, though only superficially; indeed, he cast her off shortly afterwards. The same carelessness shows itself also in another way—namely, in his prodigality. In one year Frederick spent 90,000 lire, without gambling and without purchasing anything of lasting value, simply amusing himself, alone and almost concealed, in a small provincial city in which he was a soldier. He had with difficulty, on account of his poor education, been admitted as a volunteer for one year into a cavalry regiment. By dint of recommendations he succeeded even in becoming a company officer, but as his behaviour was frivolous, he was asked to resign. He disappeared at the funeral of King Humbert, and for ten days there was no word of him. Well supplied with money, he wandered here and there, but it was never known where he was, and it was feared that he might have perished in the railway disaster of Castel Giubileo.

Frederick does not possess a single general idea; he has no imagination; he never asks himself what is likely to be his future. It is in vain that he has attended schools and institutions, from which he has been dismissed more on account of his inaptitude than because of breaches of discipline; in vain that he has been boarded with distinguished teachers; in vain that he has had in his own house tutors and masters; in vain that he has lived in society. His intelligence assimilates only practical ideas, and those that are most necessary for the foolish enjoyment of a life of pleasure, but not for procuring the means for it. In the purchase of horses, automobiles, clothes, articles of luxury, etc., Frederick is inexperienced, simple, impatient, and imprudent. He pays no attention to his dress. When he was a soldier, and subsequently when an officer, he was negligent, his sword was always indented, and his uniform disordered. When he travelled he lost his luggage, left his linen in the hotels, arrived home without a penny. From time to time he lived with young women of easy virtue, but did not cease to devote himself to sport. He unexpectedly married one of these women without asking the advice of any of his friends, and did not announce the event of his marriage to anyone. The marriage took place after an abrupt separation, which had not cost him a tear. It was the most reckless, but not the last, of his adventures.

In his amorous adventures Frederick has never displayed any initiative. He has always purchased love with his purse in his hand. If he paid dearly for it, he did so not because he valued it much, but because the expense was nothing to him. As a rule he gave what was asked of him. In one Transatlantic voyage he appropriated some hundreds of lire, taking them from the pocket of the tutor who accompanied him, and it appeared that he had made a present of them to two passengers, one of the first and the other of the second class, to whom he was paying simultaneous court, and whom he never saw after leaving the ship. At that time he was twenty years of age. On another occasion, at the age of seventeen, he took some family heirlooms from the house, exchanging them for other valuable articles. His lack of refinement shows itself continually in a milder form—namely, that of lying—which is with him a practice of everyday life.

This youth, who is so devoid of ideas, so deficient in *amour propre*, so weak in moral restraints, is not wicked. He is gentle to his parents, biddable, polite, is not jealous, does not illtreat the servants, and does not despise advice. He has never been drunk, and is not a gambler. His affective qualities do not, however, prevent him from disobeying the most kindly counsels, from forsaking his

family, and from grieving his friends by his misconduct. He is docile when reproved, but, like a tame and unintelligent animal, he forgets the lesson as soon as the trainer has gone away. He really lives under the rule of a wife whom he does not love. Twice he has run away from her, and, nevertheless, he has not revisited any of his relatives. The money that remains is paid out to him in small sums by a salaried agent. Frederick now vegetates in the shade, after having vegetated, but not lived, in spite of the dazzle of his wealth, for the previous twenty-six years of his obscure, insignificant, and useless existence.

Simple Imbecility.—C. A., aged twenty-seven, big, healthy-looking, with regular features, is a vivacious and cheerful chatterer, slow in perception, but quick in response. He has learned to read capital letters, can do simple addition, but has never followed any trade. He is a peasant, but believes himself to be rich, and despises the plebeian mob. He has no sexual tendencies, and is not an onanist, though his genital organs are normal. He thinks that he is beloved by all the women (who make fun of him), but boasts that he repels them with measures the reverse of gallant. He often strikes the boys and women who tease him with their obscene jokes. He abstains from attending church, because he insists that the priests to whom he had confessed did not take him seriously. This does not, however, diminish the exalted idea that he has of himself. Without any reason, he sometimes becomes agitated, angry, and inclined to strike. As a rule he is docile and harmless, but at any rate he is always *euphoric*, alert, energetic, and free from care. He does not concern himself about his relatives, but welcomes them with delight if they bring him any present.

Imbecility with Partial Talent and Episodes of Melancholia.—P. P., aged forty-seven, the son of a distinguished architect, has a brother who is unstable, dissipated, and in a state of permanent hypomania. The arrest of mental development in P. P. was noticed from his earliest childhood, but his physical appearance was always florid and healthy. He learned with great difficulty to read and to write, yet if he is given any date, even one of some years ago, he can tell at once on what day of the week it fell. His pronunciation is infantile.

This patient, who, as a rule, is inert and without ideas, suffers from long *depressive crises*, during which he exhibits delusional ideas—as, for example, that his mouth is rotten, or broken, or closed up—and he may even reach a state of *sitophobia*. He also suffers from short attacks of excitement associated with *coprolalia* and *agitation*.

Intellectual and Moral Imbecility with Attacks of Mania and Violence.—S. M., aged thirty, has cranial and facial asymmetry. The left ear is a full centimetre behind the right, otherwise he is healthy and robust. He has completed his term of military service, and is married, but has no children. Nevertheless, he is an imbecile. His mother suffers from *chronic dementia*, and has been admitted three times into the asylum; his maternal grandmother was a certified lunatic; his father was a miserly and brutal man.

The patient was three times in the asylum on account of fugitive and semi-lucid attacks of mania. The last of these attacks betrayed him into a terrible quarrel with his own father, who was killed by a blow from an axe. S. M. wandered for some hours over the country; when put in prison was noisy, very talkative, and excited for several days, and showed no sign of depression or repentance.

The intelligence of this man, who in the country was regarded as normal, is so poor that he cannot do a simple sum in arithmetic. He

does not perceive his own inferiority, and, the maniacal attack having passed, instead of excusing his crime as the result of a momentary mental disturbance, he accused his father of harshness, and congratulated himself on having punished him.

He is vain, and regards the blemish of his imbecility as a joke.

During the actual period of his detention in the asylum there was a fourth maniacal attack, which occurred without any known cause, and lasted not more than three days. The patient's face was flushed, he was talkative and swore, was sleepless and overbearing, and threatened to kill the attendants. At the end of the attack he became quiet again. The maniacal symptoms have disappeared, but the imbecile remains with his lack of sense, his carelessness, and his vanity.

Intellectual and Moral Imbecility associated with Paranoiacal Constitution.—Callisto Grandi of Incisa is forty-five years old, is small but

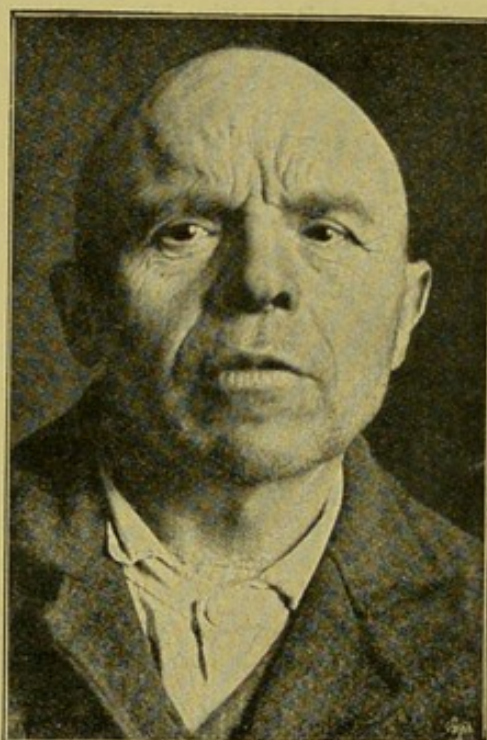
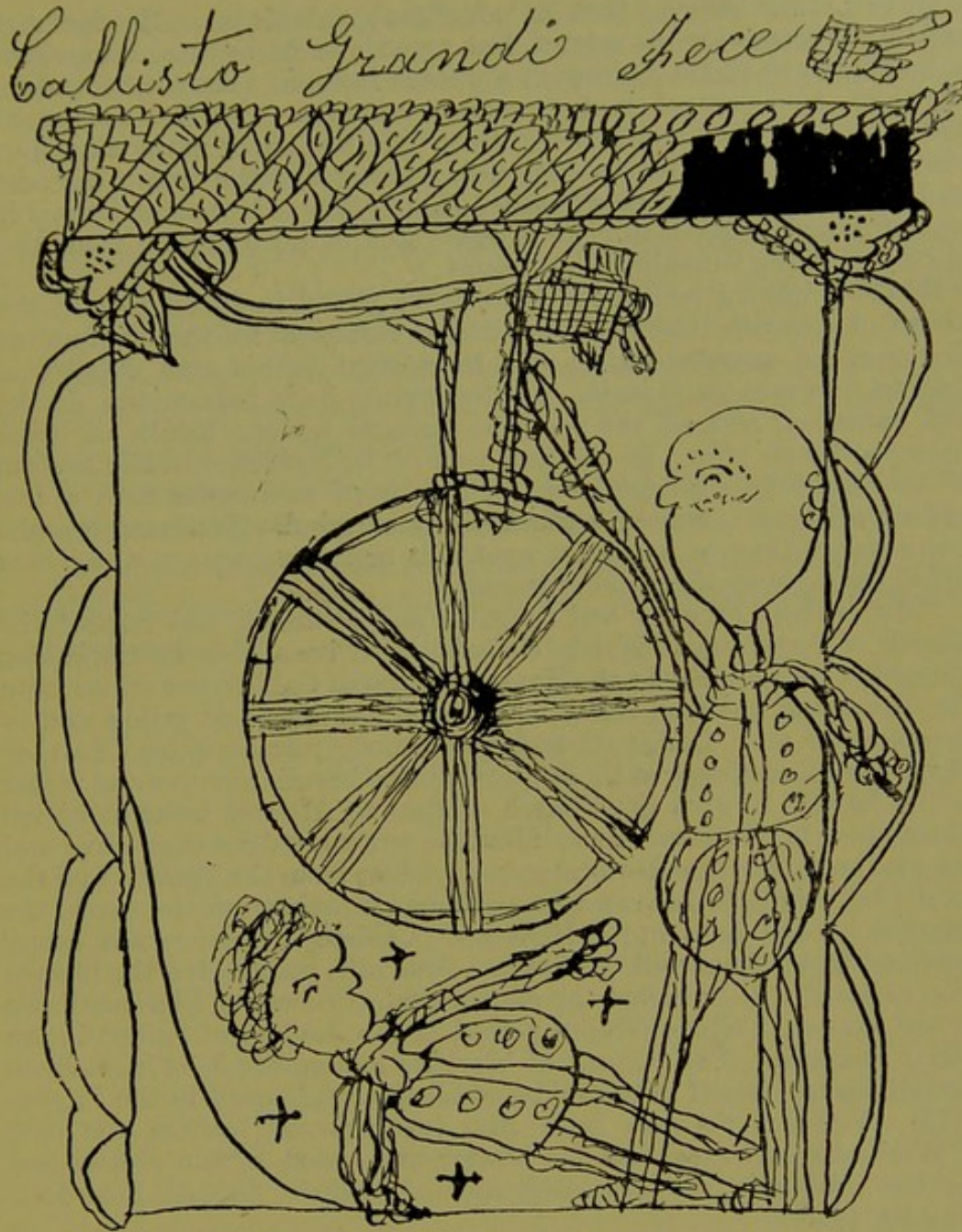


FIG. 131.—CALLISTO GRANDI, WHO MURDERED FOUR CHILDREN BECAUSE OF OFFENDED PRIDE: IMBECILITY, PARANOIACAL MEGALOMANIA, MORAL ANÆSTHESIA, HYPOCRISY, CONGENITAL ALOPECIA.

healthy, and presents various anomalies—*hexadactylia* of the right foot and complete *congenital alopecia* of the head, so that there is no hair on his scalp, or chin, or eyebrows (Fig. 131). His appearance might suggest a long-standing form of congenital myxœdema, but his pulse is normal, even rapid, and often reaches eighty-nine beats per minute. Callisto is a case of *geroderma*, to employ the appropriate expression of Rummo. Mocked and jeered at by boys and loafers, he avenged himself by killing in succession four children. He cunningly enticed them after him into a subterranean passage, where he crushed them under a cart-wheel, and buried them, afterwards laying their clothing at the side of a stream, so as to make it appear that they had been drowned. He underwent twenty years' hard labour. He is rather obstinate and sullen, but is analgesic.

He was a capable workman, but was unable to distinguish good



*Le Tombe dei
Bambini degli
Incisa*

FIG. 132.—AUTO-APOLOGETIC DRAWING BY CALLISTO GRANDI, IMBECILE, PARANOLIAC, AMORAL, MURDERER OF FOUR CHILDREN.

The picture represents the commission of the murder by means of a wheel suspended by a rope. The four crosses symbolize the four deaths. Callisto is faithfully figured without hair. Above is written *Callisto Grandi fece*, with a hand pointing. Below there is the title of the picture which shows the absence of any repentance or shame. Incisa (Valdarno) is the name of the district that was the scene of the murders.

from evil. He believes that he possesses great genius. He does not feel any remorse for his crimes, but regards them as acts of heroism, and delights in them, smiling in a puerile fashion. He is sententious, unctuous, hypocritical, and extremely religious. He has no sexual instincts, and is ashamed of the fact. He has made many sketches, which he believes to be masterpieces, representing the prison, his acts of homicide, and his glorification (Fig. 132). He has written his memoirs, and believes that he is celebrated, admired by all men, and worthy of being worshipped as a saint.

In 1896, having completed his twenty years' imprisonment in the island of Capraia, Callisto Grandi was removed to the asylum at Florence. A popular rising was threatened in his own country if Callisto was sent back to it. In the asylum he is industrious, docile, and harmless, and all the more so because no one thinks of being disrespectful to him. In the first year of his residence in the asylum of San Salvi he suffered from an attack of pneumonia with a few hallucinations (?), but with fair lucidity of mind. Believing that he was about to die, he solemnly wrote his moral testament, which was full of errors in spelling and grammar.

