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MENTAL DEFICIENCY
(AMENTIA)

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A TEXT-BOOK OF
MENTAL DEFICIENCY
(AMENTIA)

BY

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TO

ALL THOSE PERSONS OF SOUND MIND WHO ARE INTERESTED IN THE WELFARE OF THEIR LESS FORTUNATE FELLOW-CREATURES

PREFACE TO SEVENTH EDITION

THE sixth edition of this book, published in 1937, went out of print shortly after the beginning of the war. In order to meet the American demand it was reprinted in the United States, for until now I have not had the time to prepare a new edition, nor was labour or paper available in this country to print one.

A considerable amount of new matter has been added to the present edition, and the changes made by the Education Act 1944 relating to educationally subnormal and defective children have been dealt with. These alterations have necessitated some pruning, the re-writing of several chapters, and a careful revision of the whole book. Through the kindness of several colleagues a number of new illustrations have also been added, for which I am particularly indebted to Dr. Wilfrid Sheldon and Mr. Derek Martin, The Hospital for Sick Children, Great Ormond Street; and to Dr. L. T. Hilliard and Mr. J. E. Stevens, The Fountain Hospital, Tooting. Unfortunately, owing to the acute shortage of labour in the binding trade, it has been found necessary to bind these plates in groups instead of separately as in previous editions.

The literature relating to Mental Deficiency is now so extensive, and the subject has ramifications in so many fields of knowledge, that it is becoming increasingly difficult to keep it within the limits of a text-book. I think, however, that the present volume will be found to be a tolerably complete and up-to-date account, and to contain all the essential information needed by mental specialists, medical officers of public authorities and institutions, general practitioners, and all who may be concerned with the diagnosis, administrative disposal, and treatment of defectives, as well as those who are interested in the social problems presented by this important subject.

I hope this new edition may continue to merit the commendation which has been so generously bestowed upon its predecessors for nearly forty years.

A. F. TREDGOLD.

62, QUEEN ANNE STREET,
LONDON, W.1.
July, 1947.

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MENTAL DEFICIENCY

CHAPTER I

THE CONCEPT AND NATURE OF MENTAL DEFICIENCY

IT is convenient to divide the various abnormal conditions of mind into three main groups—namely: (1) Conditions of mental disorder, embracing the psychoses and psychoneuroses; (2) conditions of mental decay, embracing the various types of dementia; and (3) conditions of incomplete development. Literally, the term "mental deficiency" is applicable to all three groups; but there is a great difference between them. Thus, the person suffering from mental disorder may be compared to one in a state of temporary financial embarrassment; the person suffering from dementia to one in a state of irrecoverable bankruptcy; whilst the person whose mind has failed to attain complete development may be likened to one who has never possessed a banking account. For many years past the term *mental deficiency* has been restricted to this last group, and it is with this specific meaning that it will be used in this book. It corresponds with the term *amentia* (*a*, without; *mens*, mind), and, in the main, it corresponds also with the term *oligophrenia* (*oligos*, small; *phren*, mind), which is often used on the Continent and sometimes in this country.

Mental deficiency or amentia, then, is a condition in which mind has failed to reach complete or normal development. But the question at once arises, What is "complete" or "normal" mental development? For in regard to the development and capacity of their minds it is clear that individuals vary within a very wide range. At the one extreme we have a state known as idiocy in which mind is so little developed as to be practically non-existent; at the other we have the ability of a Plato, Aristotle, Copernicus, Bacon, Newton, Kepler, Shakespeare and Goethe; and these two extremes are connected by intervening degrees of capacity

which merge into one another so imperceptibly that the whole range forms an apparently continuous series. Where, then, are we to draw the line between complete and incomplete mental development? Where are we to say that the normal ends and the subnormal begins? What, in short, is the criterion of mental deficiency?

From the strictly psychological point of view it might be considered that a mind of which the development fell in any way short of the possible maximum was subnormal and defective; but if such an ideal were to be taken as the standard we should have to regard the majority of the human race as defective—which would be absurd. Plainly, our concept of the normal or complete mind must be based upon some more practical standard, and the question is, What shall this standard be?

Educational Criterion.

One standard of normality which has been suggested is that of scholastic educability. As is well known, whilst the great majority of children attending school reach a certain standard of scholastic proficiency, a considerable number are unable to do this; in fact a proportion cannot be profitably taught in the ordinary schools at all and have to be sent to " special " schools. Since this inability is clearly a mental one, it has not unnaturally been suggested that " educability " should be used as a criterion to distinguish between mental normality and defect. But it must be remembered that, if the whole population be considered, there are very wide differences in individual responses to scholastic instruction and in ability to learn particular subjects. So wide, indeed, that some of these school failures may well be within the range of normal variation, especially as a large proportion of them, after leaving school, prove quite capable of earning their living, successfully protecting their interests and fending for themselves in some, it may be humble, walk of life. It therefore seems unscientific and unjustifiable to use an arbitrary standard such as scholastic educability as a distinguishing test of the normal and the defective mind, and some other criterion must be sought.

Intelligence Quotient Criterion.

Many years ago Binet and Simon of Paris compiled a series of tests for each year between 3 and 16 which the average child of these years was able to pass. It was considered that ability to do this was dependent upon "natural intelligence"; and the response to these tests, expressed as a percentage, constitutes the "intelligence quotient" (I.Q.), or "mental ratio" (M.R.). It has been claimed that this I.Q. may be used as the criterion of normality and abnormality, and that it is a reliable indication of the presence or absence of mental defect. Whilst it is possible to draw a line, and specify an I.Q. which is incompatible with normality and below which all would agree that the individual was defective, yet, if this line were placed low enough to exclude all those regarded as normal, it would certainly also exclude many regarded as defective; on the other hand, if it were placed high enough to include every defective it would certainly include many usually considered to be normal. Actually, there are many persons in institutions for defectives, whom no one doubts to be in need of care and control, but whose I.Q. is considerably higher than that of others fending for themselves satisfactorily in the general community. Whilst, therefore, the I.Q. is a useful criterion of scholastic educability, in my opinion it is, by itself, not only valueless, but may be actually misleading as a criterion of mental defect. This is becoming increasingly recognized by those with extensive practical experience of defectives, who now realize that in the diagnosis and certification of this condition the I.Q. must be supplemented, or replaced, by other data. We now come to the next criterion.

Biological and Social Criterion.

This is based upon the consideration of what is the essential purpose of mind. There can be no doubt that the essential requirement of all living creatures is an ability to maintain existence. Other qualities may be advantageous and desirable, indeed necessary to a progressive evolution; but this one is fundamental. The lower forms of life are endowed with a variety of means whereby they are enabled to secure their food, escape from their enemies, conform to their environment, and thus to survive. As instances of the many devices bestowed by Nature to achieve this end I may

mention the capacity for adaptive mimicry possessed by many insects; the ability to emit disagreeable odours; the possession of stings, spines, tough and horny integuments, and of limbs specially adapted for speed; the powerful claws and teeth of many of the carnivora; the highly developed special senses and the elaborate instincts of many of the lower forms of creation.

With the appearance of man, however, a new phase is entered upon. In physical condition, even in instincts, his equipment is greatly inferior to that of many of the creatures by which he is surrounded, and had he not been possessed of something to take their place he must inevitably have come to an end at an early stage of his life history. But his increased development of mind has given him a capacity for survival greater than that possessed by any other animal. By means of conscious skill and strategy, cunning and inventiveness, intelligence and reason, he is not only enabled to escape his enemies, to secure his food, and protect his body under the most extreme conditions of climate, but also to make provision against contingencies, and by these means he has not merely been enabled to survive but has become the lord of creation. In short, in the case of man the maintenance of existence has ceased to be entirely a matter of brute force, unconscious adaptation and instinct; it has become a conscious process and the primary and essential function of mind.

Considered from this aspect it is clear that all the attributes of mind are not of equal value; that some, in fact, must be regarded as embellishments whilst others are essential. Thus, whilst the ability to translate dead languages, to create works of art, to invent mechanical appliances, to evolve theories and give birth to new ideas and the like may be of great advantage to the community (even if not always to the individual), ability of this kind can hardly be considered, from the biological aspect, so essential as to justify our regarding those individuals in whom it is lacking as defective. The essential purpose of mind is that of enabling the individual so to adapt himself to his environment as to maintain an independent existence; from the biological and social aspect the one who can do this is to be regarded as normal, while the one whose mental development does not admit of this is to be regarded as defective.

It may be contended that there is a fallacy in making the maintenance of existence the criterion of normality, inasmuch as this cannot be entirely dependent upon mind, but must be influenced

by the nature of the surroundings. No doubt to a certain extent this is so, for it is obvious that very little mental capacity might suffice to ensure survival in an equable climate, devoid of foes, and with an abundant supply of food to hand; while the greatest intelligence might not avail to preserve the life of an individual cast alone upon a barren island. Again, it may be urged that some defectives might be so financially endowed as to survive without difficulty, while non-defectives might be unable to do so unaided owing to lack of employment. It is obvious, however, that the ability to maintain an independent existence must be judged in relation to circumstances which normally obtain, not to those which are grossly exceptional. To constitute abnormality and defect the failure must be due to psychological and not to economic and social causes; and there is usually little difficulty in distinguishing between the two.

With regard to these three criteria—educational, intelligence quotient, and social—it seems to me that the only one which may satisfactorily be made use of to differentiate the normal from the defective individual is the social one. The human mind is so complex, individuals differ so much in their scholastic ability, in their special aptitudes, in their temperament and character, in fact in all the many constituents of mind, that we must clearly have recourse to some practical test. As we have seen, the essential purpose of mind is that of enabling the individual to make a satisfactory and independent adaptation to the ordinary environment of his fellows; it would be intolerable if a person able to do this, to earn his living and to manage himself and his affairs with reasonable prudence and efficiency, were to be stigmatized as defective, and subjected to control, merely on the ground of illiteracy and poor scholastic attainments, or because he failed to come up to some arbitrarily fixed intelligence quotient. Hence I regard the social as not only the most logical and scientific concept of mental deficiency, but as the only criterion which the community can justly impose.

Legal Concept.

We have now to see what is the legal conception of mental deficiency. I think it is clear that the view taken by the English legislature, and the one which is coming to be generally accepted in most other countries, is identical with the social concept just

described. The Mental Deficiency Act of 1927 says "*mental defectiveness means a condition of arrested or incomplete development of mind existing before the age of eighteen years, whether arising from inherent causes or induced by disease or injury.*" It is true that this general definition gives no indication as to the amount of arrest which must be present, nor as to the criterion by which it is to be recognized; but when the definitions of the various classes of defectives enumerated in the same section of the Act are read in conjunction with it, as they are meant to be, it becomes quite evident that the concept is that of a degree of arrest sufficient to prevent independent social adaptation and to necessitate some form or degree of external care. Thus, briefly, the degree of defect in idiocy must be such as to prevent the individual from guarding himself against common physical dangers; in imbecility, from managing himself or his affairs; and in feeble-mindedness, as to render him in need of care, supervision and control either for his own protection or for the protection of others.

In addition to persons who are socially defective, the Education Act, 1921, recognized another criterion of defect. It regarded as mental defectives a group of children of school age who were incapable of profiting from the instruction in ordinary public elementary schools, and who, in consequence, were in need of instruction in special schools. While many of these were also socially defective, others were not so, with the result that there were two types of defectives recognized by the law—namely, social and educational. This not only gave rise to considerable confusion as to the nature of mental defect, it also caused hardship to those who had been stigmatized as defective, but were only so from the scholastic standpoint. The Joint (Wood) Committee on Mental Deficiency which reported in 1929* recommended that certification on the ground of scholastic inability should be abolished, and this has now been implemented by the Education Act, 1944, which also abolishes the term mental defective as applied to such children. The class, of course, remains and as it is an important one in regard to Education Authorities and their Medical Officers, it will be necessary to deal with it in this book. The point I desire to emphasize is that the only type of mental defect now so termed by English Law is social incapacity as defined by the Mental Deficiency Acts.

* Report of the Mental Deficiency Committee, 1929. H.M. Stationery Office.

The Nature of Mental Deficiency.

Having dealt with the various concepts of mental deficiency, we may now consider some further points regarding the nature of social defect as defined by the Mental Deficiency Acts. Some of these arise out of the wording of the legal definition. (It will be noticed that this says the arrest of mind must have existed " before the age of eighteen years," and I will first refer to this. In the original Act of 1913 the words used were " existing from birth or from an early age "; but it was found that in practice these gave rise to considerable difficulty as they were usually, and not unnaturally, interpreted to mean that evidence must be forthcoming of the existence of defect in early childhood. It was not always possible to do this for two reasons. First, there were many cases in which information as to the mental state during childhood was not available. Secondly, there are a number of cases of mental deficiency in which the defect does not become evident until much later than early childhood, as we shall see later. The intention of the Act was to legislate for persons suffering from arrested development of mind, and to use words which would distinguish between these and persons suffering from disorder or decay of mind, who might also be in need of care, supervision and control, but who were already provided for by the Lunacy Acts. In order to make this distinction and to overcome the two difficulties to which I have referred the age of eighteen years was specified, since it is now generally agreed that by this age the normal mind is sufficiently developed to admit of independent social adaptation.

With regard to these other forms of mental abnormality—namely, disorder and decay—it should be pointed out that although they differ in many ways from mental defect, and consequently need different forms of treatment and care, the three groups are not mutually exclusive; they are not even absolutely distinct from one another. Thus, many mental defectives develop a super-added psychoneurosis or psychosis, or pass into a state of dementia. A dementing process may arise before the development of mind is complete and induce, as an incidental phase, mental defect. Again, there is reason to think that in many persons who develop a psychosis there exists some inherent defect in the constitution of mind which, although not being legal mental deficiency, yet presents certain analogies to that condition. It is clear, therefore, that there is a close relation-

ship between these various forms of mental abnormality, and that mental deficiency cannot be considered as something entirely distinct, but as a very real and integral part of psychological medicine. It may be, indeed, that they are all but different manifestations of some common underlying inherent factor.

Next it will be noticed that the definition says of the arrest of mind "whether arising from inherent causes or induced by disease or injury." The words relating to causation were not included in the Act of 1913, and it was often assumed, quite erroneously, that it therefore only related to mental defect which was innate. It is now made quite clear that this is not so, and that the Act also applies to cases in which the defect has been induced by external causes. This brings us to another important point regarding the nature of amentia. It will be apparent from this reference to causation in the definition, and it will become still more evident later on, that the condition of mental deficiency is far from being a single clinical entity. Mental deficiency is, in fact, mainly a legal and social concept, and although all aments agree in suffering from an arrested or incomplete development of mind which results in social incapacity, this arrest may be due to many different causes and may assume many different clinical forms. One of the objects of this book is to describe these various clinical forms.