"My citizens be good and religious and obedient, and respect the Church of Rome and all faithful christians and live all faithful Christians who enjoy the paradise in the Heavens. Grandi Callisto has arisen from the Tomb and has seen many stars green and blue and yellow and of the colour of fire. Callisto Grandi performed a miracle in his Chamber where was his confessor at the feet of Callisto Grandi. Evviva and praise to the Lord. Evviva the Church of Rome. He was brought before Alexander his Confessor, Grandi Callisto was more dead than alive and my good superiors (the doctors) have saved me from the Tomb. And the good God reigns in heaven who pardons all actions on the earth, the smallest blessed ones in the Heavens. Callisto Grandi endures many evils and bears them with patience. And with resignation the blessed who suffer ill will be called the men of God. Citizens of Florence listen to my words. Callisto Grandi placed in the Asylum of Salsarvi (San Salvi) Florence. The Prisons of Florence September 3, 1875, Callisto Grandi found himself in the midst of all the condemned in the Prisons 1875. Volterra Capraia Isola (the two prisons) learned the (art) of Workman and mechanic his Master was called Emilio Fallaci and his two Milanese masters mechanics of Callisto Grandi Fioredino. May 10, 1896."

The above writing indicates a marked tendency to *religious delusion*. Callisto Grandi by no means lacks the prophetic emphasis and attitude, a certain biblical intonation, a most exalted idea of himself, and some tendency to mystification. The visual hallucinations, the resurrection from the tomb, and the miracle that he claims to have performed, have their explanation in his vanity of character. His poverty of imagination, however, prevents him from profiting by it, from indicating details, providing proofs, and from regulating his conduct on the lines of the sanctity of which he has made display on many other occasions, and tacitly also on this. Nevertheless, an apology for himself is the predominant, not to say the only idea that can be ascribed to the miserable production given above, which displays an extraordinary petulance that is only equalled by the literary and intellectual impotence of it all. It is to be noted that Callisto begins every line in his writings with capital letters, deceiving himself with the idea that he has composed verses. The rhythm of poetry has a special attrac-

tion for imbeciles, but they do not succeed in reproducing it with their own words, and the spontaneous prose productions of Callisto remain arhythmical in spite of the almost complete disregard of sense.

Mental deficiency arising from spontaneous arrest of development is the extreme example of degeneration, and the rudiments of constitutional immorality and of paranoia that are associated with it only serve to confirm its degenerative nature. But here the matter stops, and we must not attribute to degeneration of the family the interminable series of lesions that belong to neuropathology, which have their cause in a pathological process, and which form the characteristic features of the infantile cerebropathies with or without idiocy.

The *instruction* of imbeciles may reach a fairly high degree, but their *education* gives only unsatisfactory results. Legal interdict is a provision that should never be omitted in these cases ; it is not right that an imbecile should possess the power of squandering a patrimony.

CHAPTER XXVI

ASYLUMS

A HUNDRED years ago the asylum, though a new institution and evidence of a certain degree of progress, had no higher function than that of a public dumping-ground. Society abandoned to it, without harshness, but also without compunction or hope, all those unfortunate beings who, on account of their unlikeness to others, disturbed the public peace. There began to be recognized in insanity something different from perversity, and the insane were spared the *via crucis* of the court of justice and the prison, though it is true that the first asylums arose as prison annexes. The Berlin Asylum was only the top story of the prison edifice. Awakening of the social conscience was indeed manifested, but only in an incomplete manner. It was hindered by the persistent fanaticism of evangelical pastors and catholic priests, and repressed by the ignorance of the laity, firm in their belief that insanity was a sort of monstrosity which could not be controlled except by more or less moral means.

The actual management of the insane was the monopoly of monks and friars, to whom the doctrine of *original sin* rendered impossible the existence of a material disease capable of affecting the intangible soul, and to whom a rule of tolerance appeared absurd. Tolerance presupposes the natural necessity of psychopathic phenomena, and the genuine resemblance of the insane person to an innocent sufferer from disease. A priest steeped in theological learning can never be brought to understand that an insane person is absolutely free from blame in the expression of his ideas and in his actions, so long as it is believed that there are millions of human beings who have scarcely been born before they become responsible for the evil deed committed in paradise by their unknown ancestors. There were two intelligent and courageous alienists in Tuscany, Carlo Livi and Francesco Bini, who gave up the directorship of an asylum and their lecture-ships rather than share the management with nuns.

The serious results of religious credulity, handed onwards from

Jewish tradition to Christianity, received a scientific, and, worse still, a practical sanction. In the first thirty years of the nineteenth century Germany possessed only one book on psychiatry, and in it Heinroth consigned the insane to the wrath of God as conscious rebels who had parted with their souls to the devil. In various asylums in Europe the use of corporal punishment was introduced, or, still more frequently, a no less atrocious sort of psychotherapy in the form of humiliations, surprises, and frights. Patients suffering from the exalted delusions of progressive paralysis were compelled to remain on their knees, a target for the jokes and insults of other patients, till they renounced their delusions; the penitent and wretched melancholic wakened to find himself under a canopy of showy rags with a crown of cardboard on his head; the excited and impetuous saw themselves surrounded by attendants clothed like furies, wearing savage masks, and uttering satanic noises. Patients were subjected to interminable, automatic, and oppressive labour of no utility, such as that of turning a wheel, which is the undisputed speciality of blind horses and broken-down donkeys. In the asylum of Florence there is still preserved, as a relic of a past but not distant epoch, a sort of revolving sentry-box. The patient, having been suitably fastened, was spun round in the sentry-box on his own vertical axis, and as he was spun round he was supposed to become calmed, even until he lost consciousness. The instrument was called *il frullone* (the bolter).

Cold shower-baths, suddenly applied with the object of intimidating violent patients, who need anything rather than additional excitement, were the last remnant of those murderous methods with which harsh and unintelligent doctors, ignorant of the nature of mental diseases, imagined they could correct them in the same manner as, with more or less success, laziness, timidity, fancies, and dislikes are capable of being corrected.

Apart, however, from religious prejudices, which are often nullified in practice by the instinctive revolt of common sense, there were clinical preconceptions. The mentally afflicted were not well treated even by medical men, who, apart from anomalies, deformities, and pathological curiosities, intuitively perceived, but did not identify disease. This need not surprise us. In the same way we to-day look upon and treat the congenitally immoral and also sexual inverts. Society may pity them, but it need not put itself about too much for them, and when it has provided for the former and pardoned the latter, and shunned both, it must be acknowledged that there is nothing more for it to do. As regards the alienist, he has performed his function when he has made clear the diagnosis.

This point of view, which, a century ago, applied vaguely to all the insane, has been abandoned at the present day for the majority of them. It is now known that sufferers from mental disease can recover; that good asylums promote, not only the tranquillity of society, but also the individual restoration to health of many patients; and that, whilst from the prison arose the asylum, it is not befitting to cease progress, but to labour on, in order that from the asylum there may gradually be developed the hospital. Amentia, melancholia, mania, pellagra, alcoholism, and morphinism are diseases which, save in exceptional cases, disappear after a short period; infantile cerebropathies, epilepsy, hysteria, and neurasthenia may be controlled, either by lessening the acuteness of their symptoms, or diminishing the number of attacks, until the disorder either moderates or is reduced to a latent state; progressive paralysis and the cerebropathies of adults can be treated, though they are not curable; only the anomalies (imbecility, paranoia, moral insanity, sexual perversion) resist all methods of medical treatment, but they sometimes necessitate measures for the protection of society which—at the present day, at any rate—can hardly be carried out except in asylums. There is, moreover, no mental disease which is not benefited by a change of surroundings, isolation, and freedom from domestic worries, and for the poor patient there is no refuge better adapted than an asylum for the attainment of these objects.

The asylum, even if only intended as a refuge, requires to be so organized as to eliminate all possible dangers. The patient should not, however, be exasperated by excessive preventive measures. Mechanical restraint often actually causes a recrudescence of those very dangers it was intended to prevent, because it renders patients desperate, and drives them to attempts at escape, to acts of violence, and to suicide, in spite of high walls, massive doors, peepholes, padded rooms, and all the other instruments of torture which cost so much money. In the asylum at Turin, for the last twenty years, iron cages, like mosquito-curtains, have been fixed upon the beds for epileptic patients, in order to prevent them from falling out; the possibility of escape has also been provided for, as each cage is closed on all sides and has a roof. In the asylums of Siena, Palermo, and Turin there is a constructive device that seems to have been inspired by the same Muse. The single rooms of the excited patients are arranged in a semicircle, and their doors open so that the attendant, standing like a fakir in the middle, can see into them and observe what the patients are doing without turning. If, however, he moves from his strategic position, he cannot observe them any longer. With the interest of the capital expended on

this architectural arrangement it would be possible to pay a good wage to another attendant. In 1893 there were still to be seen at Cagliari lunatics chained to their beds, and it was only with the greatest difficulty that the superintendent of the asylum finally succeeded in abolishing the chains. In other instances, when a new division is under construction, the director is allowed to select the colour of the paint for the walls in each room, as the practical philosophy of the public authorities attaches thereto great importance in the treatment of mental diseases.

In modern asylums gaol-like methods of restraint and paranoid expedients have been abandoned. The *open door* prevails at Mendrisio, Alt-Scherbitz, and Gheel. The use of mechanical restraint is limited to a few unconscious cases, which, if they could, would constantly mutilate themselves, and it does not always save them from suicide by biting the tongue (a rare but possible occurrence). Prolonged warm baths, continual, wise, silent, and kindly supervision by numerous attendants who are trained in patience and well paid, and varied and carefully planned arrangement of rooms suitably constructed and furnished, are the factors that serve for the attainment of this first object—that is to say, quietness. In Germany the use of baths is continued even through the night (*Dauerbäder*), and the patients pass their sleepless and restless hours under the calming influence of water heated to 34° C., in a large room under supervision, free from belts and jackets, each in his own bath, in groups of eight or ten. Quietness follows upon comfort and induces order.

Further Development of Asylums.

Quietness is an indispensable condition, not only for order, but also for the diagnosis of the mental disease, and for a rational method of treatment. Of the asylum it is the last word, but of the hospital the first syllable. What can be clearly understood or properly arranged in the midst of a crowd of patients who are groaning, imploring, threatening, using abusive language, singing, and each seeking to overcome the other by limb or by voice in their struggle for food or attempt to reach the doctor, the arbiter of their fate? Who can succeed in distinguishing a very acute case of amentia—perhaps in need of gastric lavage, or of a prompt laxative, a bath, hypodermic medication, or a disinfectant, in order to save his life—from a more or less periodic mania which runs its course with no danger to life, and requires treatment of quite a different nature? Who can perceive if, among one hundred patients crowded together, there is one who has been suffering for twenty-four hours from sitophobia, who is already exhausted by previous illness, and who will require forced feeding

if he is not to die from hunger ? Who will be able to prevent the martyrdom of a sleepless melancholic who has been placed in a dormitory with forty or fifty other patients, if, by some error, even one noisy man has been placed among them ? To what kind of desperate conclusions will not a lucid paranoiac abandon himself when he sees his surmises of persecution being realized in a veritable prison, aggravated by association with insane persons of every sort, among whom some are dirty and others excited ? And what kind of school will it be for the imbecile, so facile and open to suggestion and prone to imitation, to be placed among patients suffering from dementia præcox, mania, and hysteria, the victims of the most strange disorders of conduct ?

In order that the asylum may really deserve the name of hospital, it is not sufficient merely to separate the quiet patients from the restless, the clean from the dirty, the lucid from the confused, the able-bodied from the weak, and adults from children ; nor does it suffice further to subdivide the patients by placing the sensible, or the more dangerous, or those who are specially weak, in small groups, and even two by two, or in single rooms, at least during the night. This improvement, which is of the greatest value, has already been adopted in several asylums, both abroad and in Italy ; but an asylum will never be equivalent to a hospital until the number of medical officers is increased till it reaches at least the proportion of one to every hundred patients. At the present day, save in the case of very small asylums, which, with 100 or 200 patients, cannot avoid the employment of a doctor with his assistant, this proportion is still only an ideal. Even in Germany one asylum doctor has charge of, not uncommonly, 150 to 200 patients, and sometimes even more.

Ought this state of affairs to be tolerated ? Let us waive the intellectual degradation to which the doctor is condemned who has to devote himself purely to the business of supervision and discipline, and also the difficulty there is in enrolling cultured and intelligent men for so material an employment, and let us analyse what will happen in even the most hygienic and best-organized and governed of asylums, with 800 patients assiduously supervised by not more than four medical men. Assuming that the responsibilities of these four doctors are of equal extent, and that the attendance upon the patients can be apportioned in such a way that each has to undertake the treatment of not more than 200, each will devote to his patients, say, three hours in the morning and three in the afternoon—that is, altogether, six hours in the day, or 360 minutes, and the task will be a super-human one. Woe betide the doctor if he should spend more

time in his rounds : his nervous equilibrium, his prestige among the patients, and his mental clearness would be seriously affected. Now, 360 minutes in the day, considering the distances he has to travel, and the time he must give to the inspection of rooms, food, medicines, etc., only leave the doctor one minute and a half for each patient. In this brief time he has to observe, question, listen to replies, make a mental summary of what has come under his notice, and give, if necessary, appropriate orders. How can he discover, when dealing with a patient who does not speak, or who perverts the truth, or is ignorant of it, the existence of fever, anuria, a cardiac murmur, a localized œdema, a thoracic dulness, or other serious signs which proclaim, like a cannon-shot, the onset of an intercurrent disease from which the patient may die ? Thus it comes about that meningitis, nephritis, heart disease, caries of bone, pneumonia, etc., which the doctor had never suspected during life, are discovered upon the post-mortem table in asylums. If such gross conditions escape detection, it is easy to imagine the other mistakes that may occur.

The errors of observation into which asylum doctors have been led through being compelled to confine themselves to hurried inspections in large and crowded wards without the assistance of trained attendants have had the honour of being made the subject of monographs, mentioned in textbooks, and brought before scientific meetings. In this way have arisen such legends as that the dystrophic hæmatoma is peculiar to the insane, that there is an absence of fever in their intercurrent diseases, that bed-sores are unavoidable in the great majority of patients who are kept in bed, etc.