There is one important point regarding the nature of mental deficiency to which the Act makes no reference—that is, its permanency. There is no doubt, however, that a degree of mental arrest sufficient to cause the social incapacity envisaged by the Act will be permanent and incurable. Hence, although not explicitly so stated, permanency is an essential part of our conception of legal mental deficiency.

Although, as already stated, the Law no longer applies the term mental defect to children on the ground of scholastic inability, this condition is, in fact, due to an abnormality of mind; it is therefore necessary to consider its relationship to social defect. While it is true that educational and social incapacity often co-exist in the same individual, this is by no means invariably so. On the one hand, there are many persons who subsequently prove to be quite efficient socially who are so incapable of making a satisfactory response to the instruction in the ordinary schools that they have to be sent to special schools. These were formerly certified as mentally defective. On the other hand, there are not a few persons

subsequently proving to be incapable of independent social adaptation who yet possess sufficient scholastic ability to be capable of remaining in the ordinary schools. We must therefore conclude that scholastic and social incapacity, while often co-existing, are not identical.

Finally, the definition says arrested development of *mind*, and we have to consider what is meant by mind. It is commonly assumed that the only really important aspect of the human mind is the intellectual one and that amentia is of necessity due to a defect of this. I shall discuss this later in dealing with the psychology of defect; but I may say here that there is no legal justification for such a view, and that an arrested development of any process or department of mind, provided it resulted in social incapacity, would constitute legal mental deficiency. But it seems necessary to go further and to ask what we mean by *mind*. Regarding this, as is well known, there are two chief views. The one contends, briefly, that mind is an independent spiritual something which entirely transcends matter, although making use of the matter of the brain for its manifestations. The other holds that mind has no such independence, but that it is merely a transient product of brain activity. It would obviously be utterly presumptuous and out of place for me even to attempt to answer a question which has been asked, and asked in vain, for thousands of years; but it is perhaps necessary that I should state the point of view from which the defective mind will be regarded in this book. As we shall see later, the evidence from ætiology and pathology shows that the arrested and incomplete mind of amentia is accompanied by an arrested or incomplete development of brain. This being so, the most convenient standpoint from which to consider the subject of mental deficiency is the material one, and this is the one I shall adopt. But, although in my opinion arrest of mind is invariably accompanied by arrest of brain, it does not thereby follow that mind is merely a product or function of brain. It may be that in amentia an immaterial and normal "mind" is present which is incapable of manifesting itself because of imperfection of the material mechanism. The study of amentia really affords no evidence one way or the other, and as to the real nature of mind we have no knowledge—and in this place need have no concern.

In concluding this chapter it will not be out of place to emphasize the great significance of mental deficiency to the community. At

the close of the last century the only defectives generally recognized were those of low-grade—idiots and imbeciles—and the number of these was comparatively small. But it is now realized that above these there is a class—the feeble-minded—who are three times more numerous and who, although capable of useful employment under supervision, are incapable of independent social adaptation, and who consequently need some kind and degree of external care. The recognition of this class has enormously added to the social and administrative weight of the problem.

It is thus evident that the condition of mental deficiency, whilst presenting many interesting problems to the physician, the pathologist, and the psychologist, has also a much wider interest and importance. Since in Man the predominant feature is Mind, and since it is by its development and evolution that human progress has taken, and must take, place, it is clear that the question of its disease, and particularly of its defect, is one of supreme importance to the statesman, the sociologist, the philosopher, and the whole community.

CHAPTER II

INCIDENCE

THE enumeration of the mentally deficient section of any community is a very difficult matter for many reasons, and the figures concerning this class ascertained by the official census are so notoriously inaccurate as to be not worth quoting. For one thing, even if parents realize that their offspring is definitely defective, they are not unnaturally reluctant to proclaim the fact on a census paper. In many cases, however, particularly of the milder degrees of defect, which are by far the most numerous, although parents may recognize that their children are in some way abnormal, they do not realize that mental defect is present. It follows, that if an approximately accurate enumeration is to be made, it can only be by means of a special investigation; although it is practically certain that even by this the ascertainment will still be imperfect. During the present century two such special investigations have been made in this country: that in 1906 by the Royal Commission on the Feeble-minded, and that in 1926 by a joint Mental Deficiency Committee of the Board of Education and the Board of Control. The present chapter will be based upon the findings of these two inquiries.

THE NUMBER OF AMENTS IN ENGLAND AND WALES.

Investigations of the English Royal Commission.

In 1904 a Royal Commission was appointed to consider, *inter alia*, the existing methods of dealing with mental defectives, and the Commissioners decided that, before any practical administrative scheme could be formulated, it was imperative to obtain approximately accurate information regarding the number and condition of these persons. The Commissioners remark:* "Almost at the

* Report of the Royal Commission on the Care and Control of the Feeble-minded, Cd. 4202, 1908.

outset of our enquiry we found that there were no available statistics from which any trustworthy estimate could be made as to the number of persons who might be said to fall within one or other of the categories named in our reference. We decided, therefore, that an expert investigation of the matter was indispensable." With this object, a series of personal investigations were instituted on a considerable scale, and this was the first systematic attempt to obtain reliable data. It is not too much to say that these inquiries added enormously to our knowledge regarding the condition, manner of living, and environment of the aments of this country, besides enabling their total number to be calculated with a degree of accuracy which had previously been impossible.

The method adopted by the Royal Commission consisted of a series of elaborate and searching inquiries by a number of medical men, to each of whom a selected area was assigned. The investigator was instructed to visit personally all public elementary schools, poor-law institutions, charitable establishments, training homes, reformatories, common lodging-houses, prisons, idiot asylums, hospitals, and, indeed, any establishment likely to harbour the mentally abnormal. Further, he was to see persons in receipt of outdoor relief, to apply to the clergy, medical practitioners, the police, charity organization societies, and similar agencies, and, in short, to make use of any and every channel which might help him to make the enumeration complete.

It was not found practicable to investigate the whole of the country in this way, but in order that conclusions applicable to the entire country might be drawn, a selection of certain typical areas was made. Altogether, there were examined nine areas in England, two in Wales, one in Scotland, and four in Ireland, having an aggregate population of 3,873,151.

The general results regarding incidence in England and Wales ascertained by the inquiry may be stated as follows: The total number of " defectives " ascertained in the eleven areas was 10,925. This was equivalent to 4·6 per 1,000 general population, and from this the Commissioners estimated that on January 1, 1906, the total number of mental defectives in England and Wales was 149,628.

This investigation showed that the incidence varied considerably in different localities, ranging from a minimum of 1·35 per 1,000 population in Hull to a maximum of 4·68 per 1,000 in Lincolnshire.

If, however, the areas of extreme low incidence were excluded, there was a very close correspondence between the remainder, their mean average incidence being about 4 per 1,000. Agricultural areas showed a slightly higher, and urban areas a slightly lower, ratio than this.

It was ascertained that the incidence of the different grades of defect was inversely as the degree of defect. Thus the approximately 40 aments which existed in every 10,000 population were made up of 2 idiots, 7 imbeciles, and 31 feeble-minded. Or, expressed in percentages, in every 100 aments there were approximately 6 idiots, 18 imbeciles, and 76 feeble-minded.

Investigations of the Mental Deficiency Committee.

In 1924 a joint committee was appointed by the Board of Education and the Board of Control to consider certain administrative and other problems concerning mental defectives. It was decided by the committee that another survey on similar lines to that conducted by the Royal Commission should be made, and this was entrusted to Dr. E. O. Lewis, whose experience rendered him eminently suitable for the inquiry. The findings are not only exceedingly valuable in themselves, but enable us to institute a comparison with the figures ascertained twenty years previously by the Royal Commission. The general results regarding incidence ascertained by Dr. Lewis are as follows:*

The total population of the areas investigated was 622,880; and the total number of defectives ascertained in these areas was 5,334. With regard to the different grades of defect, it was found that in every 100 aments there were approximately 5 idiots, 20 imbeciles, and 75 feeble-minded. After making certain corrections and allowances, Dr. Lewis concluded that the number of defectives was at least 8 per 1,000 of the total population, and (taking the Registrar-General's estimate of population of 39,290,000) he estimated that in 1927 there was a total of approximately 314,000 defectives of all ages and grades in England and Wales. From the ascertained ratio of the different grades it may, therefore, be stated that in 1927 the approximate number of each grade of defect was as follows:

* Report of Mental Deficiency Committee, Part IV., 1929. H.M. Stationery Office.

Idiots	15,700
Imbeciles	62,800
Feeble-minded	235,500
Total	314,000

It was found, as in the investigations of the Royal Commission, that the incidence of amentia was relatively greater in the rural than in the urban areas. Thus, the mean average incidence in the rural areas was 10·4 per 1,000, whilst in the urban areas it was 6·7 per 1,000.

In comparing the figures ascertained by these two investigations, we are at once confronted with a very striking difference—namely, that Dr. Lewis' estimate of the incidence of mental defect in England and Wales is practically double the estimate of the Royal Commission made twenty years previously. It becomes of the utmost importance to inquire whether this represents a real increase or whether it is capable of any other explanation.

Although the methods of inquiry and the standards laid down were practically the same in the two inquiries, there are two facts which have unquestionably tended to make the later one more complete. In the first place, all the areas were investigated by Dr. Lewis instead of by different investigators, thus securing greater uniformity in the application of standards. In the second place, it must be remembered that during the time which had elapsed since the first inquiry much greater attention had been paid to the subject, and a great development of social services had taken place. Doubtless in each inquiry the defectives ascertained fell short of the total number existing, but this was less so in regard to the later one. It follows that much of the increase may be due to the fact that Dr. Lewis was enabled to make a more complete ascertainment than were the investigators of the Royal Commission.

There are certain facts, however, which appear to make it impossible to refer the increase entirely to this cause. There can be little doubt that had any considerable number of cases been missed by the investigators of the Royal Commission, they would have been mainly cases of the milder or feeble-minded grade of defect. The grosser conditions of idiocy and imbecility are so obvious that it is highly unlikely that many of these could have been overlooked. It follows that if the difference between the two sets of figures were due to a more complete enumeration, we should expect to find a relatively greater proportion of feeble-minded amongst those ascertained by Dr. Lewis. It is therefore extremely significant to note the close

correspondence in the ratio of the different grades of defect revealed by the two inquiries—namely, 76 feeble-minded to 24 imbeciles and idiots (Royal Commission), and 75 feeble-minded to 25 imbeciles and idiots (Dr. Lewis). It is further to be noted of the Royal Commission's inquiry that, with the exception of certain very low incidence areas (and I think the accuracy of these is open to very considerable doubt), the remainder, in spite of being investigated by different persons, show comparatively little variation round a mean average incidence of about 4 per 1,000.

It seems impossible, therefore, to account entirely for the increase from 4 to 8 per 1,000 by a more complete ascertainment, and to avoid the conclusion that Dr. Lewis' figures represent a real increase in the number and proportion of defectives. Perhaps to some extent this may be due to an accumulation consequent on a lowered mortality rate; but even this would only account for a relatively small proportion, so that although I do not for a moment think that the number of defectives was double what it had been twenty years previously, it would certainly appear that there had been some increase in this number, both absolutely and relative to the general population.

The figure as to the total number of defectives in England and Wales is, of course, an estimate based upon the number actually ascertained in a comparatively small portion of the country, and in arriving at this estimate certain corrections and allowances had to be made. For instance, the Royal Commission's inquiry included a proportion of sane epileptics, of uncertified insane, and of "mentally defective" children whose disability was chiefly educational, and who would not be certifiable under the Mental Deficiency Act. The second inquiry did not include either of the former groups, but it did include the latter. It is very doubtful, however, whether in either case the number so included would amount to more than the number of real defectives who were missed. Again, it is to be remembered that there is a difference in the rates of incidence in urban and rural areas respectively, and a correction has to be made for this. After careful consideration of these and other points, I think there is no doubt that the estimation of 8 defectives per 1,000 population is a conservative one. In fact, more recently Lewis' figures have been exceeded in some areas where a thorough ascertainment has been carried out, and I think it likely that the total incidence of mental defect in England and Wales is not less than 1 per cent. of the general population.

Location.

The incidence of amentia in urban and rural areas respectively is shown in the following Table I.

TABLE I.

SHOWING THE TOTAL NUMBER OF AMENTS, AND OF IDIOTS, IMBECILES, AND FEEBLE-MINDED RESPECTIVELY, PER 1,000 POPULATION, IN CERTAIN AREAS OF THE UNITED KINGDOM, ACCORDING TO THE INVESTIGATIONS OF THE JOINT MENTAL DEFICIENCY COMMITTEE, 1924.

	Area.	Idiots.	Imbeciles.	Feeble-minded.		Total Aments.	
				Adults.	Children.		
Urban.	A (Extra-metropolitan) ..	0·29	1·24	1·88	2·30	5·71	Mean average =6·7
Urban.	B (Cotton town in North of England) ..	0·27	1·22	2·84	2·47	6·80	
Urban.	C (Midland industrial) ..	0·31	1·22	2·62	3·44	7·60	
Rural.	D (Eastern Counties) ..	0·40	1·62	3·61	4·10	9·74	Mean average =10·4
Rural.	E (Western Counties, includes one large town) ..	0·43	1·98	4·58	3·94	10·93	
Rural.	F (Wales) ..	0·37	1·85	4·62	3·94	10·78	

Incidence of Amentia in Relation to Mental Disorder.

There is evidence pointing to a fairly constant relationship between the incidence of amentia and that of mental disorder, so that in areas where the one abounds there is a high prevalence of the other. At the same time, there are decidedly more aments in the country than there are insane persons under care. Thus, as we have seen, the total number of aments in 1926 was approximately 314,000, corresponding to 8 per 1,000 population, whereas, according to the Fourteenth Annual Report of the Board of Control, the total number of notified insane under care on January 1, 1928, was 138,293, corresponding roughly to 3·5 per 1,000, or rather less than half the number of aments. In the year 1938 (which is taken as being the last normal period before the war) the total number of persons notified to the Board under the Lunacy and Mental Treatment Acts had risen to 158,723, corresponding to 3·9 per 1,000 of the population. But these figures relating to the mentally disordered are only approximate, since they do not include many uncertified persons

living in their own homes or in private care; they also include about 20,000 aments who are suffering from mental disorder. It is clear, therefore, and it cannot be regarded as other than disquieting, that probably between 15 and 20 persons per 1,000 of the population are suffering from some form of mental disease sufficiently serious and incapacitating to render them in need of care and control. It must be added that these figures do not include a far larger number of persons suffering from psychoneuroses.

Sex Incidence.