Inadequacy of sanitary service, neglect of hygiene, wretched dietary, and mingling of chronic patients with acute, and perhaps with the sane, reach incredible proportions in those asylums in which pauper patients are placed under the control of private contractors, who seek to derive from them as much profit as is possible. In Belgium 71 per cent. of the pauper patients are received into private asylums managed for gain. To these there could be no objection if they admitted voluntary patients and also certified lunatics at the expense and with the concurrence of their friends, for in this case the patients themselves, or their relatives, would see that the contract was carried out and its conditions respected. Such supervision is, however, impossible in the case of pauper lunatics who have been committed to the asylum by the warrant of a judicial or political authority, and who have no means of choosing for themselves a more reputable asylum. The contracts for the Belgian insane are taken chiefly by monks, who pay to a single doctor (on an average) sixteen

centimes per head per day. And there is wisdom in this, from their point of view, for a doctor who has charge of 1,000 patients earns the respectable sum of 160 lire per day, and he has neither time nor means, nor is it in his interests, to treat or to discharge his patients, for a smaller number of inmates in the asylum would mean to him, as also to the brotherhood, a shrinkage of income.

Obstacles to the Regular Hospital Treatment of Mental Diseases.

Legal Restrictions.—The direct participation of the district authorities in the maintenance of asylums is imagined by the ruling classes to be an automatic check which tends to retard the flow of patients into the asylums without appearing to do so, but it is not the only check. Where this expedient has not been adopted, there have been applied others, not by any means original, but very appropriate to their purpose, which is that of lightening the cost of patients by diminishing their number. Unfortunately, the diminution, however it may be defended, always falls upon the acute cases of insanity, which would benefit most by being placed in an asylum, and on the subacute cases, which are exactly the most difficult to treat outside an asylum. In England, the country of local government, the admission of patients into public asylums is surrounded by judicial safeguards intended to insure personal liberty and to render arbitrary confinement impossible, but their only effect is to deprive acute cases of the means of being studied and treated, for ordinary hospitals and infirmaries will not admit them because of their turbulence, and they cannot enter an asylum until they have their medical certificate of insanity. Thus there are refused admission to the asylum those patients who, though the most costly and the most troublesome, have the best claim to public care, and who, moreover, would make a comparatively short stay in the asylum.

The asylum still remains what it was, a refuge, instead of becoming a hospital. Asylum doctors become mentally blunted by contact with chronic patients and the work of administration. The study of psychiatry is limited to the strictest necessities, and separated from the fountains of knowledge, from which it ought to draw in order to progress. With the exception of the Laboratory of the Scottish Asylums, which was founded some years ago in Edinburgh, it may be said that Great Britain has been mute, and that psychiatry is cultivated there as a philanthropic institution, and not as a science. (There are now also special laboratories for the investigation of the pathology of insanity at Claybury, Manchester, and Lancaster.)

The fact is that the legal restrictions, which are intended to prevent unlikely abuses, often serve to hinder or delay, not without very serious results, the isolation of pauper lunatics, who could never be provided in their own homes with the means necessary for their successful treatment. Arbitrary removal of a person to an asylum cannot take place without the perilous and improbable complicity of doctors, who are public officials, and who would expiate their crime with ruinous penalties, if they were scoundrels enough to commit it. Kraepelin does not mention a single case of this kind as occurring in Germany, and I have not known of any in Italy.

The morbid imagination of legislators, who cannot think of the world except as an immense dock full of accused persons, thrives, indeed, upon these distant possibilities, and prompts the creation of safeguards which are both useless and obstructive. In Italy the law of Giolitti requires (and rightly so) that there should be in every asylum an observation ward for newly admitted cases, but the zealous busy-bodies in the public administrations have commanded that these patients, who are not yet officially entitled insane, are to be rigorously separated from other patients, so that they may not be contaminated by even the sight of them. And for what reason? Is it because the persons who have been sent to the asylum by the public authorities and outside doctors are not insane? Or because the asylum doctors may retain them unjustifiably when they are, or seem to be, quite sane? Or because the new cases become insane only on the day on which arrives the decree that officially commits them to the asylum (this, further, being procured by the doctor of the asylum)? Or because, by avoiding contact with inmates of longer standing, the new cases are not in the observation-ward made to associate with those admitted at the same time—that is to say, with patients of all sorts, and no less impressive than those in other parts of the institution? In Florence, since the observation department was opened, I have never seen, among some thousands of cases admitted, even one who had been wrongfully placed under treatment. Before the opening of this department there had been one case in which the outside doctor had been deceived by a man who sent to him a letter written by his own sister, which contained threats of suicide. The letter had, however, been written eight years before, during an attack of melancholia, from which the patient recovered, and the date had been altered. The brother thus succeeded in making the case appear to be one of relapse, in spite of the patient's protests; but the deceit was discovered on the very threshold of the asylum, the supposed patient was reassured and returned to her home with

as little delay as possible, and the brother was arrested, tried, and convicted.

False Interpretation of Statistics.—A more ingenious means of preventing overcrowding of asylums—in other words, of effecting economies on behalf of the public purse—but which requires the concurrence of alienists, consists in fostering the preconception as to the terrible and incalculable increase of insanity there is likely to be as the result of civilization. In order to strengthen the effect, appeal is made to the bogey of degeneration, which has a scientific shape and is always fashionable. The idea is very simple. If insanity is increasing; if we can neither arrest nor foresee the amount of its increase; if, indeed, causes exist which render it progressive, it is necessary to discover substitutes for the asylum, and to obstruct the hospitalization of asylums, because it is evident that asylums cannot go on multiplying indefinitely, and it would be disastrous, apart from the question of cost, if such numbers of people were to be deprived of their personal liberty. It may seem impossible, but all alienists take this bait, forgetting that it has been made by their own hands. One might as well say that their patients, the alcoholics, the pellagrous, the cerebropathics, the melancholics, the maniacs, the paralytics, the aments, the paranoiacs, the congenitally immoral, imbeciles, epileptics, the hysterical, and the neurasthenics of the present time, are so many thinkers who have become insane through indefatigable study of social and scientific problems: another catastrophic theory in the etiology of mental diseases! Nevertheless, there is not a mental disease, and perhaps not a single lunatic, that can seriously be ascribed to such a cause (*vide* Chapter II.). The causes of mental disease are simple and prominent—namely, intoxications, infections, acquired and hereditary dyscrasias, physical traumatisms, and the diseases of early childhood—all of which it is the tendency of civilization to counteract and to diminish, not to favour. It is not owing to excess of civilization that the black races become drunken, or that the Chinese poison themselves with opium. Civilization does not spread syphilis, but pursues and isolates it; civilization, which is the mother of hygiene, is not responsible for epidemics and sporadic infections, violent crises of poverty, disregard of infant life, and the other morbid causes which produce such carnage in those countries that are comparatively in a savage state. Civilization increases the delicacy of medical diagnosis, and sharpens the sensibility of society as a whole, stimulating it to purge itself of psychopathic elements, but it does not foster insanity. It is indeed easy to understand that exactly the contrary must be the case.

Progressive paralysis is not on the increase, though sufferers from the disease now survive for a comparatively long period. Cases of amentia recover with a rapidity of which earlier psychiatry had no conception. The larger proportion of defectives is not composed of imbeciles who owe their state to their heredity, but of cerebropathics who have suffered in infancy from accidental maladies to a large extent avoidable. Mental diseases afflict by preference the poor, who represent a comparatively early stage of civilization, instead of the prosperous classes, who enjoy to the full the advantages of modern civilization, and indicate what in the future will be the conditions of life for all classes of society. Pellagra is not a product of education, of agricultural progress, of international commerce, or of legislation, but it will be possible to overcome it exactly by these measures, even if there should never be any increase in the prosperity of the classes who at present subsist upon damaged maize. Epilepsy is not a mysterious and proteiform manifestation of a neuropathic heredity, but is a disease caused by acquired lesions, which modern medicine is elucidating and endeavouring to combat. Alcoholism is the result of a voluntary vicious habit, which is specially prone to be formed by those who have no occupation, by the ignorant, the poor, and those who are driven to disagreeable and difficult occupations, which, however, are tending to disappear or to become less irksome.

An intelligent and cultured man who is not obliged to struggle against poverty may regard his own mental future with tranquillity. If he has already weathered the danger of dementia præcox, which arises from material causes independent of civilization; if he avoids that of syphilis, or renders it innocuous by preventive and curative measures, and protects himself against the arterio-sclerosis of old age, then, excluding the hereditary psychoses, for which, in any case, he would not have civilization to blame, he may rest assured that he will not become insane, or, at least, that he will not become so either through his own fault or through that of the epoch in which he lives. Literary, scientific, professional, and political activity, the more it is intellectual, the less does it predispose to disorders of the intelligence; and since civilization ever tends to render more intellectual even the most humble of employments, it will not give rise to new factors in the production of insanity, or be the complex cause of its increase. Insanity will decrease and asylums will become less crowded when they have reached the highest level of hospitalization. The tendency is to keep them free from anomalous cases, and to send all curable cases to them, and so to transform them into hospitals. But by the time that the insane have decreased

in number because we have learned how to prevent their diseases or to combat them effectively, asylums, although continuing to admit cases, will cease to overflow owing to the continual increase of admissions, and the public authorities will be able to devote to other objects part of the money they expend with such reluctance and bad grace upon the maintenance of insane patients.

This reluctance is not justified in Italy, where the proportion of asylum patients to the sane population is scarcely more than 1 per 1,000, and only in the more prosperous regions of the north and centre does it reach, or exceed, 2 per 1,000. Belgium, Switzerland, England, and Germany deplore or rejoice in (according to the point of view) much higher proportions, between 3 and 4 per 1,000. Must we conclude from this that the most cultured nations of Europe are thrice more exposed to the scourge of insanity than Italy is? Certainly not. In the first place, a greater number of asylum inmates does not mean a greater number of lunatics: to a certain extent at least it is only the result of a more highly advanced hospitalization of asylums—that is to say, a natural consequence of a high degree of civilization. Secondly, we may observe that, even in less highly civilized countries, such as Russia, if special circumstances favour the hospitalization of the insane, their number does not become less. Russia, in spite of the way in which whole provinces, many of them populous, are neglected, actually contains 150,000 patients confined on account of mental disease, and 50,000 placed in private dwelling-houses.

The only exciting cause of insanity which is characteristic of Northern Europe, and which shows signs of increasing, thus justifying the contentions of the pessimists, is alcoholism. Civilization has not been able to repress this vice, but is it civilization that has given rise to it? The abuse of alcoholic beverages manifests itself chiefly in the shallows that civilization has not succeeded in reaching, and during the periods of transition, happily short, that are, as it were, its diseases. If, however, civilization tends, as it would seem to do, to increase the wealth of all ranks of society, and at the same time to promote the comforts of life, hygiene, education, amusements, social intercourse, and the sense of responsibility, no one will be inclined to believe that increase of these collective advantages must involve a corresponding increase of alcoholism. Alcoholism has its source in nervous irritability, organic weakness, unsatisfied wants, and faults in the environment. The elevation of human life to more highly evolved forms of society cannot aggravate, but should rather correct, these factors of alcoholism by increasing

the general well-being. It is not credible that social progress, which renders possible the satisfaction of fundamental needs previously only imperfectly satisfied, gives rise to new and more futile, not to say capricious, wants, which are equally overmastering and clamant. Every subjective want is the expression of a previously existing objective necessity: a refined sensibility does not invent the demands of the cœnesthesis in order to give itself the pleasure of satisfying them, but it gives intimation of them with a precision and quickness that are of value to the organism. To enjoy is to live, and he who lives perfectly, intensely, and completely, leaving idle no function of the body or of the mind, makes wise provision for his own health. An intelligent, refined, and civilized man will experience much less pleasure in alcohol than repugnance for alcoholism, because he will be able to realize the pernicious effects of alcoholism from a thousand scientific, æsthetic, and moral considerations that do not influence uncultured beings.

Insidious Substitutes.—When there is resident within asylums a number of patients proportionate to a rate of 3 or 4 per 1,000 of the total population, it is easy to understand that it is desirable, in the interests of the ratepayers, to place a limit upon the number of admissions, and to devise some substitute for the asylum of a less costly nature. It is becoming the custom in nearly all European States to entrust quiet patients to the care of families who live in the country, and who undertake to board them at a moderate rate. Usually the families are those of attendants who reside in the neighbourhood of the asylum, and not far from one another. The patients thus live with persons who understand their needs, who treat them kindly, and who, at the same time, are subject to a continuous, effective, and easily exercised supervision by the medical staff of the asylum. This form of domestic care of the insane, from the nature of the persons who undertake it, the situation of the houses in which it is carried out, and the supervision exercised by the asylum authorities, virtually constitutes an expansion of the asylum itself. The labour of the patients may be utilized by the custodians in the cultivation of their gardens. In the district of Gheel there is, properly speaking, no asylum, but each house gives accommodation to one or two patients, and there is a closed department under the direct supervision of a doctor, who there treats those who are ill, isolates those who are restless, sends back to their custodians those that undergo improvement, and at the same time supervises all the others who enjoy a measure of freedom in the country. In Belgium, where the asylums are an Inferno, the colony of Gheel is a sort of Paradise.

There is, however, the reverse of the medal. The rustic idyll and the illusion of increased liberty often conceal a double compromise—between the public authorities and the public on the one hand, and between the doctors and the public authorities on the other. In the province of Florence it is thought that, if in other countries patients are handed over to entire strangers, *a fortiori* they cannot be refused to families who make a request for them; and in order to encourage such requests, premiums are paid which vary from 5 to 15 lire per month. The provincial authorities thus save the 46 lire which would require to be spent did the patient remain in the asylum. There are about 800 lunatics scattered throughout a vast province, without any supervision and entrusted to miserably poor families, who sometimes employ them in agricultural work, but sometimes also in begging or for even baser objects. It is evident that the patients thus isolated cannot enjoy treatment comparable to that received in an asylum, even if the miserable sum disbursed as payment for their maintenance is entirely expended for that object. It is, however, equally evident that, ninety times out of a hundred, even that small sum goes perforce to benefit the poverty-stricken family, and that the lunatic is only a hostage who insures its continued payment. This system is a degeneration of the home care of the insane, and one of the principal objections to it is its power of almost unlimited extension, involving impossibility of proper supervision.

Though the home care of the insane is tolerable as a method complementary to the asylum in countries where the proportion of insane patients reaches 3 or 4 per 1,000, it is not to be recommended where the proportion is only that of 1 or 2 per 1,000, for in this case it becomes, though certainly an economical, yet a degraded substitute for the asylum. The more robust and more active patients become the non-salaried servants of custodians whom they do not know, and by leaving the asylum, after they have been uselessly separated from their own families, they deprive it of one of its strongest supports. It is the chronic, quiet, diligent patients, habituated to an automatic existence, who constitute the muscular system of an asylum. They are the instruments of order, financial profit, and salutary example to the other patients. It is not right that the asylum as a whole should lose, for the sake of a few peasants, the advantages derived from the presence of these peaceful and contented inmates. When the "Old Guard" of chronic patients is well represented, the general atmosphere of the asylum is healthier, and its credit balance larger, because the work of its inmates provides unlooked-for profits which lessen expenditure.

Practical Arrangement.

Observation Hospitals.—It is necessary that provision should be made in asylums for a more rational selection of patients. Cases of *acute insanity* ought to be able to find a ready and easy admission into suitable hospitals, with which all the chief towns of a province should be provided. These hospitals for cases of acute insanity cannot be placed in the country, and therefore they ought to be completely autonomous if the asylum is isolated and remote. If, however, the asylum is a city or suburban one, it is desirable that the hospital should not be far from it, and even that it should constitute a sort of antechamber of the asylum, forming an *observation hospital*. This observation hospital, in addition to receiving cases of acute insanity, should be the first residence of all other cases, so that no patient can enter the asylum proper unless he has first passed through the observation department. The treatment of the acute psychoses will then be carried out in the same place as the preliminary study of all the psychoses, including the chronic, for in the early stages of mental disease a chronic case has almost the same requirements as an acute one. This twofold function, so important to the health of society, should not be allowed to be restricted by any statutory limitations; it ought to be continued at the discretion of the doctor, according to the requirements of each case, even though the patient is qualified for admission to the asylum.

A patient whose form of insanity is not yet clearly defined, or is of an acute nature, will not suffer any harm from association with a few chronic patients, provided they do not usurp his place in the single room or observation dormitory, or continuous bath, which are indispensable in an institution for the treatment of acute insanity. Nine times out of ten the patients who enter such an observation hospital are just as insane as those who leave it to enter the asylum for chronic patients, for insanity is not determined by the signing of a judicial or magisterial decree.

Institutions of this sort can become centres of culture and professional improvement, because educational requirements coincide exactly with those of an observation department. In Germany, indeed, the clinics for mental diseases are in most instances simply the observation hospitals. They are centres of methodical and continuous scientific production, which elsewhere is dependent upon individual initiative. These clinical institutions are naturally arranged and constructed so as to meet the requirements of all forms of mental disease, and specially of the acute, and as regards the instruction given, it does not make any particular call upon the internal arrangements of the build-

ing. It will suffice if the observation hospital is equipped with all that is necessary for post-mortem examinations, urine analysis, histological investigations, and the instruction of students; such equipment should not be lacking even in the asylums for the chronic insane. In cases in which the observation hospital and the asylum are close to one another, and under the same medical or administrative authority, it is desirable, merely with a view to economy, to concentrate in the former everything that has to do with the scientific side of the work.

In order that the clinics may really be used as hospitals and as a means of relieving the asylum by receiving all the patients who are in need of treatment or observation, as well as those who on admission are suffering from illness dangerous to life, it is necessary that they should contain at least 100 beds in the case of the smaller cities, and from 150 to 200 in the case of the larger. If the clinics or observation hospitals contained all the patients of one class, and the asylums all those of another class, each of the two institutions would acquire the freedom necessary for its perfect development in conformity with its particular object—the former as a hospital with the special features and arrangements required for mental diseases, and the latter as a colony with a very simple and economical organization for agricultural labour.

Asylums of the latter kind could be placed in the open country and far from the urban centres, but in this case it would be more than ever necessary that the capital of the province should possess an observation hospital. For example, Milan, with its 500,000 inhabitants, sends its mental patients 16 kilometres away from the city. It is evident that, sooner or later, it will require to build an observation hospital, either in the city or in its suburbs. Such hospitals, even if they possess the title of University clinics, must be considered, not as simply schools of science, but as institutions for the restoration of health and the practical study of disease. If the provincial capital is the seat of a University, the fact affords a good reason for profiting by an alliance which will unite the economical forces of the State with those of the province in the attainment of common ends. The State, for the sake of its academic interests, requires a well-organized clinic, but it will not have reason to complain if the hospital is large enough to contain all cases of acute insanity, and if the province employs the University staff in work which is of value in the general economy of the asylum. On the other hand, the province, for the sake of this economy, will require to concentrate in the hospital all the acute cases and those that require investigation, but must not complain if the institution

is constructed and administered in accordance with academic rules, which do not differ in any respect from the regulations of well-managed general hospitals. Should, however, the capital of the province not be a University town, there are still good reasons for gathering into one suitable institution all cases of acute insanity and those undergoing observation for the first time, thus giving to it the features of a hospital with scientific aims.

It need not be thought that observation hospitals, which are now compulsory according to law also in Italy, constitute a danger to the finances of the provinces. Although they are necessarily organized like hospitals, and may sometimes be transformed into University clinics, or something equivalent to them, the provinces will find them to be to their advantage, provided that, instead of being unfriendly to them and stinting the number of beds, they learn how to make the best use of them, concentrating in them all the most urgent, uncertain, and expensive work. They will thus be enabled to simplify the organization of their asylums, and perceptibly to diminish their cost.

Separation of the Aged and the Anomalous.—It is a cruel practice to place among the insane persons suffering from *senile dementia*. Such cases should live on a ground-floor, in well-warmed rooms. They should be carefully watched, lest they fall or set themselves on fire, and should be gently restrained if morbid irritability or moral perversion drives them to acts of violence against one another. For the better bestowal of these cases, which are the cause of much trouble and expense in asylums, there is much need to organize special compartments in the poor-houses, roomy and healthy, and better adapted than those of the asylum for their care and treatment. The protection of the aged should not be limited to those who suffer from dementia, which is the sad, but also the most frequent, and one might almost say the most natural, epilogue of senility, especially among the poor. Dirty, amnesic, and paralytic old people in their second childhood represent one-tenth of the inmates that crowd an Italian asylum, although the mortality among them is terrific. To remove them from the asylums and to make them the chief occupants of the poor-houses would be useful both for the well-being of these unfortunates and as a means of rendering asylums less crowded. If there are provinces which do not possess poor-houses, there is good reason to construct them precisely for these senile demented, who have a much greater claim upon public charity than simple mendicants. In course of time, perhaps, senile demented, as well as old persons in general, will be able to dispense with both asylums and poor-houses. It is permissible

to hope that *old-age pensions* will be sufficient to meet their extraordinary and ordinary needs. Such provision is now made in Germany and in England.

Anomalous persons also are out of place in the midst of insane and demented patients. Cases of *congenital immorality*, on account of their lucidity and treacherous character, are a constant peril to simple and helpless patients, who have a right to protection from every danger. There are, indeed, placed in ordinary asylums (in Italy) persons who have committed some so-called crime in a state of unconsciousness, and who therefore are neither criminal nor immoral, whilst lucid immoral persons are detained in criminal asylums. If the criminal asylums bear too great a resemblance to prisons, they may reform in deference to modern standards; but it is no great hardship that the severities of prison life should be experienced by these immoral persons so long as they are also suffered by ordinary offenders, who are superior as individuals, and deserving of more consideration. If cases of congenital immorality are declared to be irresponsible, ought we to reserve the rigors of the law for offenders of honest character who have committed some fault in a moment of oblivion? It would be an odd kind of justice. So long as there continue to be prisons and criminal asylums, no one will have better title to enter them than a congenitally immoral person.

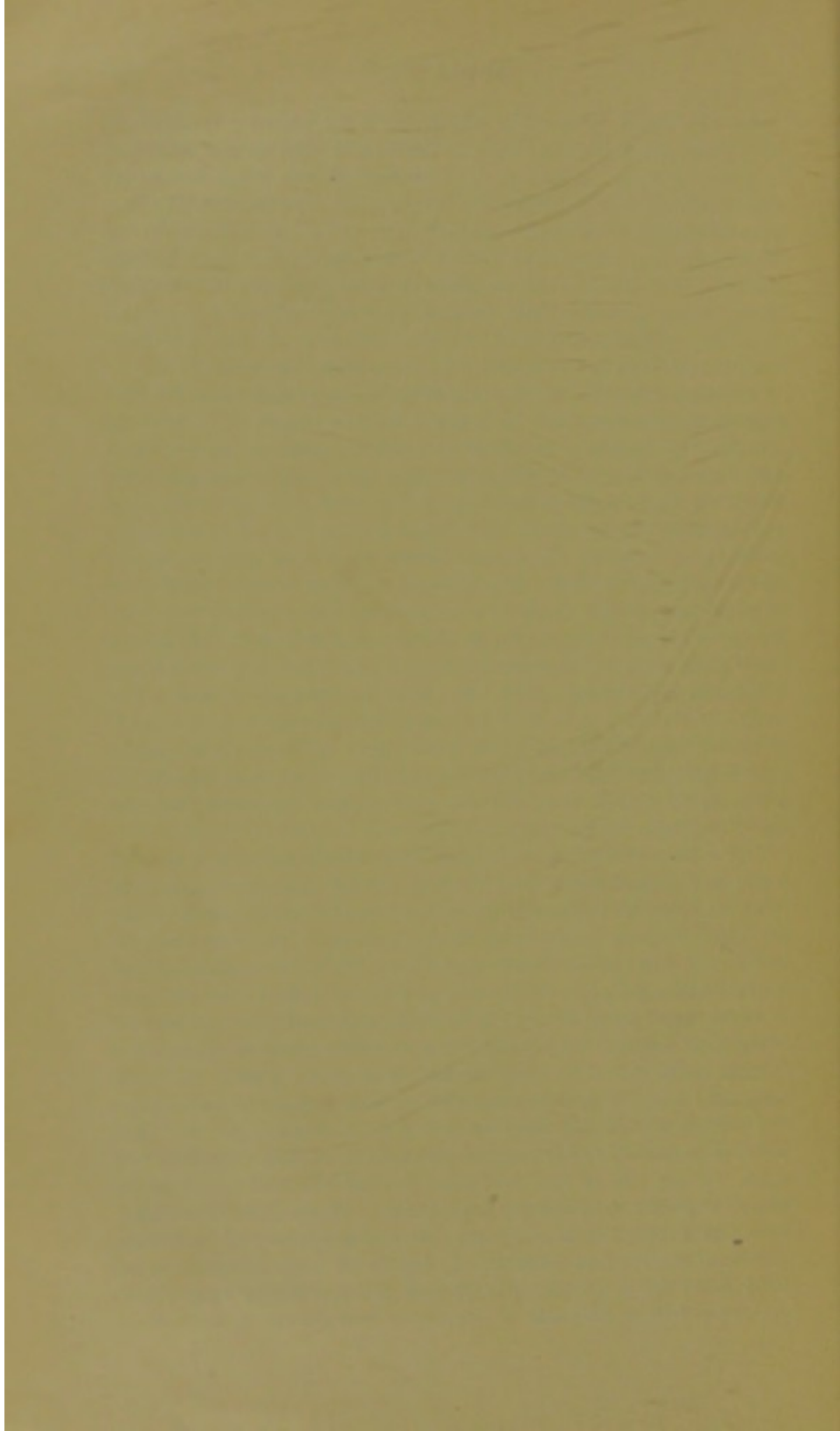
But there are other classes of anomalous persons to whom the surroundings of an asylum are hurtful and humiliating—namely, pure *paranoiacs* and *imbeciles*. For a paranoiac suffering from well-defined delusions of persecution it is sufficient to arrange for his removal to some place far distant from those with whom his delusion is connected. For imbeciles there are now provided schools and colleges in which those who have not already reached adult age receive treatment much more suitable than that which can be given them in the asylums. Along with the imbeciles, or, better still, in children's hospitals, a place ought to be found for cases of cerebropathic idiocy. Although these patients often suffer from complete and profound defects of intelligence, they are neither dangerous nor violent. They require special care rather than supervision, treatment rather than repression. They are not suitable cases for an asylum, but would be suitably provided for, and would cause no disturbance, in a children's hospital for chronic cases.

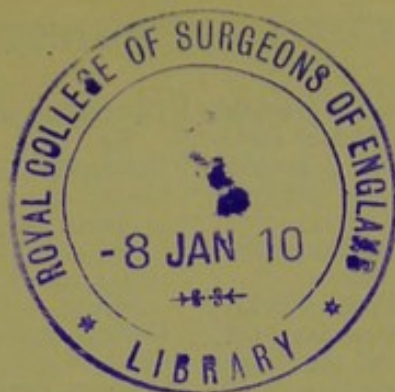
Agricultural Colonies.—Work, and especially work in the open air and in open and healthy surroundings, is of the utmost value for mental patients. It renders them more composed and patient, and better satisfied with themselves. Being a factor in the production of health and quietness, it also becomes a means of

cure. In those asylums in which work for patients is carefully organized the mortality rate is decreased, mechanical restraint is reduced to a minimum, and recoveries are more frequent; the spirits of the patients are brightened, the labour of those who attend to them is ameliorated, and the mission of the State, provinces, and communes, which thus provide not only for the custody, but also for the recovery of their patients, is ennobled. Hence every good asylum possesses an *agricultural colony*, and some city asylums which at one time did not possess one have been transferred to the country in order that they may do so.

A nucleus of chronic quiet patients, accustomed to useful and regular occupation, and enjoying a certain degree of liberty, in addition to carrying on outdoor work, constitutes an excellent and salutary source of companionship for convalescent patients. While the male workers live together in a large home, with open doors and no single rooms, the female may be housed in a similar dwelling of homely character, where they can employ themselves in suitable work. Each house requires a very small staff of attendants, who share in the work of the patients. It also serves as a place of probation, and perhaps also of discharge, for those patients who, whether workers or not, have not yet entirely recovered their tranquillity. In these agricultural colonies the policy of the *open door* may be freely and unreservedly adopted. If under such a regime there does occur an occasional escape that might not otherwise have taken place, it does not constitute a danger or a fault, but will serve to impress upon the patients and the public the liberal spirit of the institution.