Table II. shows the sex of all the aments discovered by both investigations. It will be seen that there is a preponderance of males. Dr. Lewis showed that this is not only so with regard to actual numbers, but that males are relatively more numerous than females. Thus, the proportion of males is 9·21 per 1,000 of the total number of males in the population investigated, while the proportion of females is 7·97 per 1,000 of the total number of females.

TABLE II.

SHOWING THE SEX OF AMENTS.

Compiled from the total numbers ascertained by the inquiries of the Royal Commission and the Joint Mental Deficiency Committee.

	Idiots.	*Imbeciles.*	*Feeble-minded.*		*Totals.*
			Adults.	*Children.*	
Males	424	1,482	4,228	3,306	9,440
Females	376	1,270	3,292	3,077	8,015

It is of interest to compare these figures with the following table showing the sex incidence of defectives in institutions in the United States of America.

TABLE III.

SHOWING THE SEX OF 41,439 DEFECTIVES IN INSTITUTIONS IN THE UNITED STATES.*

	Idiots.	*Imbeciles.*	*Morons*	*Totals.*
Males	3,351	10,495	6,643	20,489
Females	3,291	9,666	7,993	20,950

* H. M. Pollock, "Feeble-mindedness in Institutions in the United States," 1926.

It would at first sight appear as if there were a preponderance of females; but the difference is really due to the fact that a considerable proportion of males of the moron grade are not in institutions, but are able to find some employment outside. It is probable that the ratio between the sexes is not greatly different from that in England.

Incidence of Mental Defect in the United States of America.

I have tried to obtain statistics relating to the incidence of mental defect in other countries; but with the exception of U.S.A. the figures are so obviously incomplete that their quotation would only mislead. The following figures show the estimated number of defectives resulting from different inquiries in certain of the United States:*

Year.	*Investigation.*	*Estimated Number of Defectives per 1,000 Population.*
1914.	Massachusetts Society for Mental Hygiene ..	3·54
1915.	New York State Commission	4·13
1915.	W. E. Fernald	4·00
1915.	The Porter County (Indiana) Survey	7·35
1916.	The New Castle County (Delaware) Survey ..	3·82
1916.	C. H. Strong's investigation of New York Charities	3·40
1917.	Nassau County (New York) Survey	5·44

It is clear, however, from other and more recent investigations, that the actual number is considerably greater than these figures would suggest. Thus, the application of group tests to the American Army during the first Great War showed that the number of men with a mental age of eight years or less was 8 per 1,000; and Professor Terman† considers that from 2 to 3 per cent. of school children "are so poorly endowed in intellectual ability as to render their social competency a matter of extreme doubt."

Dr. Edgar A. Doll‡ says that generally speaking it may be concluded that 1 per cent. of the total population is mentally deficient

* New York Committee on Mental Hygiene, September, 1917.

† L. M. Terman, "Intelligence of School Children," 1921.

‡ Edgar A. Doll, "Community Control of Mental Deficiency in the United States," *Journ. Mental Science*, October, 1933.

in the social sense, and that this figure has been confirmed by both intensive and extensive local surveys. It rises in the rural districts and in those States which have inbred populations, and it falls in the Western States, where there is less inbreeding. This rate corresponded in 1933 to a total of at least 1,000,000 mentally deficient persons. Dr. Doll further says it is generally agreed that at least 2 per cent. of the school population are mentally deficient. This corresponded in 1933 to a total of 500,000 mentally defective children of compulsory school age.

If allowances are made for possible differences of standards, it is likely that the incidence of mental deficiency in America is very similar to that in England.

Finally, I may add that a survey, published in 1943 by Lemkau, Tietze, and Cooper,* of the chief investigations made in several countries during the preceding 15 years shows that, apart from the English inquiries relating to mental defect, the statistics are so unsatisfactory as to afford no true indication of the incidence of amentia or mental disease. This defect in our knowledge as to the number of the mentally affected is urgently in need of remedy.

* P. Lemkau, C. Tietze, and M. Cooper, *United States Public Health Report*, Vol. 58, December 31, 1943.

CHAPTER III

ÆTIOLOGY

As was stated in a previous chapter, mental deficiency is neither a clinical, pathological, nor ætiological entity. It is a condition of arrested or incomplete development of mind which may be produced by many different causes and of which there are many clinical and pathological varieties. This being so, the question of causation should really be considered in regard to each separate variety of defect and this will be done in subsequent pages. In the first instance, however, it seems advisable to deal with causation from the general standpoint and this is what I now propose to do.

The growth and development, and consequently the arrest and imperfection, of the brain are dependent upon many influences, but all of them are comprised under the two headings of inheritance and environment. In investigating the causation of mental defect, therefore, we have to make an enquiry into the family history in order to ascertain the presence of any hereditary tendencies, and into the personal history, from the time of conception onwards, to ascertain if there are any adverse environmental influences. Further, we have to take a sufficiently large series of cases which are not drawn from any one situation, class, or age group, but are representative of mental defect in general. For cases which are due to environmental factors tend, on the whole, to be of lower grade and less manageable at home; a greater proportion of them are therefore sent to institutions, so that statistics confined to institutional cases will not be representative. Moreover, these lower grade cases tend to die earlier and are therefore more prevalent among children than adults. The investigation of a large number of cases of defect on these lines shows that with regard to causation they may be divided into the following four groups.

1. *Amentia due to Inheritance.*—In this group the cause of the defect is germinal, intrinsic or endogenous, and I have therefore termed it *primary* amentia.

2. *Amentia due to Environment.*—In this group the cause of the defect is extrinsic or exogenous, and I have therefore termed it *secondary* amentia.

3. *Amentia due to both Inheritance and Environment.*

4. *Amentia without Discoverable Cause.*

The proportion of cases in group 4 is a small one. In the majority of those in group 3, although factors of inheritance and environment are both present, careful investigation shows that one or the other preponderates to such an extent that they can really be placed in group 1 or 2. These two groups of primary and secondary amentia are therefore by far the most important numerically, and it is necessary to ask what proportion of defectives belongs to them respectively. Many years ago, as the result of an enquiry into a large number of cases of all ages, degrees and types, I came to the conclusion that approximately 80 per cent. were of the primary, and 20 per cent. of the secondary form. Since then a number of such enquiries have been made by other investigators, and the results are shown in Table IV.

TABLE IV.

SHOWING THE PROPORTIONS OF PRIMARY AND SECONDARY AMENTS.

Observer.	*Primary.*	*Secondary.*
	Per cent.	*Per cent.*
Brugger, C.* (Germany)	80·71	19·29
Grundy, F.† (England)	75·0	25·0
Larsen, E. J.‡ (Denmark)	76·2	23·8
Lokay, A.§ (Germany)	69·5	30·5
Penrose‖ (England)	29·0	9·0
Shrubsall, F. S., and Williams, A. C.¶ (England)	78·0	22·0
Wildenskov, J. O.** (Denmark)	90·0	10·0

When it is considered that these later figures come from different countries, and that there are probably differences in the nature of

* Brugger, C., *Zeitschr. f. d. ges. Neur. u. Psych.*, vol. cxxx., 1930.

† Grundy, F., *British Medical Journal*, June 30, 1934. (In this enquiry the 25 per cent. of secondary cases includes a number in which the cause was indiscoverable.)

‡ Larsen, E. J., *Acta Psychiatrica et Neurologica*, vol. vi., 1931.

§ Lokay, A., *Zeitschr. f. d. ges. Neur. u. Psych.*, vol. cxxii., 1929.

‖ Penrose, L. S., "Mental Defect," 1933.

¶ Shrubsall and Williams, "Mental Deficiency Practice," 1932.

** Wildenskov, H. O., "Investigations into the Causes of Mental Deficiency," 1934.

the material and in the criteria of defect, it is remarkable that, with one exception, they should be in such close agreement; I think, therefore, it may be regarded as established that approximately four-fifths of defectives in general are of the primary, and one-fifth of the secondary form. The exception is the investigation of L. S. Penrose and is due to the fact that although he found hereditary factors in 91 per cent. of his cases he was of the opinion that only 38 per cent. of them could be definitely assigned to primary and secondary groups, the remainder being regarded as the result of *both* inheritance and environment.* It is now proposed to consider these ætiological groups seriatim.

AMENTIA DUE TO INHERITANCE.

Primary Amentia.

The term *Primary Amentia* is now very generally applied to all those cases of defect which are due to germ abnormality. In a proportion of them adverse environmental factors are also present; but these are regarded as merely concomitant and not contributory, and the essential cause lies in the condition of the germ cell. This is shown by the occurrence in the family of a marked and altogether unusual amount of mental abnormality. But this abnormality is not always of the same kind. In some instances its clinical type is similar to that in the defective patient. In others it assumes a variety of forms. Thus, one member of the family may have been insane, another a sufferer from mental instability or a psychoneurosis, another an epileptic, another a pre-senile dement, and another a dullard or defective. In my experience the majority of defectives come from families which are characterized by an exceptional proneness to such varied clinical forms of mental abnormality.

On this point it may be remarked that the Departmental Committee on Sterilization† received evidence to the effect that a considerable proportion of patients in mental hospitals and institutions for defectives have one, two, or more relatives who have suffered

* Dr. Penrose has since made a clinical and genetic study of 1,280 cases of mental defect in the Colchester Institution (Medical Research Council, Special Report No. 229, H.M. Stationery Office, 1938). This research is of great interest and value; but it does not lend itself to summarization in this place and should be read by those specially interested in the subject.

† Report, H.M. Stationery Office, Cmd. 4485, 1934.

from some form of mental disease or defect, and the Committee concluded that "if the incidence of mental abnormalities in these families prevailed in all other families of the general community the number of mental patients would be considerably larger than the most reliable statistics indicate."

The presence of these different forms of mental affection in the family suggests that the abnormality of the germ may not be the same in all cases of defect, and regarding this there are three views which have to be considered.

1. Evolutional Lag.

It has been suggested that the peculiarity of the germ which is responsible for mental defect is not really any change at all, but that it is the persistence of a simple type of germ plasm which has failed to evolve up to the standard necessary to produce what we regard as a normal mind. In the words of Dr. C. B. Davenport,* who is one of the leading advocates of this view, "the conclusion is forced upon us that the defects of this germ plasm have surely come all the way down from man's apelike ancestors, through two hundred generations or more. The germ plasm that we are tracing remains relatively simple; it has never gained, or only temporarily at most, the one or the many characteristics whose absence we call (quite nadequately) 'defects.' Feeble-mindedness is thus an uninterrupted transmission from our animal ancestry. It is not reversion; it is direct inheritance."

At first sight this view appears to be supported by several facts. In the first place, while mankind in general has undergone a considerable mental evolution since primeval days, all the races and nations of mankind have not progressed to the same extent, and there are many which still remain in a comparatively backward or unevolved condition. It may therefore well be that the same holds good of certain stocks in civilized nations, and, in fact, it has been shown that a proportion of mental defectives occurs in families characterized by intellectual dulness. Further, from the psychological aspect, many defectives appear to differ quantitatively rather than qualitatively from their non-defective fellows; indeed, they are often regarded as merely the tail end of a normal variation, and such have been termed by Dr. Lewis *sub-cultural* defectives.

* C. B. Davenport, "The Origin and Control of Mental Defectiveness," 1912.

But there are serious objections to this hypothesis as an explanation of mental defect. Whilst it is doubtless true, as Davenport says, that a continuous trail of defects may sometimes be traced back for six or seven generations, for we have to remember that for some time past the operation of natural selection has been rendered nugatory in civilized communities, yet it is not so very long since the defective and deformed were abandoned to their fate, as they still are in some savage tribes, and it is inconceivable that they could have survived and propagated their kind amidst the ruthless selection which existed in the dawn of man's existence. Again, whilst it is perfectly true that many defectives come of intellectually dull stocks, there are many who come of families of average and even superior ability, but numerous members of which have been insane or otherwise psychopathic. Lastly, whilst the mental condition of many aments, when looked at superficially, appears to differ in degree rather than in kind from the normal—to be, in fact, merely a form of subnormality—yet I think that if a closer psychological examination be made it will usually reveal definite qualitative changes in the shape of irregularity and distortion of development. In many aments, indeed, the abnormal and pathological condition of their minds is shown by their unusual proneness to mental disorder and deterioration.

For these reasons, whilst admitting that the theory of evolutional lag or failure may account for cases of dulness, I am unable to accept it as an explanation of mental defect. No doubt there are certain general resemblances between some aments and some of the inferior races of mankind, such as the South Sea Islanders and the Bushmen. But there are many differences, and, as we shall see later, the lack of adaptiveness and common sense which characterizes aments is such that it is incredible it could ever have represented a normal phase in human evolution. Nor can I agree with the view sometimes expressed that the individuals whom we now class as socially defective would have been regarded as normal in a less civilized community, or that those who are now normal might, with the march of civilization, be regarded as defective. Amentia occurs in primitive human races and even in animals, and it seems to me that it is, and always has been, a mental abnormality, and consequently due to some change which has taken place in the germ material.

2. Specific Gene Abnormality.

As a result of the researches of Mendel, which have been amply confirmed and extended by many later investigators, it is now generally accepted that hereditary factors are contained within certain elements of the chromosomes of the germ cells termed *genes*. These genes are minute in size and invisible under the highest powered ultra-microscope. Their nature and constitution are not known, but they are assumed to be molecules of a physico-chemical structure. Each germ cell contains a large number, and it is estimated that no less than 1,800 genes are present in each germ cell of the fruit fly (*Drosophila*), upon which most observations have been made. It has further been ascertained that each gene occupies a definite place within the chromosome in regard to its fellows. Each gene is concerned in directing and controlling the development of a particular structure or organ; but it is probable that in regard to most organs many genes co-operate, and that should one of them be altered the character of the organ may be considerably modified. Indeed, it is suggested that there is a certain interdependence between the whole system of genes whereby a balance is produced, and that in some circumstances the alteration of a single gene, particularly if it should be one which controls some definite physiological or chemical activity, may upset this balance and produce widespread changes in the organism. We shall consider the possible causes of such gene alterations presently.

But, whilst it is established that the genes are concerned in the transmission of characters and qualities peculiar to the family, species and race, it must be emphasized that these characters do not exist ready formed in the genes. Strictly speaking, there is no such thing as the direct transmission of any character as we see it in the organism. The gene system must be regarded as a complex of determinants, directive forces, or urges to a particular kind and degree of development, and what they transmit are not characters as such, but tendencies to the development of those characters. In some instances these tendencies are so great that the character will appear in any environment; in others a special environmental stimulus is needed for its production.

When a particular character appears in practically the same form generation after generation, it is justifiable to conclude that it is due to a *specific* peculiarity in one or more of the genes which are

concerned with the development of the affected structure. This is the case in some forms of amentia. For instance, in amaurotic family idiocy each affected member of the family presents similar clinical features. Dr. T. Sjögren,* of Sweden, has described a special type of mental defect occurring in an isolated Swedish valley—but which appears to be rare or unknown in England—which also breeds true. Gunther and Penrose,† from a study of the family histories of twenty institutional cases of the tuberous sclerosis variety of mental defect, conclude that in this condition also " a single rare dominant gene is the main causative factor." Dr. Penrose‡ has also studied the pedigree of a case of so-called " phenylpyruvic amentia," and holds that a single recessive gene is the cause.

In all these varieties of mental defect—and further investigation may reveal others—we may conclude that the cause is a specific gene abnormality, and this is confirmed by the fact that their mode of transmission is in accordance with Mendelian laws. But cases of this kind present very definite and peculiar physical features, and they are relatively rare; in fact, the whole of them do not amount to more than a very small proportion of the total number of defectives. The question therefore arises whether the mass of primary defectives, those who present no special distinguishing features and whom I have termed the undifferentiated or " simple " type of primary aments, are also caused by a specific gene abnormality.

Regarding this, it is important to bear in mind what has been said as to the antecedents of the great majority of primary aments—namely, that they occur in families in which there is a concentration, not of one particular form, but of many clinical forms, of mental abnormality. Actually, as we shall see later, contrary to what is often thought, the proportion of defectives who are the offspring of a defective parent is not more than about 10 per cent., and usually other forms of mental abnormality appear in the family more often than does defect. It is clear that no single specific gene change could account for such a diversity of mental diseases, and the suggestion has been made by those who approach the subject

* T. Sjögren, *Acta Psychiatrica et Neurologica*, Supplementum Copenhagen, ii., 1932.

† M. Gunther and L. S. Penrose, " The Genetics of Epiloia," *Journ. of Genetics*, October, 1935.

‡ L. S. Penrose, *Lancet*, July 27, 1935, p. 192.

entirely from the Mendelian and statistical aspects that in these cases there is not one, but a number of specific gene changes. It is very difficult to imagine, however, how specific gene abnormalities could be responsible for each of the great variety of clinical conditions which exists in these families, ranging as they do from various forms of psychoneuroses and psychoses to premature degeneration and the structural brain defects of amentia; moreover, the transmission of the defect does not conform to any known Mendelian law. It has been suggested that the investigation of mono- and di-zygotic twins, one or both of whom are mentally abnormal, should throw light on the matter, and a large amount of work has been done on this subject. The general results, however, are at present so conflicting and unsatisfactory as to be not worth quoting in this place.* The question therefore arises whether there may not be some other explanation. This brings us to the third hypothesis.

3. Impaired Developmental Potentiality.

According to this view, the abnormality is not any specific change in the genes, but a qualitative and pathological alteration of them, or of their protoplasmic milieu, or even of the whole germ cell. It is suggested, in fact, that the germ is in a state of ill-health in consequence of which there is an impairment of its developmental potentiality. This is the hypothesis of *Blastophoria* or germ corruption.

There is ample proof that the germ cells and their contained genes are far from being immutable or immune to adverse influences. Apart from the probable production of gene mutations by inequalities of division, entanglement of the chromosomes, and similar accidents during the complicated process of mitosis, there is experimental evidence that the germ cells may be adversely affected by many pernicious factors of the environment. Thus, Sumner succeeded in producing important racial alterations in mice by means of temperature; Bordage has done the same in peach trees, and Tower† in beetles. MacDougal has brought about new varieties of plants by injecting various chemicals into the

* *Cf.* E. T. O. Slater, "Critical Review: Twin Research in Psychiatry," *Journ. Neurol. and Psychiat.*, July, 1938.

† Publications of the Carnegie Institute, Washington, 1905-06.

immature ovaries: and Guyer and Smith* have shown that in rabbits the injection of a special serum produces changes in the lens of the eye of the offspring which have been transmitted for six generations. Lustig† found that when cocks, by a gradual process of intoxication with abrin, had been rendered immune to ordinarily fatal doses, their offspring showed clear signs of the influence of this paternal poisoning, being few in number, of low vitality, stunted, and often deformed. Similar results were obtained by Watson‡ in guinea-pigs. Cole§ also states that in the case of rabbits and fowls, where the males were fed with lead acetate, the resulting offspring have a lower vitality and are distinctly smaller in average size. It should be noted that these results followed treatment of the males, and were therefore due to germ changes. Bauer‖ considers there is evidence that quinine, mercury, iodine and arsenic may also be attended with injurious effects upon the progeny, and this writer says, " we have to recognize that toxins and doubtless other harmful influences may affect the idioplasm and produce hereditarily transmissible injuries."

Professor E. W. MacBride¶ has drawn attention to the work of Tornier upon Chinese goldfish, in which it is claimed that marked and transmissible changes of characters, due to a weakening of the germ material, are brought about by breeding in water deficient in oxygen. Muller** has produced gene mutations in the fruit-fly with X-rays, and these have since been applied to many species of plants and animals with similar results. It is possible that other forms of radio-activity may also be responsible for gene changes.

The question of the effect of alcohol upon the germ cell is one of considerable practical importance. The observations of Stockard,†† based upon thirteen years' experimental work upon guinea-pigs, were to the effect that the mating of alcoholized males with untreated females produced markedly degenerate offspring in which a variety of nervous abnormalities occurred. It must be stated, however, that subsequent work by R. Pearl upon fowls and by Miss Durham

* M. F. Guyer and E. A. Smith, *Journal of Experimental Zoology*, vol. xxxi., 1920, and vol. xxxviii., 1924.

† Lustig, *Zentralblatt für Pathologie*, No. 15, 1904.

‡ Watson, *British Medical Journal*, vol. ii., 1905.

§ Cole, *Proc. Soc. Experimental Biology*, vol. xii., 1914.

‖ Bauer, Fischer, and Lenz, " Human Heredity," 1931.

¶ E. W. MacBride, " The Influence of Environment in producing Inheritable Degenerate Changes," C.A.M.W. Conference, 1924.

** H. J. Muller, " Artificial Transmutation of the Gene," *Science*, vol. i., 1927.

†† Stockard, *American Journal of the Medical Sciences*, April, 1924.

and Miss Woods* upon guinea-pigs does not confirm, in fact is in opposition to, Stockard's results, so that for the present the matter must be regarded as non-proven. But it may be added that Dr. E. Bertholet,† after making microscopical examinations of the testes of 120 men, of whom 80 were notoriously alcoholic, claimed that there were marked differences between the alcoholic and the normal.

I think there is now abundant experimental evidence to justify the conclusion that in many animals and plants changes in the genes, or germ cells, may be produced by various factors of the environment. In the case of man, experimental evidence of this kind is necessarily lacking, and we can only have recourse to clinical experience and genealogical studies, which, although not without value, are naturally less conclusive. One of the earliest inquiries made was that by Dr. C. Paul in 1861 regarding the effect of lead. This observer found that out of 32 pregnancies in which the *father alone* suffered from lead-poisoning, the mother being free from that condition, 12 of the offspring were stillborn, 8 died during the first, 4 during the second, and 5 during the third year of life, while another one died later in childhood. Similar data regarding workers exposed to the fumes of nitrate of mercury were published by Lizé. Out of 12 pregnancies, in which the father alone was exposed, there were 4 stillbirths; of the remaining 8 children, 3 died before the fourth year, and only one could be described as vigorous.

In studying family histories I have been struck by the extent to which alcoholism and tuberculosis occurred in the antecedents of persons suffering from mental abnormality, including mental defect, and this has caused me to think that these factors may play a part in producing the germ change which is responsible for these conditions. It is also possible that syphilis may act in the same way. But there are probably many other influences, which are at present quite unrecognized, which may have a similar effect. We can, I think, say with certainty that alterations in the germ cells can be produced by various factors of the environment; but it remains for further research to show definitely what are the factors which produce those changes which are the genetic basis of mental defect.

* F. M. Durham, and H. M. Woods, "Alcohol and Inheritance," M.R.C. Report No. 168. H.M. Stationery Office, 1932.

† Ed. Bertholet, "On the Atrophy of the Human Testicle under the Influence of Chronic Alcoholism," *Zentralblatt für Pathologie u. Pathol. Anatomie*, Band xx., No. 23, 1909.

Reference may here be made to two other matters bearing upon the question of germ change. It is a popular opinion that the *intermarriage of blood relations* is fraught with considerable evil effects, both mental and physical, to the offspring. That this is the case in certain of the domesticated animals there seems to be no doubt, and practically all breeders of experience are unanimous that injury is almost certain to result from repeated " in-breeding." The effects upon the offspring are stated to be that the nervous system is rendered more unstable, and therefore more excitable; any existing constitutional defects are intensified; the size tends to decrease; and there is produced a predisposition to disease and an impairment of the reproductive functions. In other words, the result is a deterioration very similar in some respects to the psychopathic disposition in human beings. If, therefore, we can argue from the lower animals to man in this respect, consanguinity is undoubtedly harmful.

In the case of man, in-breeding to this extent is practically unknown; but instances are not wanting in which intermarriage has taken place for many generations without the slightest untoward result. Thus, Voisin, who investigated the offspring of forty-six consanguineous marriages in the commune of Batz, where intermarrying had been the rule for several generations, says that " insanity, idiocy, and deaf-mutism are unknown "; and the same author could not find consanguinity the cause of mental deficiency in a single case at the Bicêtre and Salpêtrière. Huth* also was of opinion that this practice is not attended with harm if the family is healthy, and instances the inhabitants of Pitcairn and Iceland in support of his statement. George Darwin† arrived at a similar conclusion.

More recently Dr. C. A. Penrose investigated this subject in regard to the white population of the Bahama Islands. He found there a large proportion of congenitally blind, idiotic, and other degenerates, and ascribed their presence to the prevalence of consanguineous marriages. But the editor of the *Journal of Heredity*‡ strongly combats this view. He found that in some of the worst fraternities instanced by Dr. Penrose there was no consanguinity, and in others not an excessive amount; and he

* Alfred Huth, " Marriage of Near Kin," London, 1875.

† George Darwin, *Journal of the Statistical Society*, June, 1875.

‡ August, 1916, p. 343.

regards the degeneration as due to the accumulation in the islands of the worst stocks, owing to the emigration of the most able and enterprising individuals. He further instances the case of Smith's Island, off the coast of Maryland, where all the inhabitants were said to be interrelated, but where, among 700 persons, no case could be found of idiocy, insanity, epilepsy, or congenital deafness.

The Quakers and Jews are well-known instances of modified intermarrying. So far as I am aware there is no undue incidence of mental abnormality among Quakers. With regard to the Jews, there can be no doubt that whilst many of them evince a very high degree of intellectual and artistic ability, yet as a race they are exceedingly neurotic and prone to insanity. But it must not be too readily assumed that consanguinity is necessarily responsible for all this. When one recalls the wretched conditions under which the Jews have been compelled to live for at least the past 2,000 years, from which, indeed, even now they are in many places not free, and when one thinks of the constant harrying to which they have all this time been subjected, it is not improbable that other factors than consanguinity may have left their mark upon the nervous system of the Jew.

In my opinion, the crux of the whole question is the presence of morbid inheritance, not of consanguinity, and I believe the result to be entirely dependent upon the presence or absence of a constitutional taint. Should such be present, it will, of course, tend to be accentuated, and the effect upon the offspring may be disastrous. In its absence, however, I doubt whether any untoward result is likely to follow, and I certainly do not think that amentia will arise. As a matter of fact, a considerable amount of intermarrying still takes place in certain localities of our own country, such, for instance, as inaccessible islands in the north of Scotland and out-of-the-way rural districts; but I know of no statistics showing that in these cases it has been responsible *per se* for the occurrence of mental deficiency.

I consider, therefore, that the statement that consanguinity in itself is an important cause of amentia is not supported by the facts. In my own series of cases I found that only 5 per cent. of defectives were the offspring of blood relations, and in all of these a pronounced psychopathic heredity was present. A similarly small percentage is revealed by several other inquirers. Thus, Beach and Shuttleworth found consanguinity in 4·2 per cent., Down in

7 per cent., Kerlin in 7 per cent., and, in fact, the result of careful research is decidedly to discount this factor as a cause of amentia.

There are reasons for thinking that the *age of the parents at conception* is not without influence upon the vitality of the child. Thus Korosi, as a result of the investigation of 24,000 unselected individuals, came to the conclusion that the children of fathers below twenty and above forty years are weaker than when the fathers are between these ages; also that the children of mothers over forty years of age are weaker than those born when the mother is below this age. Dr. Antonio Marro, Director of the Lunatic Asylum of Turin, after a very extensive series of observations, came to the same conclusion, and considers that both mental and physical stigmata of degeneracy are commoner in children born of parents under the age of twenty-six and over that of forty than in those born between these ages. Matthews Duncan was of opinion that premature and late marriages were influential in the production of idiocy, and Langdon Down,* found that in 23 per cent of idiots there was a disparity of more than ten years in the ages of the parents. Amongst my own patients a similar disparity existed in 4 per cent. of cases, in all of them the father being the elder. In one case the difference in age was as much as thirty-two years. As we shall see in a later chapter, cases of the Mongolian variety of defect are very commonly, although by no means invariably, the offspring of mothers nearing the end of the child-producing age. On the whole, whilst it cannot be said to be an important causal factor of ordinary mental defect, I think it must be admitted that the evidence tends to the conclusion that there is an optimum period for conception, and that any marked departure from this in the direction of immaturity, or more particularly of approaching senescence, is likely to be accompanied by germ weakness and consequently feeble offspring.

In general like tends to produce like. But the likenesses which run in families are not confined to facial resemblances, build, and peculiarities of anatomical structure; they often extend much deeper and concern the physiological resistance, or durability, of organs and tissues. For instance, it is common experience that the members of some families tend to be long-lived and others short-lived; that the members of some families tend to die of respiratory, those of others of cardio-vascular, and those of others of alimentary

* Langdon Down, " Notes on One Thousand Cases of Idiocy."

or other diseases. Even in some of the so-called familial or hereditary diseases, such, for example, as Huntington's chorea or amaurotic family idiocy, which are considered to be the result of gene mutations of a specific kind, the affected individual appears to be normal for some years, and the inheritance would seem really to consist in a defective resistance or durability of particular tissues, as a result of which they undergo early degeneration. It would therefore appear that the genes are not only the bearers of forces which direct and control the kind and degree of development of the various tissues and organs of the offspring, but that they also determine their durability and length of life. In other words, the genes are the depositories of a *vitality* (anathema though this word may be to many biologists) which is handed on to the resulting organism.