The colony of workers, both male and female, imparts a tone of simplicity, peacefulness, and economy, which does not exist only in appearance, to the whole of the asylum. When the acute cases are concentrated in an observation hospital, it is those outdoor workers in the colony who come to form the most numerous and characteristic group in the asylum properly so called. In addition to the houses occupied by the workers, there should also be two *infirmaries* (one for each sex), with suitable accommodation for chronic patients, who may suffer from intercurrent diseases, especially those of febrile character, or who require to be kept in bed, or are allowed up only for a few hours each day. Another pavilion is necessary for restless patients of each sex, with a few single rooms. It is not necessary for all the epileptics to be placed together in a special department. They differ too much from one another in their lucidity, in the frequency of their fits, and their liability to excitement, for those least affected to be condemned to a perpetual and not always happy association with their fellow-sufferers.





INDEX OF SUBJECTS

A

- Abscess, cerebral, 38, 80, 494
 Absinthe: convulsive action, 318
 Abstinence: in alcoholics, 326, 331;
 from morphia, 334, 336; sexual, 671
 Abulia, 222, 511
 Acrophobia, 150
 Aerophagia, 579
 Affectivity: affective ataxia, 584; af-
 fective vacuity, 206; in old age, 211,
 477, 478; in the affective psychoses,
 497-539; in epilepsy, 606; in dementia
 præcox, 640; in the genesis of ob-
 sessive ideas, 152; in the genesis of
 delusional convictions, 209; in im-
 beciles, 752, 763; in the immoral, 695-
 697; pathological variations of, 208-
 214
 Age as a predisposing cause of psy-
 choses, 55
 Agnesia: of the nervous centres, 69, 445,
 451; of the mnemonic impressions,
 179; of ethical sentiments, 698
 Ageusia, 232, 575, 582
 Agoraphobia, 150, 548
 Agrammatism, 189, 410
 Agraphia, 184, 188, 255
Akinesia algera, 576
 Alalia, 251
 Alcoholism, 309; causes, 54, 60, 309-312;
 convulsions, 318; extent and distri-
 bution, 313; drunkenness, 314, 316;
 facies potatorum, 319; symptoms of
 chronic, 316-321; delusions, 320, 321;
 delirium tremens, 323; pathogenesis,
 325; pathological anatomy, 327;
 pseudo-paralysis, 322; social prophyl-
 axis, 332; treatment, 330; and con-
 stitutional immorality, 696
 Alexia, 182
 Algophilia, 232, 508
 Altimetry, electrical, 116, 751
 Altruism, 681
 Amaurosis, 581; amaurotic idiocy, 458
 Amblyopia, 581
 Amentia, 343; causes, 42, 355; acute de-
 lirium, 42, 355; symptoms, 344;
 pathological anatomy, 92, 352; differ-
 ential diagnosis, 347; treatment, 358;
 uræmic, 359
 Amimia, 184, 245, 406
 Amorphinism, 334, 336
 Anusia, 184
 Anæsthesia, 117; in alcoholism, 317; to
 cold, 526; to pain, 348; pharyngeal,
 583, 589; conjunctival, 583
 Analgesia, 289, 348, 412, 526, 693
 Anarthria, 248, 408, 315
 Aneurisms, miliary, 79, 98
 Animism, 6, 714
 Anomalies, degenerative mental, 56, 281,
 669, 680, 709, 747
 Anorexia, 515, 582
 Anosmia, 582
 Anxiety, precordial, 514, 574
 Apathy, 202, 205, 347, 414, 454, 657
 Aphalgesia, 584
 Aphasia: amnesic, 182-185; ideo-nu-
 clear, 182, 188; in deaf-mutes, 251;
 in uræmia, 360; motor, 181, 401,
 467, 487; nuclear, 181; systematic,
 of linguists, 189; word-blindness,
 181, 487; word-deafness, 181, 401,
 487
 Aphonia, 253, 576
 Aphthongia, 249
 Apraxia, 184, 488
 Arithmetical obsession, 150, 154
 Arterio-sclerosis, cerebral, 99, 480, 486,
 561
 Aspergillosis, 292
 Associations: centres in cerebral cortex,
 16-23, 32-36; psychology of, 142;
 principle of correspondence (Spencer),
 111, 144; rapidity of, 146; slowness
 of, 147; evocation, 163; fantastic, 166;
 dance of the mental images, 345;
 systematization in senile involution,
 473; in mania, 522; by verbal sound,
 523; selective affinity for doleful
 images, 504; anomalous, in hysteria,
 564; systematized delusion, 157, 724
 Astasia-abasia, 575
 Astereognosis, 133
 Asylums, 351, 722; organization, 785;
 legal restrictions, 778; insidious sub-
 stitutes, 783; observation hospitals,
 785; criminal, 707, 788; agricultural
 colonies, 788
 Asymmetry, cranio-facial, 58, 102, 462,
 608, 614, 749

Ataxia : in cases of pellagra, 296 ; mental, in amentia, 343 ; of delicate movements in paralytics, 402 ; graphic, 408 ; affective, 584 ; ataxic variety of astasia-abasia, 576
 Athetosis, 464 ; hemi-athetosis, 463 ; double athetosis, 464
 Atrophy : of the nerve cell, 93, 96, 431, 445, 483, 623, 665 ; muscular, 107, 462 ; arterio-sclerotic, of the brain, 480 ; secondary, in nerve centres, 16, 69, 80 ; of optic nerve, 466 ; of nervous elements in senile dementia, 485
 Attention, 143 ; expectant, 147, 526 ; in progressive paralysis, 394 ; in idiots and imbeciles, 454, 756
 Aura : epileptic, 121, 597 ; in Jacksonian epilepsy, 601, 615 ; origin, 614 ; hysterical, 567 ; hypnotic, 243
 Auto-intoxications : in the classification of mental diseases, 281 ; in amentia, 357 ; in uræmia, 359 ; in progressive paralysis, 423 ; in epilepsy, 618 ; from insomnia, 50
 Automatism, 217 ; automatic speech, 33 ; of attitudes and movements, 467 ; in epilepsy, 605 ; in dementia præcox, 633, 634, 640 ; automatic memory of imbeciles, 755
 Autonomasia, 189

B

Babinski's sign, 260
Bacillus paralyticus, 425
 Barbaric methods : in treatment of hysteria, 593 ; in treatment of lunatics, 773
 Barbarism : and insanity, 53, 712
 Basedow's disease, 388-391 ; treatment of, 391 ; and hysteria, 391 ; tremor in, 579 ; in progressive paralysis, 390
 Bed-sores, 107, 413 ; preventive treatment, 443
Benommenheit, 222
Bettbehandlung, 358, 520 ; Weir-Mitchell treatment, 595
 Blindness : psychical, 182 ; partial, 581 ; Régnard's experiment, 581
 Bloodvessels, lesions of, 78, 79, 98, 106 ; in progressive paralysis, 435 ; in infantile cerebropathies, 449, 451 ; in cerebropathies of adults, 486
 Bones, alterations in, 107
 Brachycephaly, 102
 Bradylalia, 249, 408, 467, 609
 Bulimia, 232 ; in pellagra, 295 ; in progressive paralysis, 413 ; in melancholia, 515

C

Cachexia : pellagrous, 300 ; morphinic, 337 ; strumipriva, 365 ; pachydermica, 477
 Calcification of cerebral vessels, 99
 Carcinoma, cerebral, 81

Castration, 593, 702 ; as a religious practice, 713
 Catalepsy, 222
 Causes of mental diseases, 37, 782 ; internal, 54 ; somatic, 38 ; psychical, 2, 42 ; social, 52 ; diathetic, 54 ; degenerative, 56 ; hereditary, 59 ; classification of, 281
 Cephalic index, 103
 Cerebral cortex : development, 16 ; structural differences, 24 ; elementary lesions, 83 ; derangement of strata, 430
 Cerebropathies of adults, 472 ; senile dementia, 473 ; hæmorrhage, embolism, and thrombosis, 486 ; cerebral syphilis, 489 ; cerebral tumours, 493 ; *sclérose en plaque*, 495 ; head traumatism, 495
 Cerebropathies, infantile, 444 ; in nosological classification, 279, 281 ; etiology, 447 ; pathological anatomy, 449 ; symptoms and clinical forms, 453 ; hemiplegic form, 462 ; diplegias, 463 ; complications common to the two forms, 466 ; treatment, 469
 Cerebro-spinal fluid, 75, 420, 440, 483
 Character : in the genesis of obsessive ideas, 153 ; classification of, 198 ; at various ages, 199 ; metamorphosis of, 208 ; Ribot's classification of, 208 ; in the genesis of paranoiacal convictions, 209, 210 ; alterations of, by traumatism, 38, 211, 495 ; in the aged, 211, 474 ; epileptic, 212, 606 ; of alcoholics, 319 ; of morphinists, 336 ; of cocaineists, 341 ; of paralytics, 394 ; in hysteria, 212, 584 ; of invert, 673 ; in constitutional immorality, 680 ; of paranoiacs, 744 ; of imbeciles, 752
 Chemotropism, 6 ; chemotactic actions, 31
 Chemical changes in the nervous elements, 42, 560
 Chorea, 463 ; saltatoria, 571 ; electrical, 572 ; rhythmic, 572
 Chromatolysis, 84, 302, 328, 353, 483
 Circular insanity, 536 ; from organic changes connected with age, 55 ; metamorphoses of cœnesthesia, 116 ; circular variety of progressive paralysis, 416
 Civilization : as a supposed cause of insanity, 52, 53 ; and myths, 723 ; false interpretation of statistics, 780
 Clarke, column of, in pellagra, 301 ; in chronic alcoholism, 330 ; in amentia, 355
 Classification : of the character, 198, 208 ; of mental diseases, 261, 281
 Claustrophobia, 150
 Clavus hystericus, 567, 584
 Claw-like condition of hand, 567
 Cocaine, 341
 Cœnesthesia, 113 ; in relation to humour and character, 199 ; in hysteria, 200 ; in morphinism, 336 ; in general paralysis, 397 ; in neurasthenia, 544
 Collectionism, 233
 Colonies of the insane, 686, 788

- Coma: in cerebral tumour, 494; epileptic, 171
- Conduct, 220; in hysteria, 584, 586; stolidity of, 633; of paranoiacs, 744
- Confusion, mental, 169, 170, 190; in pellagra, 297; in amentia, 344; in progressive paralysis, 398; in senile dementia, 478; in cerebral syphilis, 490; in epileptic mania, 604; in cases of cerebral tumour, 494.
- Consciousness: anatomical basis, 29; semi-consciousness and unconsciousness, 170; doubling of, 186, 588; raptus, 171, 203, 509, 514; in epileptics, 604; primary and secondary states, 116, 186, 588
- Contagion, psychical, 51; epidemics of hysteria, 592; religious epidemics in Russia, 713; endemic paranoia, 757
- Contracture, 260; pellagrous tetanus, 295; in progressive paralysis, 401; generalized, in infantile cerebropathies, 465; in hysteria, 578
- Convictions, erroneous, in normal persons, 683, 712; delusional, 157; in paranoiacs, 744; in imbeciles, 757; in melancholia, 508, 509; affirmative paramnesia, 192
- Convulsions: in alcoholism, 317; in progressive paralysis, 400; in infantile cerebropathies, 460, 467; in hysteria, 566; in epilepsy, 597, 600
- Coprolalia, 571
- Coprophagia, 232
- Cornu ammonis, 622
- Corpus callosum, absence of, 73
- Cranium: alterations and anomalies, 102; in cretinism, 369; in progressive paralysis, 429; in imbeciles, 750; trephining of, 442, 626; asymmetry, 462, 608; plagiocephaly, 58, 102, 614, 749
- Credulity, 165, 192, 396, 754
- Cretinism: endemic, 369; symptoms, 369; pathological anatomy, 372; etiology, 54, 372; pathogenesis, 374; treatment, 376; sporadic, 377; thyroid treatment, 384
- Criminality: in relation to degeneration and epilepsy, 57; and social conditions, 58; as a pathological phenomenon, 213; passionate, 214; constitutional immorality, 680
- Cysticerci, cerebral, 82
- D
- Deaf-mutism, 119, 251, 469, 576
- Deafness, 581; psychical, 184, 251; verbal, 181, 251, 469
- Deduction, 144
- Deficiency, mental, 192; without perversions, 446; with perversions, 747
- Degeneration: of the nerve fibres, 95; in pellagra, 301; in alcoholism, 330; in amentia, 354; of tangential and radial fibres, 432; in infantile cerebropathies, 453
- Degeneration, psychical, 56; stigmata, 56; theory of Morel, 62; relation to epilepsy, 58, 606; in classification of mental diseases, 281; in alcoholics, 319; in imbeciles, 453; in epileptics, 606; relation to somatic degeneration, 689; its prophets, 780
- Delirium, acute, 40, 298, 344, 355
- Delirium tremens, 302, 323; in morphinism, 336
- Delusion: systematized, 157; of persecution, 158, 710, 726; chaotic, 167; of grandeur, 158, 397, 729; religious, 158, 731; hypochondriacal, 158, 161, 398, 587; erotic, 158, 734; of pretension, 159; pseudo-scientific, 159; querelant, 159, 204, 233, 528, 710, 737; change of personality, 159; of guilt, 161; febrile, 57, 169; of jealousy, 233; hallucinatory, of alcoholics, 321
- Dementia, apoplectic, 169, 479
- Dementia: asymbolic, 183; pellagrous, 298; paralytic, 392; infantile (acquired idiocy), 458; epileptic, 606; graphic, 649; verbal, 649
- Dementia præcox, 630; symptoms, 633; course, 652; causes and nature, 283, 663; treatment, 666; diathesis of, 56; pseudo-hallucinations in, 140; paranoid delusions in, 162; incoherence of character, 213; absurdity of behaviour, 227
- Dementia, senile, 473; clinical varieties, 479; course, 480; diagnosis, 481; pathological anatomy, 482; pathogenesis, 485; treatment, 486
- Demorphinization, chemical, 341
- Depression, sentimental, 187, 202; alternation with exaltation, 197; facial expression in, 240, 504, 537; in pellagra, 298; in morphinism, 337; in cerebropathies, 488; in melancholia, 504; in mania, 527; in circular insanity, 532; in epileptics, 603; in dementia præcox, 642; in imbeciles, 755
- Dermography, 573
- Determinism, 706
- Diathesis, 54; melancholic, 502; manic, 502; of psychical incoercibility, 545, 547; neurasthenic, 561; arteriosclerotic, 561; of contracture, 575
- Diphtheroid bacilli, 425
- Diplegias, 463
- Diplopia, hysterical, 577
- Dipsomania, 310, 535
- Disorientation, 168, 344, 395, 478
- Dolichocephaly, 103
- Doubts, delusional, 150, 157
- Dreams: hallucinations in form of, 135; dream-state, 478
- Drunkennes, 314, 316, 616; and civil responsibility, 705; apoplectic, 316
- Dura mater: general alterations, 101; in alcoholism, 327; in senile dementia, 482.
- Dysarthria, 249, 408, 467, 609
- Dysbulia, 229, 511