Now, as we have seen, the majority of mental defectives come of families in which there is an unusual tendency to various forms of mental abnormality. This tendency may be conveniently and rightly termed a "psychopathic or neuropathic diathesis," and, whatever may be the nature of the germ change, it is this diathesis which is transmitted. The hypothesis we are now considering suggests that the basis of this diathesis is not any specific gene mutation, or combination of such mutations, but that it is a general impairment of the vitality or developmental potentiality of those genes which are responsible for the growth of the brain.

It seems justifiable to assume that since the human brain is the latest and highest biological achievement, the organ which is still undergoing the greatest evolutionary change, and the one least organically fixed, the genes which influence and control its development will be in a condition of greater instability, and therefore more likely to be affected by any general change, than will those genes which control the development of the other organs of the body. Consequently a mild degree of general impairment will be confined in its effect to the higher cerebral neurones. But with a greater degree of impairment other genes may also be implicated, and result not only in an incomplete brain, but also in an incomplete body. This may be the explanation of the fact that in aments we often find numerous signs of physical as well as of mental imperfection.

Thus, on this hypothesis, a slight amount of germ impairment and an environment devoid of unfavourable influences throughout the life of the individual may cause no appreciable mental abnormality, or at the most result in a rather earlier than usual neuronic

degeneration and senile dementia. A more pronounced degree of impairment, with the presence of abnormal stress and strain or of some powerful emotional experience during the life of the individual, may result in a disturbance of neuronic function which may manifest itself as epilepsy, a psychoneurosis, or a psychosis. A still greater degree of germ impairment and of defective neuronic durability may cause the individual to break down as soon as, or even before, mental development is complete, and result in dementia præcox. Lastly, a still more pronounced degree of impairment may render it impossible for complete structural development to take place, producing intellectual dulness or various degrees of mental deficiency.

It must be emphasized that this theory is purely hypothetical. So far as I know, no one has ever seen a gene, and in the present state of our ignorance all views as to their constitution and condition must be entirely conjectural. It should also be added that the doctrine of Blastophoria is quite unfashionable. It is, indeed, regarded by most statistical geneticists (although not by all biologists) as rank heresy. It is merely suggested as a working hypothesis, and the most satisfactory explanation of the clinical facts, until such time as our knowledge of this complicated question is more complete.

Mode of Inheritance.

Before considering the modes of inheritance and transmission of primary defect it is necessary to allude to some particulars regarding the condition of the parents and progeny of defectives which have been ascertained.

With regard to the proportion of defectives who are the offspring of defective parents there is a wide diversity in the available figures. Thus, Dr. A. C. Williams* found that 5 per cent. of London special school children had defective parents. Dr. H. Herd† found that about 15 per cent. of such children in Manchester had one or both parents defective. Dr. N. A. Dayton‡ (U.S.A.) found that in 12 per cent. of school children one or both parents were feeble-minded, and

* A. C. Williams, *Lancet*, November 8, 1930, p. 1026.

† H. Herd, " The Chances of Morbid Inheritance," edited by C. P. Blacker, 1934.

‡ N. A. Dayton, " Investigation of the Travelling School Clinics of the W. E. Fernald and Wrentham State Schools," 1921-23.

that in 6 per cent. one or both parents were insane or epileptic. In the cases from the Wrentham Institution he found that 27 per cent. had one or both parents feeble-minded, and in 12 per cent. one or both parents were either insane or epileptic. Dr. A. Myerson* (U.S.A.) found that in 29·3 per cent. of defectives one or both parents were feeble-minded, whilst in 37·1 per cent. one or both parents were either feeble-minded, epileptic or insane. In Germany Drs. Reiter and Osthoff† found that in 56 per cent. of special school children one of the parents, and in 11·6 per cent. both parents, were mentally defective; Dr. A. Lokay‡ found that 12 per cent. of the parents of defectives were oligophrenic; and Dr. Brugger§ found that 23 per cent. had one or both parents defective. In Denmark, Dr. Wildenskov found that 62 per cent. of defectives had a parent or parents who were oligophrenic (*i.e.*, of 68 parents 15 were " simple minded," 30 were " dullards," and 23 were " imbeciles "). It may be added that Wildenskov's inquiry, which, although confined to 100 cases, was a very thorough one, showed that 20·9 per cent. of the grandparents of the milder cases and 4·45 per cent. of the grandparents of the more severe cases were mentally abnormal.

It is seen from these figures that the proportion of defectives who have one or both parents defective range from as low as 5 per cent. in London to as high as 62 per cent. in Denmark, and we have to ask whether any explanation exists for this very great difference. To some extent it may be due to differences in the material investigated; but I think it is mainly due to the adoption of a different standard of mental deficiency. As I have previously pointed out, the English criterion is social incapacity; elsewhere it is not confined to this, but also includes educational incapacity. Thus, I have no doubt that the class of " morons " of the United States and the class of " oligophrenics " of the Continent include many persons who, whilst suffering from mental abnormality in the form of intellectual dulness, would not in England be regarded as mental defectives in the social or Mental Deficiency Act sense. I think it may be said that in England somewhere between 5 and 15 per cent., taking aments as a whole probably round about 10 per cent. of the total number, are the offspring of a defective parent or parents.

With regard to the condition of the progeny of defectives the

* A. Myerson, *Proc. Amer. Soc. for the Study of Feeble-mindedness*, 1930.

† H. Reiter and H. Osthoff, *Zeitschr. f. Hygiene u. Infektions-Krankheiten*, vol. xciv., 1921. ‡ *Op. cit.* § *Op. cit.*

most recent extensive figures are those ascertained by the special inquiry which was instituted by the Departmental Committee on Sterilization.* This relates to 3,733 defective parents drawn from various parts of the country (3,247 females and 486 males). These defectives produced a total of 8,841 children; of this number 2,000, or 22·5 per cent., had died, leaving 6,840 for investigation. Children under the age of seven years were not included owing to the difficulty of ascertaining their mental status.

Of those of the remainder who were over 13 years old, 32·4 per cent. were *defective*, 13 per cent. were *mentally retarded*, and 0·5 per cent. were of *superior* mentality; in other words, 45·4 per cent. of these children were suffering from either certifiable mental defect or dulness. I have quoted the figures relating to children over 13 years old as being more reliable; in the group of children between 7 and 13 years the total of defectives and retarded was 40·4 per cent.

In *America*, Dr. M. Vanuxem† investigated the mental condition of 229 children who had been born of feeble-minded women in Laurelton State Village; of these, 69 per cent. had an I.Q. below 75 (which is usually regarded as the lower limit of normality), 12 per cent. had an I.Q. between 75 and 90, and 15 per cent. had an I.Q. above 90. C. S. Woodall‡ made a similar investigation of 119 children born of defective mothers and found that 44 per cent. were imbeciles and morons, 18 per cent. were on the borderland, 21 per cent. were backward, and 15 per cent. were normal. (I have omitted the decimals from each series.) In *Germany*, C. Brugger§ inquired into the offspring of 254 families; he found that where both parents were normal, 17 per cent. of the children were oligophrenic (I think the majority of these were probably cases of secondary amentia); where one parent was oligophrenic, 41 per cent. of the children were oligophrenic; and where both parents were oligophrenic, 93 per cent. of the children were oligophrenic. Investigations have also been made by Lokay, Pleger, and Wildenskov with very similar results.

Owing to differences in the criterion of defect it is not possible to make an accurate comparison between the English figures and those of other countries regarding inheritance. It is probable, however,

* H.M. Stationery Office. Cmd. 4485, 1934.

† Mary Vanuxem, *Proc of American Assoc. for Study of Feeble-minded*, 1931.

‡ C. S. Woodall, *Proc. of American Assoc. for Study of Feeble-minded*, 1932, p. 328.

§ *Op. cit.*

that there is no very great difference between them, and their general purport may be stated as follows: The majority of defectives occur in families in which there is an exceptional, and sometimes a large, amount of various kinds of mental abnormality. Mental defect is present to a varying extent in the parents of defectives (in England in about 10 per cent. of cases); but it occurs to a much greater extent in the children of defectives (in England in about 50 per cent.). In general, I think it may be said that these figures point to a progressive family increase in the severity of the mental abnormality and in the number of persons affected.

We may now consider the mode of inheritance. Since the classical experiments of Gregor Mendel upon garden peas, in which he showed that the transmission of specific characters occurred in definite ratios, his results have been confirmed by breeding experiments which have been carried out by a host of observers upon many different plants and animals. In the case of man also, genetic studies show that such characters as brachydactyly, colour-blindness, congenital cataract, Huntington's chorea, hæmophilia, and others are in all probability transmitted in accordance with Mendelian laws. The question arises whether this is the case with primary amentia.

It has been contended by some writers that this is so. Thus, Rosanoff and Orr,* of U.S.A., concluded an interesting paper, illustrated with a number of genealogical charts, with the words: "It would seem, then, that the fact of the hereditary transmission of the neuropathic constitution, as a recessive trait, in accordance with the Mendelian theory, may be regarded as definitely established." A similar conclusion was reached by Davenport and Weeks† from their study of the pedigrees of the inmates of the New Jersey State Village for Epileptics. We have seen that this is probably the mode of transmission of certain rare and special types of defect; but in regard to mental defect in general, in spite of a large amount of work carried out by many inquirers, the views above quoted have not been confirmed. There is, indeed, a complete lack of reliable evidence that mental defect in general is transmitted in accordance with Mendelian principles. The English Departmental Committee

* A. J. Rosanoff and Florence J. Orr, "A Study of Heredity in Insanity in the Light of the Mendelian Theory," No. 5 Bulletin, *Eugenics Record* Office. New York, 1911.

† C. B. Davenport and D. F. Weeks, No. 4 Bulletin, *Eugenics Record* Office, New York, 1911.

on Sterilization, after taking a large amount of evidence on this matter, came to the following conclusion: " In many cases of mental defect there exists in the family some form of mental abnormality—*i.e.*, insanity, psychoneurosis, epilepsy, defect or dulness. In the majority of such cases there is evidence of heredity, but the mode of transmission is at present unknown. In the case of certain rare forms of defect, not only is the fact of hereditary transmission known, but the method of transmission has been demonstrated."

Unquestionably, there are great difficulties in determining the mode of inheritance of mental abnormalities in man. These are partly due to the small number of his offspring as compared with garden peas and fruit flies, and partly to the fact that some kind of mental abnormality may exist, but be latent and unrecognizable, unless brought out by adverse environmental conditions. But mental deficiency is a fairly readily recognizable condition, and it is not without significance that whilst transmission in Mendelian ratios is said to be readily demonstrable in the case of a few rare and special types of defect, it has proved impossible to demonstrate such ratios in the simple, but much more prevalent, type of defect.

It may be, of course, that the difficulty of such demonstration is due to the participation of a large number of genes; that some of the characters are Mendelian dominants, others recessives, and others sex-linked, and that in consequence the mode of transmission is so complex and variable as to resist all attempts to reduce it to law. On the other hand, if the germ change does not consist of specific gene defects or mutations, but of some qualitative alteration of a more general nature—an impairment of vitality or developmental potentiality—then the question arises whether transmission may not be in accordance with some other mode altogether.

Fifty years ago we knew practically nothing about the laws governing inheritance, and although since then the mode of transmission of certain specific characters has been demonstrated in regard to a number of plants and animals, it is surely presumptuous and unscientific to assume, as many persons do, that we now know everything, and that the same mode of inheritance necessarily applies to all germ qualities and to every form of life. If it be admitted that the nutritional state of the germ cells may exercise some influence upon the chromosomes and genes, or that the genes not only carry *specific* tendencies, but are also the bearers of some *general* force or vitality—and neither of these possibilities seems

unreasonable—then it may well be that when the sperm and germ cells unite to produce a new organism there is a blending of this general force, and that the development of the organism is the resultant of their combined potentialities. This view certainly affords a more satisfactory explanation of the progressive accentuation in the type of mental abnormality, and of the progressive increase in the number of affected persons, which has been observed; also of the antedating of mental disease which has been insisted upon by many experienced clinicians, than does the view that transmission is in accordance with Mendelian laws, which, in fact, has not been demonstrated.

However this may be, it is quite clear that our knowledge of biology and genetics is at present far too incomplete to enable us to treat of the inheritance and transmission of mental deficiency in terms of mathematics. We can lay down certain general rules; but these are only applicable in the mass and there are numerous individual exceptions. In fact there are so many unknown and variable factors that it is impossible to forecast accurately what will be the result of any one particular conception. In my experience the *general probabilities* as to any particular union may be stated as follows:

1. If both parents are healthy and there is no psychopathic family history, the offspring will be mentally healthy. Exceptions to this occur in the case of secondary amentia and in the comparatively rare instances in which amentia occurs without discoverable cause.

2. If both parents are healthy, but one of them comes of psychopathic stock, the offspring may be mentally healthy or some of them may suffer from some form of psychopathic disorder.

3. If one parent suffers from mental abnormality, or if both come of psychopathic stocks, some of the offspring will suffer from psychopathic disorders. If one of the offspring should be exposed to any serious adverse environmental influence before, during, or shortly after birth, it may be rendered mentally defective.

4. If one parent suffers from mental disorder and the other from mental defect, or if both parents are mentally defective, a majority of the offspring will be mentally abnormal, dull, or defective.*

* It should be noted that some of the offspring of two mentally defective parents may be non-defective. L. S. Penrose records a case where the incestuous union of an insane male and his feeble-minded sister produced two children who were mentally normal, although of defective physique (*British Medical Journal*, January 6, 1934, p. 10).

The accompanying family history charts illustrate some of the points referred to in this section. In them amentia, insanity, or epilepsy, is shown as ●; alcoholism, tuberculosis, general ill-health, psychoses or neuroses and premature death, as, ▨; whilst persons presumably healthy, dying from natural causes, or of whom no information is obtainable, are shown as ○.

AMENTIA DUE TO ENVIRONMENT.

Secondary Amentia.

The term *Secondary Amentia* is applied to those cases which are produced by some adverse factor of the environment acting upon the zygote at any stage from fertilization to the complete development of mind. Since these do not involve the germ plasm the defect is not transmissible to a subsequent generation. These environmental factors are many and varied. They include, among others, mechanical, chemical, bacterial, nutritional, radio-active, and, after birth, psychological, educational and social influences. It must be stated that adverse factors of this kind occur in a considerable proportion of all cases of amentia. In the primary form they are not of a nature to produce defect by themselves, and are regarded as merely concomitant. In the mixed form, to be considered presently, they exert a contributory influence. In secondary amentia there is no history whatever of any family tendency to mental abnormality and the condition is due entirely to the environment. Such cases comprise about 20 per cent. of defectives of all ages. I think there is no doubt that the proportion of secondary cases actually produced is higher than this, but a large number die in the early years or months of life.

Many of these environmental factors produce special clinical types of defect, so that it will be more convenient to deal with them in detail when these types are described. In this place I shall confine myself to some general observations as to the causation of secondary amentia. In the majority of these cases the adverse factors arrest the development of the brain by causing either intra-cranial hæmorrhage or inflammation. In some, the damage having been inflicted, no further mental deterioration takes place; this is commonly seen in cases due to hæmorrhage. In others, the pathological process tends to progress and ultimately to produce dementia; the amentia is then an incidental phase in a process which

CHART I.

SHOWING HEALTHY ANCESTRY + SLIGHT ALCOHOLIC ANCESTRY.

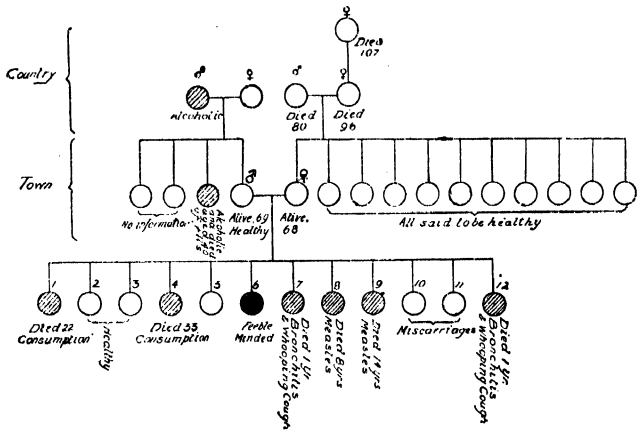


CHART II.

SHOWING HEALTHY ANCESTRY + PATHOLOGICAL ANCESTRY.

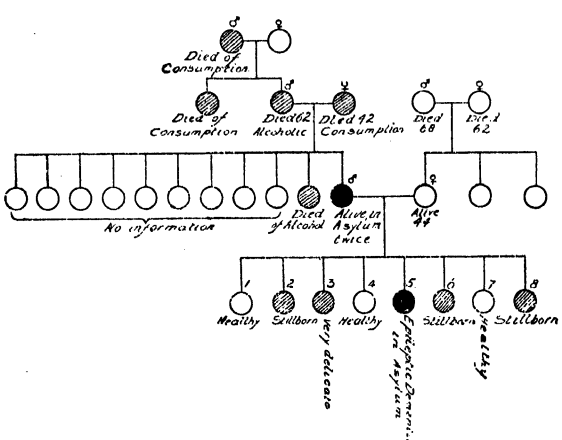


CHART III.

SHOWING HEALTHY ANCESTRY + INSANE ANCESTRY.

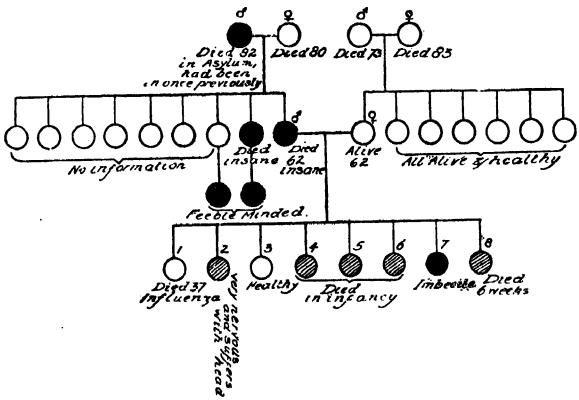


CHART IV.

SHOWING THE EFFECT OF INSANE + PHTHISICAL ANCESTRY

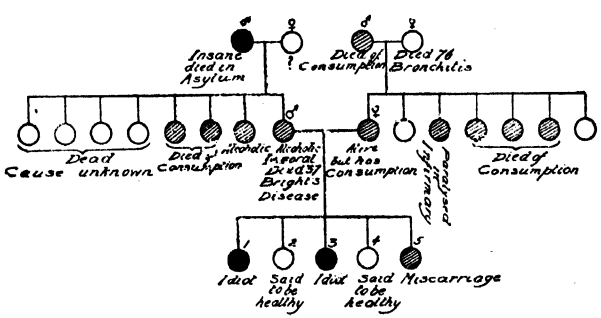


CHART V.

SHOWING EFFECT OF ALCOHOLIC AND INSANE ANCESTRY + PHTHISICAL ANCESTRY.

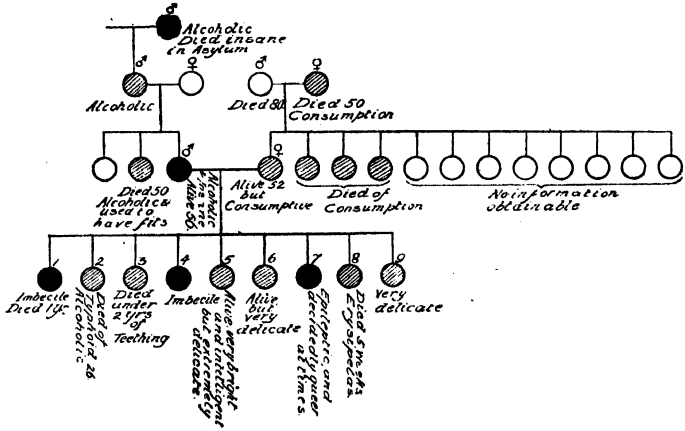


CHART VI.

SHOWING THE EFFECT OF DOUBLE MORBID ANCESTRY.

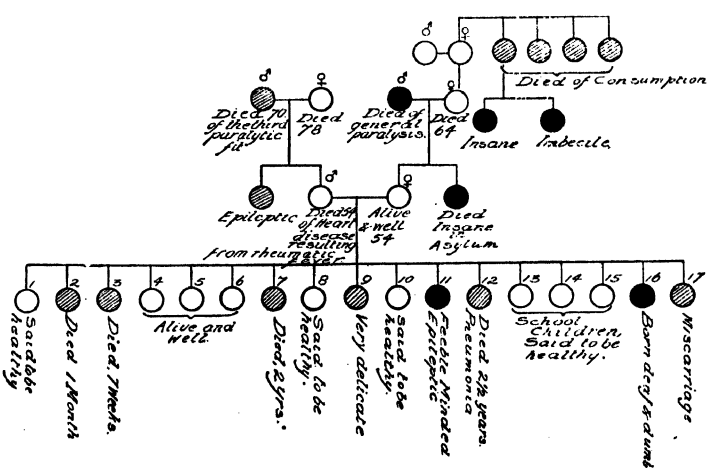


CHART VII.

SHOWING THE EFFECT OF DOUBLE MORBID ANCESTRY.

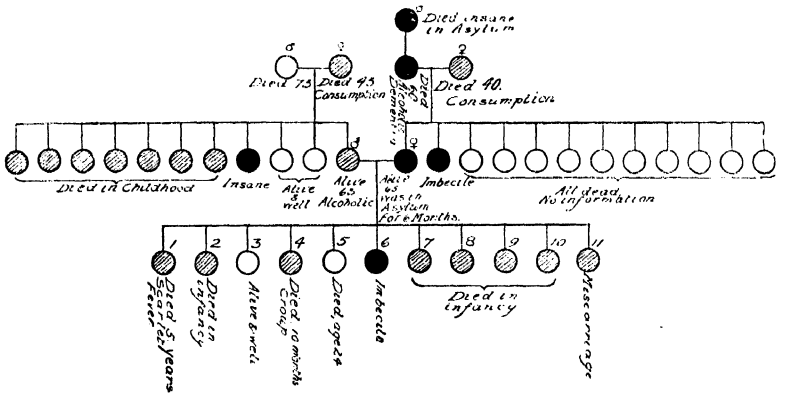


CHART VIII.

SHOWING THE EFFECT OF A DOUBLE INSANE ANCESTRY + SYPHILIS.

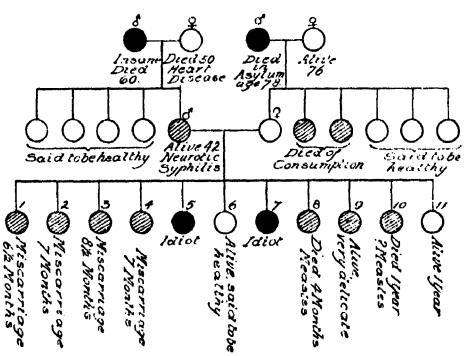


CHART IX.

SHOWING THE EFFECT OF CONSANGUINITY IN A FAMILY WITH A TENDENCY TO VASCULAR LESIONS OF THE BRAIN.

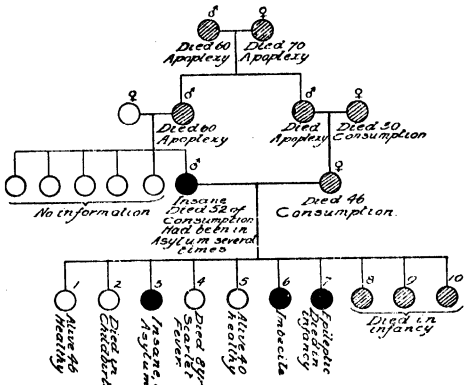
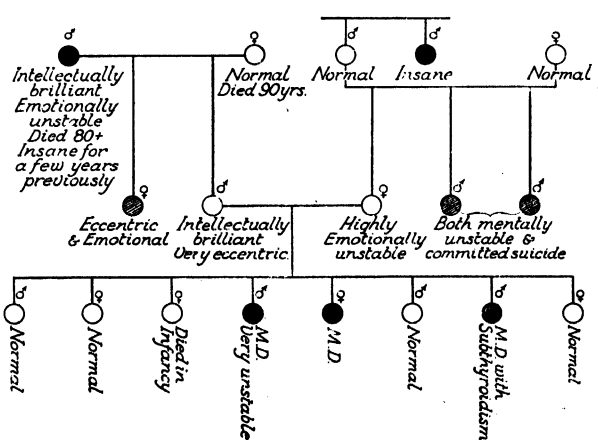


CHART X.

SHOWING IN A FAMILY THE OCCURRENCE OF INTELLECTUAL BRILLIANCE, INSANITY, ECCENTRICITY, EMOTIONAL INSTABILITY AND MENTAL DEFECT.



is really degenerative; an example of this is encephalitis lethargica. Sometimes the arrest of development is an incident in a degenerative process which appears to be idiopathic and independent of any inflammatory condition, as in dementia præcox.

Speaking generally, I think it may be said that whilst the degree of defect in these cases due to brain lesions is more severe than in the primary form, it will be influenced by three conditions—namely, the site of the lesion, the nature of the morbid process producing it, and the age at which it occurs. As a rule, inflammatory lesions produce more serious results than do traumatic ones, and the earlier the age of the child when the lesion occurs the more serious will be the effect. But external factors may irreparably damage the brain and cause amentia at any age before the development of mind is complete, and many cases of amentia have been caused by encephalitis during early adolescence.

It is convenient to describe these adverse environmental factors under three headings, dependent upon whether they operate (1) *before*, (2) *during*, or (3) *after* the birth of the patient.

1. Factors acting Before Birth.

For normal growth and development of the embryo to take place there must be a supply of nutriment, adequate in quantity and quality, through the placental circulation, and the environment must be devoid of noxious agents. It is probable that any serious nutritive deficiency, or any circulating poison or other injurious factor, may interfere with the course of development, and, in some instances, to such an extent as to produce mental defect. But whilst there can be little doubt that adverse conditions of this kind are responsible for many cases of abortion and non-viable children, the proportion of mental defectives due to them, in regard to the total number of defectives from all causes, is small—probably not more than a few per cent.; nevertheless, in the aggregate they amount to a considerable number.

Unfortunately, our knowledge of antenatal pathology is very limited, and there may be numerous conditions, such as abnormalities of the placental or uterine villi interfering with the proper circulation or oxygenation of the blood, or inadequate maternal endocrine secretions, or toxic processes and the like, regarding which we know practically nothing. There is clear evidence that X-rays may

interfere with the growth of the embryo, and a number of cases of microcephaly have been recorded in the offspring of women who had been exposed to X-ray irradiation during pregnancy. In regard to this it is interesting to note that many years ago Dareste* and Windle† produced monstrosities by treating fowls' eggs with electricity and other agents. In about one-fifth of the cases I investigated the mother had been in very poor health during the pregnancy; but since in the majority of these there was also a definite psychopathic family history, it would appear that maternal ill-health, apart from serious disease, is not by itself an important causal factor, although it may exert a contributory influence in the presence of a family predisposition.

The case is different where serious *infectious disease* or intoxication is present during gestation, and there is a considerable amount of evidence showing that these may produce mental defect in the child; indeed, I regard such conditions as the chief of the known antenatal causes of amentia. Thus, cases have been noted in which there was no discoverable psychopathic tendency, but where the mother had suffered during the pregnancy from Asiatic cholera, typhus, typhoid or malaria. There is also evidence that German measles may act in this way.‡ Maternal syphilis is another undoubted cause, and this will be discussed in detail under syphilitic amentia. I know of no evidence that tuberculosis of the mother has produced amentia, although many clinicians have stated that the offspring of tuberculous parents tend to suffer from the milder forms of mental disorder. It may also be added that a history of tuberculosis occurs in the families of a very considerable proportion of defectives (between 30 and 40 per cent.) and that many aments appear unusually prone to this disease.

With regard to *intoxications*, I have seen several cases in which the use of a soluble contraceptive pessary has failed in its desired object and has been followed by the birth of a defective child. It may be, therefore, that this is a more frequent cause of secondary amentia than has hitherto been thought. It also appears likely that some ecbolics fail to cause abortion but interfere with development sufficiently to cause amentia; indeed it is stated that the use

* Dareste, " Recherches sur la Production Artificielle des Monstrosities," Paris, 1877.

† Windle, *Proceedings of the Birmingham Philosophical Society*, vii. 1890.

‡ *Cf. Proc. Roy. Soc. Med.*, November, 1945, p. 17.

of such drugs in America is responsible for a considerable number of cases of feeble-mindedness. *Lead poisoning* is also another probable cause. Rennert* stated that many of the women employed in the pottery factories of Germany suffered from a form of plumbism which gave rise to frequent abortions, deaf-mutes and macrocephalics.

Alcohol.—There is a considerable body of experimental and clinical evidence pointing to the pernicious effect of alcohol upon the embryo. Thus it was shown by Féré,† of Paris, that the effect of the vapour of alcohol upon incubating eggs was to produce 63 per cent. of normal births, 16 per cent. of incompletely developed embryos, and 21 per cent. of monstrosities and chickens of "idiotic and imbecile grade." If the experiments were made with alcoholic solutions of absinthe, the effects were still more marked, there being but 25 per cent. of normal births, 31 per cent. of incompletely developed and 44 per cent. of abnormal and defective chicks.