Dysgeusia, 232
 Dysgraphia, 255
 Dysmorphophobia, 150, 154, 551
 Dysphrasia, 250
 Dystrophy in pellagra, 295

E

Echolalia, 225, 227
 Echopraxia, 225, 227
 Electrical chorea, 572
 Emaciation: in morphinism, 337; in amentia, 351; in progressive paralysis, 413
 Embryology, 16
 Emotions: in the pathogenesis of insanity, 42; physiology of, 196
 Encephalitis: hæmorrhagic, 77, 83; meningo-encephalitis, 76; acute, 451; suppurative, 80, 83; subcortical progressive, 480, 484
 Enuresis, 258, 602
 Ependymitis, granular, 82; in progressive paralysis, 429, 433; in senile dementia, 484; in epilepsy, 623
 Epilepsy: relation to degeneration, crime, etc., 57; aura, 597, 598; coma, 170; seizures, 317, 467, 597; differential diagnosis, 609; partial fits, 600; epileptiform seizures, 400, 423; pathogenesis, 611; pathological anatomy, 621; clinical forms, 620; treatment, 625; procursive epilepsy, 602, 615; alcoholic, 317
 Episodes: amential, in senile dementia and progressive paralysis, 358; morbid, in hysteria, 572; of exaltation in imbeciles and paranoiacs, 531; in dementia præcox, 499
 Equivalents of the epileptic seizure, 601
 Ereutophobia, 150, 552
 Ergotism, 54
Ergriffenheit, 204
 Eroticism: in the aged, 475; erotic delusion, 734; in imbeciles, 753
 Erythema, pellagrous, 293
État criblé, 80
 Euphoria, 194, 196; in pellagrous pseudo-paralysis, 299; morphinic, 333; paralytic, 397
 Exaltation, sentimental, 203; alternating with depression, 197; in progressive paralysis, 397; in mania, 521; facial expression, 242, 522; in imbeciles, 755
 Exhaustion, 185; psychoses due to, 192
 Exhibitionism, 235
 Exophthalmic goitre, 388
 Expressive movements, 216, 240; centre for, 33, 246; anomalies of, 240; animal expression, 609; in stupor, 636; katatonic concentration, 637; of physical pain, 641; in various stages of dementia præcox, 654; in imbeciles, 572; in melancholics, 505, 516; in maniacs, 526; in epileptics, 609

F

Family idiocy, 456
 Fantastic thought, 166, 211, 715, 758
 Fatigue: of nerve centres, 43; of nerves, 46; of muscles, 46; sense of, 115; myasthenic reaction in neurasthenics, 541; its origin in neurasthenia, 560
 Fetichism, 236, 676
 Fever: in pellagra, 296; in delirium tremens, 324; in amentia, 350; in progressive paralysis, 401; in infantile hemiplegia, 462; hysterical, 574; in status epilepticus, 600; alleged non-occurrence in the insane, 777
 Fits: apoplectic, 478, 479; apoplectiform, 399, 401, 423; epileptic, 318, 467, 597, 620; epileptiform, 399, 423; hysterical, 566; in alcoholism, 317; in infantile cerebropathies, 468; in cerebral syphilis, 489; Jacksonian, 400, 468, 489; uræmic, 360
 Flushings, hysterical, 567
 Focal lesions: in brain, 68, 73, 78; as a cause of amnesia, 187; in internal capsule, 411; as a cause of convulsions, 449; in the cerebropathies of adults, 472, 475, 478, 486, 493, 495; in epilepsy, 614
 Free-will, 213, 680, 706
 Furor, 205, 244; in alcoholism, 321; in progressive paralysis, 398; in raptus melancholicus, 513; sudden, 527; in epilepsy, 604

G

Genetic sense, 118
 Genital organs: alterations in the insane, 107; in cretins, 371; in myxoedema, 385; in neurasthenia, 543; in hysteria, 582
 Genius, 58
 Glioma, 81
 Gliosis: miliary, 97; perivascular, 484; sub-ependymal, 82, 429, 433, 434, 484, 623; diffuse, 82, 445, 451; in epilepsy, 99, 623, 624
 Globus hystericus, 567, 579, 583
 Glycæmia, 41
 Gonococcophrenia, 107
 Greek love, 237
Grübelnsucht, 150
 Gumma, cerebral, 82; gummatous meningitis, 489; gummata and syphilitic iritis, 492

H

Hæmorrhages as causes of insanity, 38, 41
 Hæmorrhages, cerebral, 78, 451, 479, 486
 Hallucinations, 119; as epileptic aura, 598; in protracted equivalents of epilepsy, 603; combined, 134; figured, 132; in amentia, 345; dreams, 135; in delirium tremens, 324; in dementia præcox, 645; in general paralysis, 412,

- 439, 744; in senile dementia, 478; in uræmia, 359; of peripheral origin, 135; psychical or pseudo-, 140, 646; theory of, 122; unilateral, of hearing, 136
- Hearing, disturbances of, 120, 137, 317, 323
- Heart: diseases of, as cause of mental diseases, 42; alterations in insanity, 106; hypertrophy, 319
- Hebephrenia, 55, 169, 630
- Heboidophrenia, 688, 696
- Hedonism, 218, 228
- Hemianæsthesia, 580
- Hemianopsia, 34; homonymous, 466, 469
- Hemiatrophy, 462
- Hemichorea, 463
- Hemiplegia: infantile, 456, 462; bilateral, 458, 464; spastic bilateral, 465; hemispasm, 466; in the aged, 479
- Heredity, 59; in imbecility, 455; in hysteria, 588; in epilepsy, 612; in dementia præcox, 663; in constitutional immorality, 702; in congenital imbeciles, 747
- Heterotopia in the nervous centres, 73, 300
- Histological methods: Nissl, 66; Golgi, 67; Weigert (nerve fibres), 67; Weigert (neuroglia), 67; Marchi, 67
- Homosexuality, 237, 671, 673
- Humour, 195, 197; in circular insanity, 537; other pathological variations, 200, 296, 319, 504, 523, 584, 603
- Hydrocephalus, 70, 74; psychological comparison with microcephaly, 454
- Hyperæsthesia, 117, 584; of the left ovarian region, 583; in neurasthenia, 115, 543
- Hypermimia, 226, 242, 245, 526
- Hyperthermia: effect upon nerve cells, 84
- Hypertonus: in pellagra, 295; in infantile cerebropathies, 463; exaggeration of tendon reflexes, 259, 337, 405, 462, 475, 543; in katatonia, 223, 512, 635, 639
- Hypnotism, 331, 341, 563, 573
- Hypochondria, 38, 42, 114
- Hypochondriacal delusion, 158, 162, 398, 544, 548, 587, 653; of persecution, 649
- Hysteria, 564; traumatic, 565, 589, 590, 591; major attacks, 566; minor attacks, 571; changes in urine, 569; stigmata, 582; status hystericus, 570; morbid episodes, 572; treatment, 593
- Hystero-neurasthenia, 540
- I
- Idealism, erotic, 236; particularism, 237
- Ideation: psychology of, 142; pathology, 145; rapidity, 146; prevalent ideas, 148, 160; obsessive ideas, 149; quantity of ideas, 163; evocation of ideas, 164; arrangement, 166
- Idiocy (acquired), 444; differential diagnosis from imbecility (acquired), 61, 446, 453, 458; position in classification, 281, 283
- Illusions, 119, 138; palingnostic, 147, 525; in senile dement, 478; in maniacs, 525
- Imbecility, 747; clinical varieties, 763; position in classification, 281; differential diagnosis from idiocy, 446, 453, 458
- Imitation: in mental diseases, 50; in hysteria, 565, 592; in religious epidemics, 757
- Immorality, constitutional, 680
- Impotence, 151, 152, 239, 371, 413, 677; from obsession in neurasthenia, 555
- Impulsiveness: in maniacs, 524; in epileptics, 602; raptus, 171, 203, 509, 513
- Incoherence, 170, 191
- Inco-ordination: in pellagra, 296; of delicate movements in paralytics, 402; graphic, 409
- Infantilism: affective, 210; in cretinism, 369; in myxœdema, 378, 383; in infantile cerebropathies, 460; erotic, 670
- Infections: as a cause of insanity, 39; in amentia, 343; as a cause of cerebral gliosis, 444; in general paralysis, 425
- Inhibition, 220, 518
- Insomnia, 50; in amentia, 350; in general paralysis, 397; in melancholia, 515; in mania, 524; in neurasthenia, 544
- Instinct, 217, 231; sexual, 235, 696; anomalies of, 230, 413, 509, 513, 582, 696
- Interrogative obsession, 150
- Intestines, 107; in pellagra, 302
- Intoxication, 39; in pellagra, 289; in alcoholism, 325; in morphinism, 336; auto-intoxication, 281, 357, 359, 423, 618
- Inversion, sexual, 237, 673
- Irresponsibility, 213, 277, 556, 680, 706, 760
- J
- Jumping, 51
- K
- Katatonia, 223, 631, 635, 639; in melancholia, 512; absurdity of action in, 228
- Kelp, anomaly of, 58
- Kleptomania, 395, 535
- Kymbocephaly, 102
- L
- Lactation as a cause of insanity, 41
- Lacunæ of cerebral disintegration, 79, 482
- Latah, 51
- Lambdacism, 251
- Laughter, 219, 242, 247, 479
- Lesbic love, 237
- Leucocytosis, 326, 424
- Lisping, 251
- Liver: alterations in the insane, 107; in alcoholism, 319

Localization of psychical processes, 1-31
 Lycanthropia, 509
 Lymphocytosis of cerebro-spinal fluid, 440

M

Macrocephaly, 102
 Macrographia, 255, 409, 762
 Macromimia, 246
 Mania and hypomania, 521; course and varieties, 527; differential diagnosis, 530; treatment, 532; periodic mania, 534
 Mannerisms in dementia præcox, 636
 Masochism, 237, 678
 Mast cells, 100, 435
 Mattoids, 710, 739
 Megalomania, 397
 Melancholia: its place among mental diseases, 280, 497, 502; symptoms, 504; course and varieties, 517; differential diagnosis, 518; treatment, 519; periodic form, 532; involutive form, 534
 Memory, 172; pathology of, 179; in the aged, 192, 476; of previous attacks of mania, 528; in epilepsy, 603, 605; in imbeciles, 180, 755
 Meningitis: serous, 75; tubercular, 82; syphilitic, 82, 489; meningo-encephalitis, 75, 468
 Menopause, 55; and persecutory hypochondria, 649, 655
 Mericism, 258
 Microcephaly, 70, 102, 446; psychology of, 454
 Microgyria, 70, 71, 452
 Micromania, 234
 Misophobia, 150, 154, 549
 Modesty, 235
 Monobulia, 223; obsessive, 228
 Morphinism, 333
 Movements, psychology of, 216; systematized, 225; anomalies of expressive, 240
 Music, instrumental, centre for the execution of, 33
 Mutilation, voluntary, 231, 641
 Mutism, 253, 299, 469, 576
 Myxœdema, 365
 Myxœdematous idiocy, 377; pathogenesis, 382; treatment, 384

N

Necrophilia, 679
 Negativism, 224, 513, 516, 639
 Neographia, 225, 227
 Neolalia, 225, 227
 Neologisms, 251, 743
 Nephritis, 295, 327, 359, 438, 486
 Nerve cells: their total weight in man, 45; acute lesions, 84; subacute lesions, 91; chronic lesions, 93; reaction to injury to axis-cylinder, 84, 87, 92, 302, 328, 354, 431, 445; atrophy of, 93, 95, 431, 445, 483, 624,

665; metabolism in, 44; polydynamic function, 30; yellow pigmentation of, 93, 431; chromatolysis of, 75, 302, 328, 353, 483

Nerve fibres: general lesions, 95; as organs of conduction, 111; internuclear communication, 182; in pelagra, 301; primary degeneration in amentia, 354; in progressive paralysis, 427, 432; degeneration of tangential fibres, 427; degeneration of pyramidal and posterior tracts, 436; in infantile cerebropathies, 452

Neuralgia, 42, 214, 411

Neurasthenia, 540; symptoms, 541, 545; differential diagnosis, 557; etiology and pathogenesis, 659; treatment, 562; in hysteria, 541, 588; in progressive paralysis, 417; in dementia præcox, 558

Neuritis, 95; of the vagus, 319; in alcoholism, 317, 330; in progressive paralysis, 436; in senile dementia, 476

Neuroglia, 97; glioma, 81; gliosis, 79, 97, 430, 484, 622, 623

Nystagmus, 404, 466

O

Obsessions, 149; pathogenesis, 152; phobias, 209; motor, 513, 554; favourite themes, 548; in dementia præcox, 558; diathesis, 547; of impotence, 151, 555, 676

Œdema, hysterical, 574

Œdema of brain, 100

Onanism, 239, 651

Opium-eating, 54

Optic nerve, lesions of: in alcoholism, 317; in the infantile cerebropathies, 466; in epilepsy, 623

Oxymorphone, 335, 336

P

Pacchionian granulations, 101

Pain, 116; expression of mental pain, 241; in melancholia, 504

Parabulia, 226

Paræsthesias, 116; in alcoholism, 316; in general paralysis, 411; in neurasthenia, 542