Over 2,000 years ago Plato said, "The child conceived in a state of drunkenness will be of a bad constitution, and not strong either in mind or body." In modern days several writers have described cases of mental defect which they allege to have been due to one or both parents being intoxicated at the moment of conception, and Langdon Down, Sabatier, Quatrefages, Lucon, Morel, Bourneville, and others considered that idiocy was a common sequence of such a condition. Thus Sabatier mentions, amongst many similar instances, that of a robust and intelligent peasant of Auvergne who, following the custom prevailing in many villages of his district, passed the first three weeks of his married life in drinking and jollification, being in a state of moderate alcoholic intoxication all the time. Nine and a half months later his wife gave birth to an imbecile girl, who was unable to learn to read or write. Demeaux, also Dehaut and Voisin, have traced cases of epilepsy to alcoholic intoxication of the parents at the time of conception. Grenier, studying 188 idiot and imbecile children, found that in 7 the condition was due to drunkenness of the parents during the first few days of married life.

On the other hand, it was stated by Dr. Ireland that in some parts of Scotland whole villages of the lower classes got drunk at New Year time, and that the same was the case with the herring

* Rennert, *Amer. Journ. of Obstetrics*, October, 1882.

† Féré, *Comptes Rendus, Société de Biol.*, Paris, vol. lii.

fishermen when they returned to port; but it had never been noticed that the resulting children were idiotic. Personally, I have histories of idiots conceived in such circumstances, but so I have of normal children, and on the whole I think that while such a result is certainly possible, it only occurs with extreme rarity.

Dr. W. C. Sullivan* conducted an inquiry regarding the children of 120 women who were habitual drinkers, excluding all those who had a phthisical, syphilitic, or neuropathic taint, with the following results: "335 (55·8 per cent.) died in infancy or were stillborn. Several of the survivors were mentally defective, and as many as 4·1 per cent. were epileptic. Many of these women had female relatives, sisters or daughters, of sober habits, and married to sober husbands; on comparing the death-rate amongst the children of the sober mothers with those amongst the drunken mothers of the same stock, the former was found to be 23·9 per cent., the latter 55·2 per cent., or nearly two and a half times as much. It was further observed that in the drunken families there was a progressive rise in the death-rate from the earlier to the later born children. . . . On one observation where the first three children were healthy, the fourth was of defective intelligence, the fifth was an epileptic idiot, the sixth was dead-born, and finally the reproductive career ended with an abortion."

An extensive inquiry conducted under the auspices of Dr. T. Crothers, of Connecticut, U.S.A., by a number of skilled physicians and specialists, and which was based on the study of 1,744 cases of inebriety, showed that the injury produced by the alcoholism of parents not only affected the nervous system of the immediate progeny, but that the ill-effects were also transmitted through them to the later progeny of the third generation either as a neurosis or a cerebral defect.

The following case, which came under my own observation, is an illustration of alcohol being the direct cause of amentia. The father was a hard-working, industrious man, sound in body and mind, and coming of a healthy and long-lived family; he married the daughter of a small publican, apparently a healthy and happy girl, who used occasionally to serve behind the bar. Shortly after marriage this girl developed an insatiable craving for drink; all the money she could obtain by any pretext went in procuring it. Later the ornaments and then the furniture of the house

* W. C. Sullivan, "Alcoholism."

were pawned to feed her desires; ten months after marriage she gave birth to a child—a hydrocephalic idiot, and, according to the husband, she had scarcely known a sober moment during the preceding four or five months. Further inquiry showed that this woman's father was also a heavy drinker, but otherwise there was an entire absence of any psychopathic condition in the family. Of course it may be that the alcoholic taste of the mother was in itself evidence of a psychopathic disposition; but I cannot help thinking that the child's condition was due to actual poisoning during its intra-uterine existence, for the next child that was born, after an interval of nearly two years, was perfectly normal, and is now a bright and intelligent boy of eight years; by this time, however, the mother had recovered, and had lived a steady life during the whole of the pregnancy. It may be mentioned that Galton* described the case of a man, who, after begetting several normal children, became a drunkard and had imbecile offspring. It is a common experience that excessive indulgence in alcohol by the mother tends to miscarriages, premature births, and stillbirths. Perhaps this is largely due to pathological changes induced in the placental site of the uterus; but such changes cannot be without effect upon the developing embryo.

Illegitimacy has been credited with the causation of amentia. It is no doubt responsible for a very high proportion of infantile deaths, but statistics show that this is on account of the adverse environment in such cases, and I do not think it is ever in itself a direct cause of mental defect.

The *mental state of the mother during gestation* would appear to be of considerably less importance, as was shown by an inquiry I made into the condition of children born whilst, or shortly after, the mother was insane. This is by no means an uncommon event; in fact, a certain number of children are born every year in mental hospitals, and I have traced the subsequent history of thirty-eight of these up to periods at which any mental abnormality would have been evident. In fourteen of these women the insanity was of a temporary nature, due solely to nervous breakdown at a trying period, and hereditary predisposition was absent. Out of the fourteen children, *ten were alive and well* in body and mind at ages varying from three to fifteen years, whilst *four were dead.* On the other hand, in twenty-four women, the attack of insanity was ac-

* Quoted by Sullivan in "Alcoholism."

companied by a pronounced psychopathic inheritance. Of these children only *three were alive and well*, whilst *twenty-one had succumbed*, all, with one exception, a few months after birth. Owing to the great difficulty of following up such cases, these figures are necessarily small; but I cannot do other than regard them as evidence of the slight effect of the mental state during gestation, and of the important influence of morbid heredity.

With regard to the much-debated question of *maternal impressions*, without entering into this subject in any detail, it can be said that both these and the sudden frights and shocks which are often alleged to be the cause of the patients' condition really have very little influence. So far I have been unable to discover a single case of this nature in which hereditary influences (commonly insanity) were not forthcoming upon a careful inquiry into the antecedents, so that, whilst being unable to deny the possibility of amentia resulting from such conditions, it can certainly be affirmed that such instances are exceedingly rare.

Another cause of mental defect which may act while the child is *in utero* is hæmolysis of the blood and damage to the brain cells by *Rh. blood factor incompatibility*. It has hitherto been assumed that the proportion of cases so caused was so small as to be negligible; but some recent investigations, which will be referred to in a subsequent chapter, suggest that this proportion may be greater than was formerly thought.

Lastly, a few cases of amentia are the result of a direct injury, such as a violent blow, inflicted upon the fœtus, but these in no way differ from amentia due to injury after birth, to be described presently.

2. Factors acting during Birth.

During parturition, especially in a first confinement, the cranial contents are subject to great internal pressure, and often to considerable violence from without. This may readily cause intracranial hæmorrhage; in fact, an extensive series of lumbar punctures made upon new-born children show that such bleeding is a common occurrence. In the great majority of cases no evil effects result; indeed it is a common experience that the indentations and distortions which so often occur during a difficult labour, either with or without the use of forceps, soon disappear and have no injurious consequences. But in a small proportion of cases it is

otherwise, and damage is inflicted upon the brain which destroys, or interferes with the development of, the neurones to such an extent as to produce mental defect.

It is popularly supposed that this is a frequent cause of amentia, and certainly a history of difficult labour is obtainable in a number of such cases. It is doubtful, however, whether the proportion is any higher in defective than in non-defective children, and before coming to a conclusion that intracranial hæmorrhage or cerebral trauma is responsible for the defect it is desirable to have clear evidence that signs were present immediately or shortly after birth indicative of a cerebral lesion. In my experience the number of cases of amentia which can definitely be ascribed to injury during birth is comparatively small; I should place them at the outside between 4 and 5 per cent. of all defectives. But it is, of course, conceivable that damage might be inflicted upon the brain during birth without producing any clear clinical picture at the time, and Dr. Edgar A. Doll,* of the Vineland Training School, is of the opinion that between 6 and 10 per cent. of the inmates of that institution owe their defect to this cause.

In addition to difficult labour, a number of cases of defect have been noted in connection with precipitate labour and premature birth. Since the bloodvessels of the prematurely born child are very fragile, hæmorrhage is more likely to occur than when the child is born at full term. Apart from this, prematurity *per se* probably has no causal significance, and large numbers of prematurely born children are successfully reared and show no mental abnormality.

Primogeniture.—It is commonly thought that first-born children are more liable to be mentally defective than are those born later, and this is attributed partly to a supposed increased mental instability of the mother during a first pregnancy, partly to the undoubted fact that labour is more protracted in primiparæ, and partly to the earlier age of the parents. On the whole, there is some evidence that the first-born tends to be mentally and physically inferior to later members of the sibship, and this may be a factor in determining amentia in the presence of a psychopathic predisposition. There are, however, many exceptions, and I do not think that primogeniture, *per se*, can be regarded as a cause of amentia.

* Doll, Phelps and Welcher, "Mental Deficiency due to Birth Injuries," 1932.

Asphyxia neonatorum.—Quite apart from any gross injury to the skull or brain, the child may be born in a state of asphyxia; indeed it is probable that this occurs in about one-fifth of all births. This may result from a variety of conditions, such as aspiration of mucus, the presence of amniotic fluid in the lungs, or the administration to the mother of a large quantity of anæsthetic. According to Cole and Kimball,* however, who investigated 5,000 cases, the most important single factor of the asphyxia is *prematurity*. In the majority of such cases respiration is established fairly quickly and no evil results follow; but where the asphyxia is profound, and lasts for any considerable time, a state of anoxæmia is produced which may be attended with serious results upon the cortical cells; indeed it is doubtful if these cells can survive for more than a few minutes if completely deprived of oxygen. While the proportion of cases of mental defect due to this cause is in all probability a small one, there can be no doubt that a certain number are so caused—and it is likely that some of the cases of amentia with cerebral diplegia come into this category. It may be remarked that it is recorded of Samuel Johnson that " he was born almost dead and did not cry for some time."

3. Factors acting after Birth.

The environmental factors capable of producing amentia after birth are much more numerous. They will be considered in more detail in discussing the particular clinical varieties to which they give rise, but it will be convenient to enumerate them here and to make some general observations. On the whole I think that about 15 per cent. of all aments owe their condition to some cause acting after birth, usually in the early months or years of life. The chief of these causes are as follows:

Traumatic.—Amentia due to direct injury to the child's head, by a fall or blow, is rare, although it is often alleged to be so caused; but such cases do undoubtedly occur, and I have seen several.

Infective.—There are many forms of infection which are capable of causing inflammatory lesions of the brain or its membranes and of inducing mental defect; in fact, the majority of cases arising after birth are due to such causes. The chief of these infections are

* W. C. C. Cole and D. C. Kimball, *Journ. Iowa State Med. Soc.*, September, 1940.

cerebro-spinal meningitis and encephalitis lethargica; but measles, scarlet fever, enteric, diphtheria, suppurative otitis and rhinitis may occasionally act in this way. *Sunstroke* is often an alleged cause. It is probable that in most cases attributed to this the condition is really an infection; but I have seen three cases in which the closest inquiries failed to reveal any other cause, and I am disposed to think that the exposure of a young infant to a very hot sun may occasionally damage the brain sufficiently to impair subsequent development. Two of the cases occurred in India and the third in England during a very hot summer; all of them were attended with unconsciousness.

Convulsive.—" Teething convulsions " are amongst the commonly alleged causes of amentia; I have never known a case so produced. But convulsions during teething may really be epileptic, and if they persist may induce mental defect. Probably about 1 per cent. of cases of defect are caused by epilepsy.

Nutritional.—For proper growth of the brain a supply of nutriment, adequate in constitution and quantity, is necessary. Thyroxin is particularly important in this respect, and its lack gives rise to that variety of mental defect called cretinism. It is probable, however, that in rare cases other, as yet unrecognized, special forms of nutriment may be lacking (perhaps especially during intra-uterine life), and this results in the variety of defect termed nutritional. There is no evidence that insufficient or improper food after birth, or the combination of insanitary and unsatisfactory conditions which make up " slum life," have any influence in producing amentia, although they may sometimes be responsible for temporary dulness. Rickets sometimes accompanies amentia, but in my opinion it never causes it.

An interesting question arises as to whether emotional shock to an infant or young child in the shape of some terrifying experience may produce mental defect. I have seen cases in which this has resulted in prolonged emotional instability with intellectual inhibition and consequent dulness, and, theoretically, there does not appear to be any reason why it should not interfere with intellectual development to such an extent as to cause mental defect. But I must admit that I have never seen a case so caused, and I very much doubt whether shock and fright are capable of inflicting this amount of damage upon the brain of a child who is free from any hereditary psychopathic tendency.

AMENTIA DUE TO INHERITANCE AND ENVIRONMENT.

In a large proportion of cases of mental defect there is a history of some adverse environmental factor, and such was present in 65 per cent. of the cases I investigated. Where the closest inquiry fails to reveal any mental abnormality in other members of the family, and where the factor is of a kind capable by itself of inducing mental defect, I think it may be accepted as the cause. Such cases have been described in the previous section as secondary aments, and they comprise approximately one-fifth of all defectives. But in a considerable proportion of the cases in which there is a family psychopathic tendency, adverse environmental factors of various kinds are also present, and the question then arises as to how they should be classified. The decision will depend very largely upon the completeness of the details of the family and personal history and upon the clinical experience of the observer. In the great majority of such cases there is, in my opinion, no doubt whatever. The psychopathic tendency is so marked, and the environmental factor so inadequate, of itself, to produce mental defect, that they may unhesitatingly be placed in the primary group.

But there are a few which stand on a somewhat different footing. Psychopathic tendency, although present, is less pronounced and is usually evident only as manifestations of mild forms of mental abnormality in the family; the other sibs of the patient are also of normal mentality. In such cases I think that factors of the environment may sometimes exert a contributory or precipitating influence. The influence of the environment as a determining factor of insanity after mental development has been completed is well known. Persons in whom psychopathic inheritance is relatively slight may go through life without manifesting any marked mental abnormality, and certainly without experiencing any mental breakdown, provided they lead comparatively uneventful lives and are not exposed to any serious physical or mental strain; but should these latter occur, they are exceedingly likely to precipitate a minor or major psychosis. This was well shown during both the recent wars. The uprooting from their civil surroundings, the rigorous training, and the physical and mental stress of war, caused mental disorder in thousands of men who would probably have remained well under normal circumstances. I am of the opinion that the environment may act in a similar manner upon the child before development

is complete, and that some adverse factor occurring before, during or after birth, which would not be sufficient to produce any permanent damage in a healthy child, may, in the case of one coming of psychopathic stock, turn the scale from normal structural development to actual mental defect. In support of this, I may say that I have seen many what may be termed " sporadic " cases of amentia, in which the psychopathic inheritance was comparatively slight and the brothers and sisters of the patient were of average mental development, where there was a clear history of ill-health of the mother while she was carrying the affected child. I have also seen others in which the exciting factor was premature birth, or prolonged labour attended with some degree of asphyxia, or malnutrition, or infectious fever occurring in the early months or years of life. I do not think that these causes would be adequate to produce mental defect in a developing child of good inheritance, but where there is already some degree, even if slight, of germ impairment, the defect of nutrition, the interference with the cerebral circulation, or the toxæmia, may act as a last straw and embarrass the growth of the neuroblasts to such an extent as to cause mental defect.