Parageusia, 295

Paralysis, bulbar: syndrome in progressive paralysis, 399, 402

Paralysis, progressive, 392; mental state and delusions in, 396; crises and seizures, 399; motor symptoms, 402; disturbances of sensation, 411; visceral and trophic disturbances, 412; clinical varieties, 414; course, 416; etiology, 39, 55, 420, 425; pathogenesis, 422; pathological anatomy, 426; differential diagnosis, 438; treatment, 440; juvenile form, 415; pseudo-progressive paralysis, 54, 299, 322, 438

Paramnesia: dubitative, 192; affirmative, 192

Paranoia, 709; comparison with the psychology of primitive people, 711; persecutory, 726; ambitious, 729; religious, 731; querelant, 737; with impersonal delusions, 739; neologisms, 743; hallucinations, 744; behaviour, 744; treatment, 746
 Paranoiacal constitution, 724; contagion, 50; convictions, 157
 Paranoid states and delusions, 264, 399, 414, 509, 630, 632; comparison with paranoiacal delusions, 724
 Paraphasia, 488
 Paraplegia, 449, 464, 575
 Parasyphilis, 422, 612
 Parathyroid glands, 363, 384, 390
 Passions, 49, 208, 214; emotional attitudes, 568; in epileptics, 606
 Pathogenesis of mental diseases, 2, 262
 Pathology, 22, 37, 65
 Pathophobia, 150, 550
 Pavor nocturnus, 206
 Pellagra, 286
 Personality, delusion of change of, 159, 396
 Perversions: of instincts, 230; of character, 211, 277, 319, 336, 394, 474, 584, 606, 673, 680, 752; sexual, 235, 669
 Phobia: verbal (Chervin), 151
 Phobias, 149, 545; in hysteria, 588
 Phosphates: in melancholics, 48; in the urine in hysteria, 569
 Pia mater, 101
 Pica, 232
 Plagiocephaly, 102, 614
 Plasma cells, 100, 434, 435
 Poisonings, 39; due to occupation, 54; action on the nerve cells, 84-95; place in classification of mental diseases, 281
 Polioencephalitis, 76, 456
 Poliomyelitis, 76
 Polyneuritis: psychosis, 325; in alcoholism, 330
 Polyuria, 569
 Porencephaly, 74, 452
 Porosis, cerebral, 80
 Prevalent ideas, 148
 Pseudo-angina pectoris, 514, 542, 574, 584
 Pseudo-hallucinations, 140, 646
 Pseudo-progressive paralysis, 54, 299, 322, 438
 Psychasthenia, 547
 Psychical centres, 16, 32; law of the hierarchy, 23; unilaterality, 23; phylogenetic development, 108, 109; in relation to hallucinations, 122; in infantile cerebropathies, 445; the depositories of representations, 32; the depositories of mnemonic impressions, 175; in relation to pseudo-hallucinations, 140
 Psychological processes, the seat of the, 1
 Psychoses: acute, in degenerates, 284; affective, 497; polyneuritic, 325; thyroid, 362; in hysteria, 588
 Pupils: reaction, 260, 403, 418, 466, 475

Q

Querelants, 159, 204, 233, 528, 710, 737

R

Railway spine, 42, 565, 590, 591
 Raptus melancholicus, 171, 203, 509, 514
Réaction à distance of the nerve cell, 84, 87, 328, 354, 431, 445
 Recovery: in progressive paralysis, 419; in melancholia, 517; in dementia præcox, 653; in paranoia, 726
 Reflexes, 197, 257; visceral, 257; patellar, 259; pupillary, 260; Babinski's sign, 260; in pellagra, 299; in morphinism, 337; in progressive paralysis, 403; in neurasthenia, 543
 Religious delusions, 159, 161, 509, 712, 731
 Remissions, 352, 417, 527, 653
 Repetition of thought, 131
 Responsibility: phobia of, 552; civil, of imbeciles, 760; in habitual drunkenness, 705
 Rotacism, 251
 Rupophobia, 549

S

Sadism, 237, 678
 Sanatoria: for alcoholics, 331; for morphinists, 339; for melancholics, 521; for epileptics, 629
 Sarcomata, cerebral, 81
Sclérose en plaque, 82, 495
 Sclerosis: tuberos, 77, 450, 468; diffuse, 82, 98; lobar, 73, 451; of cornu ammonis, 622
 Senile dementia, 473
 Senility, 199, 211, 474
 Sensibility, 108
 Sentiments, 194
 Shock, 42, 461
 Sialorrhœa, 527
 Sitophobia, 232, 351, 413, 509, 582
 Slang, 693
 Sleep, 5, 45; in amentia, 350; in neurasthenia, 544; attacks of somnolence, 494, 602
 Smell, 118; anosmia, 575, 582
 Softening, cerebral, 79, 479, 483
 Somnambulism, 187, 568, 605
 Speech, 248; scanned speech, 250; cortical centres, 33; stammering, 137, 250, 761; anarthria, 243, 408; dysarthria, 249, 408, 467, 609; aphasia, 181, 251, 360, 401, 467, 487
 Stammering, 251, 761
 Status epilepticus, 468, 600, 623, 627
 Stigmata: degenerative, 56, 608, 749, 689; hysterical, 582
 Stomach, 107; atony of, 561; catarrh of, 357
 Strabismus, 404, 466, 577
 Stupor, 347, 527, 512, 604, 656
 Suicide, 231, 321, 641; in melancholia, 203, 512; in paralytics, 419

Symbols and symbolism, 33, 35, 125, 143; erotic, 236, 677, 678; centres for, 175; asymboly, 173, 183, 488
Sympathetic, section of, in epilepsy, 626

Syncephaly, 74

Syphilis: hereditary, 59, 461; cerebral, 39, 82, 489; and progressive paralysis, 420

Syringomyelia, 581

Systematization of delusions, 724

T

Tabes, 405, 415, 436

Tactile sensibility, 116

Taphyphobia, 150

Taste, 118; in pellagra, 295; ageusia, 232, 575, 582; in progressive paralysis, 412

Tattooing, 232, 691, 693

Temperaments, 198

Thermo-sensibility, 116, 526

Tic, 247, 571; labial, 467; verbal, 252

Thyroid gland, 41

Thyroid psychoses, 362

Traumatism, as a cause of insanity, 38, 211, 495, 613; traumatic hysteria, 565, 589, 591

Tremor, 317, 388, 407, 475, 495, 579

Tumours, cerebral, 38, 81, 493

U

Uræmia, 40, 92, 184, 359

Uranism, 237, 673

V

Vesania, 498, 499, 633

Vision, 118; amaurosis and amblyopia, 581; amaurotic idiocy, 458; dyschromatopsia, 581; verbal and psychological blindness, 181, 182

Volition, 217; and instinct, 217, 218; pathology of, 220, 223, 224, 226, 228, 513, 516, 633, 639

Voluntary movements, 216

Vomiting, 259, 319, 578

W

Weeping, 240: cerebral centre, 247; spasmodic, 247, 479; in maniacs, 527, 529; in melancholics, 507

Will, anomalies of, 230

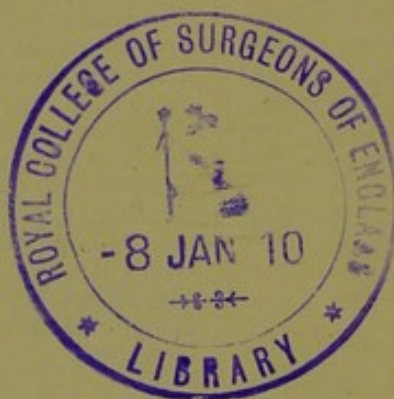
Writer's cramp, 254

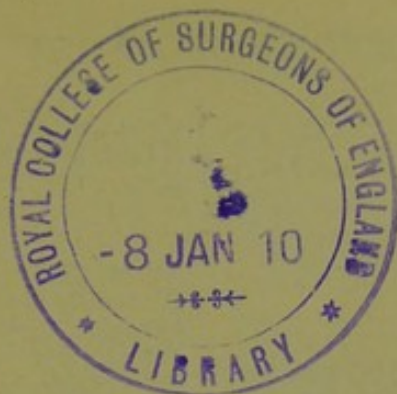
Writing, 239, 254; looking-glass, 257; in alcoholics, 318; in progressive paralysis, 409; in dementia præcox, 650; in imbeciles, 762

Z

Zones, hysterogenic, 583

Zoopsia, 568





INDEX OF NAMES

A

AGOSTINI, 50, 60, 295
Alexander, 626
Alt, 340
Althaus, 612
Alzheimer, 100, 415, 480, 482, 484, 622,
624, 632, 665
Amadei, 627
Anelli, 307
Antonini, 296
Argyll-Robertson, 260, 403, 417
Aristotle, 4, 5, 6
Armanni, 356
Arndt, 442, 498, 618, 626, 632
Aschaffenburg, 631, 632
Audry, 466
Augustine, 5, 718
Axenfeld, 561
Azam, 185

B

Babes, 288, 291, 301, 302
Babinski, 260, 594
Baccelli, 287
Bachofen, 714
Badaloni, 288, 306
Baginsky, 184
Baillarger, 140, 441, 536, 646
Bain, 174
Baker Brown, 593
Balardini, 290, 291
Ball, 384
Ballet, 575, 577
Bartholow, 16
Bastian, 33, 720
Batty Tuke, 442
Baumann, 363, 368
Beard, 543, 560
Beca, 323
Bechterew, 6, 14, 44, 246, 316, 561, 576,
627
Belmondo, 49, 297, 300, 302, 420
Beneden (van), 48
Berezowski, 626
Bergeron, 592
Berkley, 341
Bernabei, 340
Bernheim, 568
Bernstein, 46
Betz, 86, 451

Bianchi, 14, 15, 106, 175, 356, 414, 437,
493
Bichat, 5
Bicherton, 617
Biernacki, 411, 412, 561
Biervliet (van), 88
Binet, 174, 236, 671
Bini, 772
Binswanger, 480, 482, 484, 576, 595, 689
Bircher, 368
Birt, 48
Blanes, 28
Bleuler, 623
Blocq, 575
Bochefontaine, 44
Bödeker, 404
Bondurant, 627
Bonhöffer, 328, 330
Bonne, 331
Bordaries, 561
Bosc, 570
Bouchard, 561
Bouchaud, 456
Bourneville, 76, 77, 384, 446, 447, 451,
467, 468, 570, 593, 600, 614, 747
Boyer, 14
Bratz, 622, 628
Brenner, 136
Bresler, 72, 452
Briand, 356
Briquet, 577, 588
Brissaud, 246, 364, 383, 451, 458, 464,
575
Bristowe, 578
Broca, 3, 9
Brown-Séquard, 60, 443, 520
Bruce, 424
Buccola, 149
Buchholtz, 356
Bufalini, 44
Burghardt, 391
Burkhard, 534
Büttner, 615
Byrom-Bramwell, 33

C

Cabitto, 356
Calmeil, 52
Camia, 86, 91, 92, 302, 328

Cantalamessa, 456
 Cappalletti, 356
 Carpentier, 159
 Carrier, 150
 Casal, 305
 Cathelineau, 569, 571
 Catola, 100
 Ceni, 292, 356
 Cestan, 464
 Charcot, 13, 182, 365, 540, 545, 565, 567,
 570, 578, 579, 583, 588, 591, 592, 594,
 595
 Chaslin, 451, 623
 Chervin, 151
 Chiari, 384
 Claye-Shaw, 442
 Colella, 437
 Cololian, 441
 Conti, 430
 Corin, 48
 Cotard, 73, 467
 Cottam, 331
 Cramer, 412
 Cristiani, 420
 Crocq, 55]

D

D'Abundo, 74, 403, 414
 Dange, 593
 Danilewski, 44
 D'Annunzio, 192
 Darwin, 219, 241, 690
 Dax (Marcus), 9
 De Amicis (Edmondo), 321
 Deaver, 16
 De Boeck, 48
 De Fleury, 560
 Dejerine, 173, 427, 456, 464, 466, 576,
 595
 Delasiauve, 324, 614
 Demoor, 47
 De Sanctis, 253, 265, 451, 456, 747
 Descartes, 7
 Dodd, 617
 Dods Brown, 425
 Donaldson, 45
 Donath, 619
 Dubini, 572
 Ducceschi, 44
 Duchenne, 241
 Dunton, 665

E

Ebstein, 577
 Echeverria, 618
 Edinger, 411
 Edmunds (Walter), 390
 Ehrlich, 435
 Eichhorst, 403
 Ellero, 292
 Elzholz, 326
 Erb, 423, 541, 576
 Erba, 289, 291
 Erlenmeyer, 339, 340, 341
 Esquirol, 165, 266, 454, 504, 688
 Eulenburg, 44, 589

Evans, 619
 Ewald, 363, 376, 382
 Exner, 12

F

Falret, 536
 Féré, 560, 584
 Ferrand, 79, 80, 482
 Ferrati, 289
 Ferri (Enrico), 213, 685, 690
 Ferrier, 14, 15, 493
 Fischer, 622
 Flechsig, 10, 15, 16, 19, 20, 127, 175, 493,
 593, 628
 Flint, 48
 Flora, 541
 Flourens, 8, 9, 10
 Forel, 6, 331, 593
 Fournier, 448, 464, 612
 Fox, 300
 Franceschi, 95
 François-Franck, 44
 Freud, 446, 447, 448, 456, 458, 462, 464,
 466, 469
 Freund, 190
 Friedreich, 593
 Fritsch, 10
 Fuchs, 352, 468
 Fürstner, 323, 437

G

Galezowski, 581
 Gall, 5, 7, 8, 10, 19, 23, 104
 Garnier, 441
 Garofalo, 690
 Gehuchten (van), 88, 458, 464
 Generali, 364
 Gennari, 24
 Giacomini, 70, 446, 451
 Gilles de la Tourette, 569, 570, 571, 579
 Giraud-Teulon, 714
 Glénard, 561
 Gley, 363
 Göbel, 412
 Godet, 322
 Goldscheider, 451
 Golgi, 28, 67
 Goltz, 14
 Gonzales, E., 457
 Gosio, 289
 Gradenigo, 574
 Graf (Arturo), 718
 Gräfe, 581
 Griesinger, 150, 266
 Griffini, 303
 Grosz, 14
 Gucci, 502
 Guislain, 202, 266, 267, 632
 Gull, 365

H

Hack Tuke, 689
 Haeckel, 5
 Hagen, 140
 Haig, 618, 628
 Hajos, 622
 Hammarberg, 45

Hammond, 150, 549
Hartmann, R., 718
Hayem, 560
Hebra, 291
Hecker, 631
Heger, 48
Heilbronner, 183
Heinroth, 773
Heller, 251
Hering, 173
Hern, 617
Herter, 618
Herting, 410
Hertz, 327
Heschl, 74
Hillenbergl, 412
Hirschl, 421
Hitzig, 3, 10, 13, 14, 15, 44, 340, 341, 442, 493
Hochhaus, 625
Hoffmann, 373
Hofmeister, 364
Horsley, 16, 368
Horwicz, 175
Hösel, 74
Howitz, 368
Huchard, 561, 584
Hughes, C. H., 689
Hughes Bennet, 612
Hugblings-Jackson, 33
Hume, 144
Husemann, 291

I

Ibsen, 593
Idelsohn, 184, 424
Ioteyko, 47

J

Jacoby (Paolo), 713, 757
Jaksch, 626
James, 174
Jeffrey, 425
Jennings, 338
Jolly, 595
Justschenko, 415

K

Kaan, 560
Kahlbaum, 140, 142, 224, 498, 499, 631, 632, 633, 688
Kant, 7
Kazowsky, 356
Kelp, 58
Kissling, 466
Klumpke, 591
Kocher, 365, 626
Kohn, 364
Kölliker, 27
König, 306, 446, 447, 449, 462, 465, 466, 747
Korsakoff, 325
Kraepelin, 162, 224, 268, 270, 271, 272, 273, 275, 326, 344, 349, 352, 366, 374, 423, 499, 500, 503, 523, 533, 534, 589, 612, 631, 632, 645, 652, 664, 724, 779
Karfft-Ebing, 268, 269, 271, 331, 421, 456, 497, 688

Krainski, 618
Kramer, 615
Kreuser, 614
Kundrat, 74
Kupper, 617
Kussmaul, 252

L

Lähr, 334
Lancereaux, 184
Landau, 593
Landois, 44
Lanz, 391
Lasègue, 614
Laufenauer, 622
Légrand du Saulle, 536
Lemoine, 561, 614, 627
Lépine, 44
Leroy-Beaulieu, 718
Lévi (Léopold), 100
Levinstein, 334, 336
Liebmann, 251
Liepmann, 325
Lipsius, 718
Little, 448, 458, 464
Livi, 772
Ljubimov, 622
Lloyd, 16, 689
Lombroso, 58, 105, 116, 213, 289, 290, 291, 295, 580, 583, 608, 683, 687, 689, 691, 692, 694, 739, 741
Loveland, 529
Lubbock, 715
Luciani, 12
Lugaro, 47, 88, 92, 141, 386, 404, 434, 467, 600, 655, 666, 703
Lukács, 456, 463
Lustig, 373

M

Maccabruni, 231
Mackenzie, 368
MacLennan, 714
McRae, 425
Magnan, 318, 653
Mairet, 48, 570
Manicatide, 288, 291
Mann, G., 47
Mann, L., 184, 412
Manning, 688
Mantegazza, 104
Maragliano (Dario), 297
Marchi, 67, 90, 97, 328
Maresch, 384
Marie, 73, 76, 79, 80, 301, 451, 464, 575, 589, 612, 692
Marinesco, 302, 453
Marmé, 326, 335
Marro, 105, 419, 460, 689
Marschalko, 435
Martin, 617
Martinotti (Carlo), 356
Maschtschenko, 665
Mattison, 340
Mendel, 414, 427, 576, 589, 689
Merck, 368, 627
Mercklin, 456

Meschede, 150
 Meyer, 328, 413
 Meynert, 16, 70, 323, 343, 538, 618, 622,
 Mierzejewski, 451, 575
 Mingazzini (Giovanni), 233, 576
 Möbius, 391, 421, 572, 576, 592
 Monakow, 16, 20, 173, 184
 Monti, 288
 Morel, 62, 267, 268, 374
 Morgagni, 536
 Morselli, 150, 155, 245, 250, 270, 276,
 277, 336, 403, 404, 551, 632, 633, 747,
 760
 Mossò (Angelo), 48
 Moussu, 363, 364, 383
 Müller, E., 494
 Müller, Max, 718
 Munk, 12, 13, 14, 175
 Muratow, 384, 464
 Murray, 368
 Musso, 404
 Mygind, 251

N

Naab, 627
 Näcke, 420, 702
 Naegeli, 59
 Nancrede, 16
 Navratzki, 618, 626
 Neisser, 535
 Neissler, 399
 Nerander, 622
 Neusser, 289
 Newth, 442
 Nina Rodrigues, 714
 Nissl, 66, 100, 328, 434, 622
 Nordau, 269
 Nothnagel, 34, 175

O

Obersteiner, 340, 421, 484
 O'Brien, 426
 Oliver, 615
 Oppenheim, 580, 591
 Ord, 365
 Ormerod, 617
 Orr, 425
 Ossipow, 466
 Outmont, 466

P

Page, 591
 Pandi, 628
 Pellizzi, 289, 450, 456, 469
 Pergens, 47
 Pflüger, 6
 Philippen, 46
 Piccinino, 356
 Pick, 436
 Pieraccini, 63
 Pilcz, 367, 528, 535
 Pinel, 688
 Piorry, 583
 Pitre, 717
 Pitres, 149, 150, 181, 188, 572, 584, 589
 Plato, 5, 6
 Playfair, 594

Prichard, 688
 Pugh, 619
 Putnam, 591
 Purkinje, 7

Q

Quinke, 75

R

Räcke, 433
 Raffalovich, 671
 Raggi, 403
 Ramon y Cajal, 10, 23, 24, 28, 32, 34,
 127, 175, 434
 Rasori, 356
 Raymond, 464
 Redlich, 484
 Régis, 149, 150, 322, 419, 561
 Régnard, 581
 Reichenberg, 411
 Remak, 593
 Retzius, 35
 Reverdin, 365
 Rezzonico, 356
 Ribot, 173, 209
 Richer, 570
 Richet, 44, 628
 Rie, 463, 466
 Righetti, 251, 494
 Rinne, 582
 Robertson, 424
 Rodet, 342
 Rolando, 7
 Romberg, 583
 Roncoroni, 692
 Rose, 184
 Rosenstein, 622
 Rosenthal, 591
 Roubinowitch, 517
 Roussel, 290
 Rows, 425
 Rubner, 306

S

Sachs, 458, 464
 Samt, 212
 Sander, 356
 Sandström, 363
 Sapojnikow, 714
 Savage, 689
 Schäfer, 419
 Scheffer, 458
 Schiff, 13, 14, 363, 368
 Scholz, 376
 Schopenhauer, 230
 Schrenck-Notzing, 674
 Schröder, 594
 Schüle, 241, 267, 522
 Schultze, 74
 Schütz, 427
 Sciamanna, 16, 575
 Sébillot, 717
 Séglas, 121
 Senator, 330
 Seppilli, 449
 Serena, 291
 Siemens, 599
 Siemerling, 330, 404

Sion, 288
 Slosse, 48
 Smith, 399
 Solbrig, 618
 Sollier, 446, 447, 454, 455, 614, 747, 755
 Sömmering, 7
 Spanbock, 576
 Spencer, 144, 174, 219, 715, 720
 Spiller, 450
 Sprengler, 418
 Stegmann, 331
 Steinlechner, 71
 Stenson, 85
 Stevens, 617
 Stewart, 415
 Stoddart, 516
 Strambio, 291, 293, 295
 Straub, 437
 Strümpell, 74, 76, 572, 575, 576

T

Tamburini, 121, 122, 139, 149, 250, 760
 Tebaldi, 292
 Thompson, 45
 Thomsen, 591
 Tirelli, 288, 289
 Tonnini, 295, 300, 583, 592, 614, 760
 Toulouse, 517, 628
 Trapesnikao, 44
 Treupel, 403
 Trömner, 328
 Tuczek, 96, 300, 301, 427
 Tylor, 715, 718, 720

U

Uhlich, 673, 676
 Unna, 100, 435
 Urbantschitsch, 251

V

Vas, 47
 Vassale, 295, 302, 364, 368
 Venturi, 614
 Verga (Andrea), 150, 269, 549

Verlaine (Paul), 202
 Verworn, 6
 Vieussens, 7
 Vigouroux, 562
 Vinson, 717
 Virchow, 70, 369, 372, 446
 Vizioli, 76
 Vogt, C., 446
 Vogt, R., 435
 Voisin, 747

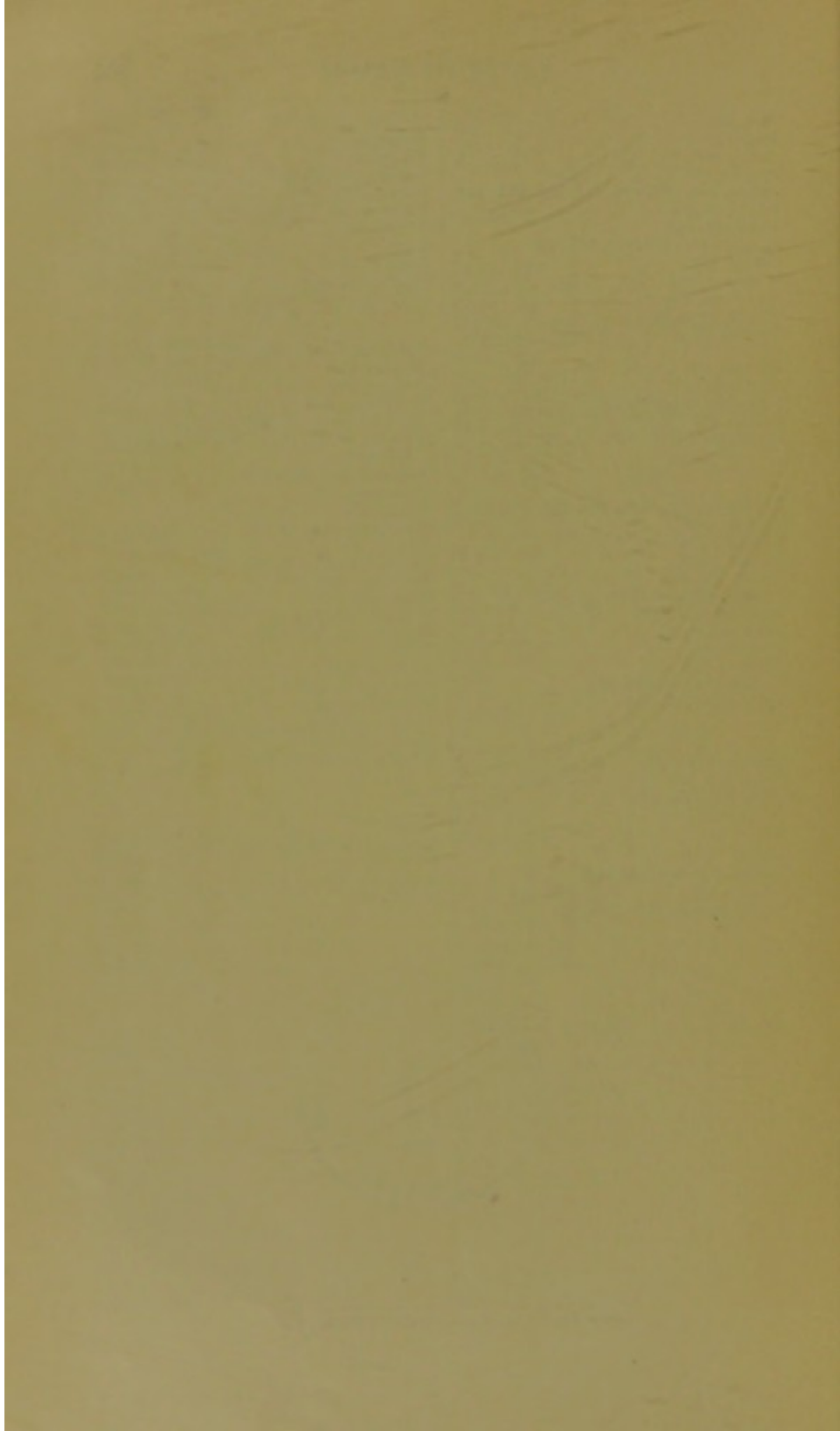
W

Wachsmuth, 448, 458, 462
 Wagner, 376
 Walton, 590
 Wartmann, 318
 Weichselbaum, 77, 356
 Weigert, 16, 67, 79, 97, 98, 328, 355, 427, 433, 495
 Weir-Mitchell, 594, 595
 Weismann, 59
 Weiss, 627
 Welt (Leonora), 14
 Wenzel, 372
 Wernicke, 148, 175, 183, 452
 Westphal, 149, 150
 Weygandt, 527
 Wigglesworth, 617
 Wildermuth, 318, 627
 Willis, 7
 Wistocki, 628
 Witzelsucht, 493
 Worcester, 622
 Workmann, 689
 Wuillamier, 458
 Wundt, 12, 14, 174, 493

Z

Zacher, 427
 Ziehen, 175, 204
 Zola, 230
 Zuccarelli, 702
 Zulzer, 48





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The author's aim in writing this book was to write a complete Encyclopædia on the sexual sciences, and it will probably be acknowledged by all who study its pages that the author has accomplished his intention in a very scholarly manner, and in such form as to be of great value to the professions for whom this translation is intended. The subject is no doubt one which appeals to and affects the interests of all adult persons, but the publishers have, after very serious and careful consideration, come to the conclusion that the sale of the English translation of the book shall be **limited to members of the legal and medical professions**. To both these professions it is essential that a knowledge of the science of Sex and the various causes for the existence of "abnormals" should be ascertained, so that they may be guided in the future in their investigations into, and the practice of attempts to mitigate, the evil which undoubtedly exists, and to bring about a more healthy class of beings. It is the first time that the subject has been so carefully and fully gone into in the English language, and it is believed that the very exhaustive examination which the author has made into the matter, and the various cases to which he has called attention, will be of considerable use to the medical practitioner, and also to the lawyer in criminal and quasi-criminal matters, and probably in matrimonial disputes and cases of insanity.

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