AMENTIA WITHOUT DISCOVERABLE CAUSE.

Lastly, there remains a group of cases in which the most searching inquiry into the family and personal history fails to reveal any abnormality of either inheritance or environment. This, of course, does not mean that no cause exists. There may be some accidental inequality of division or some entanglement of the chromosomes within the germ cell; or there may be some unrecognized intrauterine factor which is responsible. The number of such cases is small, probably at the most not more than 1 or 2 per cent. of all aments; but we have to admit that a small proportion of cases of amentia do occur for which, in the present state of our knowledge, we are unable to assign any cause.

Ætiological Factors in Regard to Local Variations of Incidence.

We may conclude this account of causation with a brief reference to the explanation which it would appear to afford of a fact which was noted in the chapter on incidence—namely, that the incidence

of amentia is relatively much greater in rural than in urban and industrial areas. Now, about the middle of the last century the population of urban and rural areas in this country was practically equal; to-day there are about four times as many persons in the former as there are in the latter. The towns and industrial centres have been built up and are being steadily increased by the migration of persons from the land, and it is justifiable to conclude that those so migrating will be possessed of greater enterprise, initiative, and mental capacity than those who remain behind —in other words, that a smaller proportion of them will come of psychopathic stocks. This process inevitably tends to the accumulation of such stocks in the country, and their intermarriage necessarily leads to an accentuation of the germ defect, and so to an increase in the number of mental defectives. It would appear, however, that even in the country these stocks are not distributed uniformly. There are some areas in which they preponderate and others in which they are relatively few. This not only applies to large districts, but even to villages, and I think there is no doubt that psychopathic stocks tend to occur in "pockets." It seems probable that it is to the existence of such pockets or foci that the variations of incidence in different localities are chiefly due.

CHAPTER IV

CLASSIFICATION AND DEFINITIONS

WE have seen that there are two ætiologically different *forms* of amentia; there are also many *degrees*; and there are certain distinctive *clinical varieties*. If misunderstanding is to be avoided it is essential to appreciate these three different methods of classification.

The Forms of Amentia.

If we consider aments in the mass, the great majority, probably about 80 per cent., are due to inheritance and to some intrinsic peculiarity of the germ cell. I therefore term this form **primary** amentia.

In about 20 per cent. of all cases there is no abnormal inheritance and no germ peculiarity, but the full development of the brain has been prevented by adverse factors of the environment. I term this form **secondary** amentia.

At first sight these terms may appear to be synonymous with the older ones " congenital " and " acquired." But they are not really so; for so-called " congenital " (existing at birth) amentia may be due to an environmental factor operating *in utero*, and in this event is acquired; whilst in some cases in which the amentia does not become manifest until long after birth, and would therefore be termed acquired, it is really germinal in origin. I think, therefore, that the terms " primary " and " secondary," denoting respectively germinal and environmental causation, are more accurate, and they are the terms now generally used. It may be remarked that not only are these two forms essentially different in their causation, but that they are also usually different in their clinical aspects.

Careful investigation of the family and personal history and examination of the patient, combined with clinical experience on the part of the observer, will enable the great majority of cases of

mental defect to be placed in one or the other of these two groups without much difficulty. As we have seen in treating of causation, however, there are a few cases which seem to occupy an intermediate position and in which, although morbid inheritance is present, adverse factors of the environment also exist and appear to be not merely concomitant, but to play a contributory part. Cases of this kind have long been recognized and they have sometimes been termed "developmental"; but the essential cause in most is germinal.

The Degrees of Amentia.

Aments vary very greatly in the degree of their defect, quite irrespective of the form or clinical variety to which they belong. At the one extreme mind is so defective that it can hardly be said to be present at all. At the other extreme the defect is so slight that it may be exceedingly difficult to say that the individual is really a defective; and these two extremes are connected by such insensible gradations that the whole form a continuous series. This being the case, and there being no natural lines of demarcation, it is obvious that any division which may be made must be artificial and arbitrary. Nevertheless, for the purposes both of description and administration, it is convenient, indeed essential, that some classification according to the degree of defect should be made, and this has long been done in England by means of the three terms: *Idiocy*, *Imbecility*, and *Feeble-mindedness*. We may even go further and subdivide each of these grades into three others, and thus describe *high-*, *medium-*, and *low-grade* idiocy, imbecility and feeble-mindedness respectively. All aments, therefore, may be relegated to one or other of these three grades, and it is here proposed to give their legal definitions and a short description of their main features. In view of what has been said, it will be apparent that such a description is only applicable to the members of each grade in the mass, and not to every individual of that grade. A more detailed description will be given in subsequent chapters.

It may be asked whether the intelligence quotient (I.Q.), or mental ratio, might not be utilized for the purpose of dividing aments into administrative grades. As a matter of fact, in America it is used not only for this purpose, but also for differentiating defectives from the normal. In England, however, as has already been mentioned, the legal concept of mental deficiency is that of social

incapacity, and it seems to me that the social criterion is also the most convenient and practical to use for the grading of aments. Thus, as we have seen, the essential characteristic of aments in general is an inability to maintain an independent existence and the need for care, supervision, and control. Speaking generally, we may say where the individual, whilst needing this supervision, is able to earn enough to provide for, or contribute materially towards, his keep, he falls into the feeble-minded grade; where he can perform simple routine tasks, but cannot contribute appreciably towards his keep, he is an imbecile; and where he can do no work at all and is so defective as to need continuous care for his own protection, he is an idiot. Whilst there is a certain correlation between these degrees of social incapacity and the intelligence quotient, it is not, in my opinion, sufficiently constant to be relied upon as the sole means of differentiation.

Idiocy.—*Idiots* are defined as "*persons in whose case there exists mental defectiveness of such a degree that they are unable to guard themselves against common physical dangers.*"*

Idiocy is the most severe degree of mental defect. Not only are such persons incapable of understanding, and therefore protecting themselves against common physical dangers, but many of them are lacking in the fundamental instinct of self-protection. In addition, they are incapable of performing any useful task or of any scholastic education; they cannot wash or dress themselves; they understand only the simplest commands; they cannot form sentences, and the majority of them cannot articulate beyond a few monosyllables. They have to be looked after all their lives like little children. Speaking generally, an individual with an I.Q. of less than 25 will be an idiot. Idiots may conveniently be divided into two grades: (1) *Partial or incomplete*, in which the primitive feelings of hunger and thirst are present, and the patients may be trained to some extent in habits of cleanliness and self-help; and (2) *complete, absolute*, or *profound*, in which there is no power of attention and a complete incapacity for responding to any kind of training. In the United States of America† an

* The English legal definitions of *Idiots*, *Imbeciles*, *Feeble-minded*, and *Moral Defectives* are contained in Sect. 1 (1) of the Mental Deficiency Act, 1927.

† These I.Q.s are those adopted in 1920 by the American Association for the Study of the Feeble-minded, and are given in the "Statistical Manual for the Use of Institutions for the Feeble-minded," New York, 1921.

idiot is defined as a mentally defective person having a mental age of not more than thirty-five months, or, if a child, an I.Q. of less than 25.

Imbecility.—Imbeciles are defined as "*persons in whose case there exists mental defectiveness, which, though not amounting to idiocy, is yet so pronounced that they are incapable of managing themselves or their affairs, or, in the case of children, of being taught to do so.*"

It must be admitted that this definition conveys a very inadequate, indeed somewhat misleading, idea of the disabilities of imbeciles. Not only does it fail to show the distinction between them and the feeble-minded, but the criterion is such that it might even be held to indicate a higher and not a lower grade of defect than feeble-mindedness. However, it is the legal definition, and although not altogether satisfactory, it is not without certain advantages for purposes of certification.

Imbeciles, as a class, stand above the idiots in that they can be taught to understand and protect themselves against many common physical dangers. For instance, they will not deliberately walk into a pond or put their hands into the fire, and they will attempt to get out of the way of a motor-car. They stand below the feeble-minded in that, whilst many of them can be trained to perform simple routine tasks under supervision, they are incapable of earning their living or of contributing materially towards their support. Most of them can wash, dress, and feed themselves under supervision. They are markedly defective in educational capacity, and as a class they cannot be taught to read beyond words of one syllable, to spell more than a few two- and three-letter words, or to do simple mental addition and subtraction beyond the smallest units. They can tell their name, say whether it is morning or afternoon, winter or summer. They can recognize and name common objects, and can say for what they are used, but they cannot give a description of them. In America an imbecile is defined as a mentally defective person having a mental age between thirty-six and eighty-three months inclusive, or, if a child, an I.Q. between 25 and 49.

Feeble-mindedness.—The feeble-minded are defined as "*persons in whose case there exists mental defectiveness which, though not amounting to imbecility, is yet so pronounced that they require care, supervision, and control for their own protection or for the protection of others, or, in the case of children, that they appear to be permanently incapable*

by reason of such defectiveness of receiving proper benefit from the instruction in ordinary schools."

Persons coming within the category of feeble-mindedness range over a greater span than do either idiots or imbeciles. Of the class as a whole it may be said that they stand above the imbeciles in that they have an intellectual capacity sufficient to admit of their being trained to perform work which will contribute materially towards, or entirely pay for, their keep. On the other hand, they stand below the normal in that, although they have this capacity, they are lacking in the ability to control, co-ordinate, and adapt their conduct to the requirements of their surroundings in such a way as to maintain existence without supervision. As we shall see in later chapters, the psychological defect which is the basis of this social incapacity varies in different individuals; for this reason differential diagnosis may be at times a matter of some difficulty, particularly since the scholastic attainments of some of the highest of them may be greater than those of the non-defective. In general, it may be said that whilst there is some niche in the social fabric where those in the lowest stratum of the normal can maintain existence and fend for themselves without assistance, there is no such niche in which the feeble-minded can do this without some amount of supervision. The one is independent, the other is dependent.

With regard to their educational capacity they vary within very wide limits. Taking the class as a whole it is below that of the normal, but sufficient to admit of their learning elementary reading, writing, and arithmetic, and of understanding simple items of scholastic knowledge. Most of them are incapable of responding in a satisfactory manner to the instruction given in the ordinary elementary schools, and have to be provided with special instruction; but a small proportion who subsequently prove to be defective are capable of being educated in ordinary schools. It will be clear from what has been said that the intelligence quotient of the feeble-minded varies within a wide range. Generally it may be said that a person whose I.Q. is below 70 is probably mentally deficient, and that if it falls between 50 and 70 he will probably belong to the feeble-minded grade of defect. To this, however, there are many exceptions, and there are numerous feeble-minded persons with I.Q.'s of over 80 and 90.

It is necessary to point out that in America the term " feeble-

mindedness" is not confined to the mildest grade of defect as in England, but is applied generically, and comprehends the whole order of amentia, thus being synonymous with the English term "mental deficiency." In America the feeble-minded grade are called **morons** (from the Greek word meaning "a fool—a person mainly lacking in judgment and good sense"), a term first suggested by Dr. H. Goddard. I think, however, that the "morons" of America do not quite correspond at their upper limit with the English feeble-minded, but that there are included in this category the lowest stratum of the class whom we should call "dullards," and whom we do not regard as being mentally deficient. The American definition of a moron is a mentally defective person having a mental age between 84 and 143 months inclusive, or, if a child, an I.Q. between 50 and 74.

The foregoing grades of defect are those defined by the Mental Deficiency Act. There is another type of defect defined in that Act which is really a form of feeble-mindedness, but the members of which possess such special characteristics as to justify their being placed in a separate category. This is the class formerly called moral imbeciles, now called **moral defectives.** They will be described in a later chapter, but it will be convenient here to give their definition. They are "*persons in whose case there exists mental defectiveness coupled with strongly vicious or criminal propensities, and who require care, supervision, and control for the protection of others.*"

Educationally Defective Children.—The Education Act 1921 defined a group of children of school age who, "not being imbecile, and not being merely dull or backward, are by reason of mental defect incapable of receiving proper benefit from the instruction in the ordinary public elementary schools, but are not incapable by reason of that defect of receiving benefit from instruction in special classes or schools." This Act has now been repealed by the Education Act 1944 and, although this does not use the term educationally *defective* children, it recognizes the existence of such a class and requires provision to be made for their educational treatment. The majority of such children are, in fact, defective within the meaning of the Mental Deficiency Act; but a proportion are merely scholastically and not socially defective. These will be described in a later chapter.

The Clinical Varieties of Amentia.

If a sufficiently large series of aments be examined, it will be found that the great majority of them present no special distinguishing features beyond certain anatomical and physiological anomalies commonly known as " stigmata of degeneracy." These are consequently termed *simple* primary aments. It will be found that the remainder may be divided into special groups, the individual members of which agree in possessing certain characteristics in common. These groups constitute the clinical varieties of amentia. It must be admitted that the differentiation of these clinical groups is a somewhat arbitrary process, and that it is not even based upon any definite principle. For instance, in some cases it is dependent upon agreement as to causation, as, for example, in the syphilitic and epileptic varieties. In others it is dependent upon agreement in regard to special pathological lesions, as, for example, in the sclerotic, nævoid, hydrocephalic, and other varieties. In yet others it is dependent upon the fact that the members of the group agree in the possession of certain physiognomical features, as in the mongols and microcephalics. It would, of course, be very much more satisfactory if the classification could be uniformly based upon the same kind of data. In the present state of our knowledge this is not possible, hence for the time being any clinical classification must be a mixed one, and must be regarded as provisional. But there are such obvious advantages in dividing aments into clinical groups that even a provisional and admittedly imperfect classification is better than none at all. The accompanying table gives the chief of the clinical varieties at present known. It will, of course, be understood that it has no relation to the degree of amentia, and that whilst some varieties may perhaps tend to be of a mild and others of a severe grade, yet, speaking generally, the members of these different varieties may suffer from any degree of mental defect. It will also be understood that further research may enable us to place a proportion of those now termed " simple " into other special categories. I have included in the table figures as to the incidence of each of these clinical varieties; but it must be emphasized that these are only approximate estimates; further, that they are in relation to aments in general and of all ages, and the percentages would not apply to selected groups.

TABLE V.

CLASSIFICATION OF THE CLINICAL VARIETIES OF AMENTIA

Approx. per Cent.	*Clinical Variety.*	*Pathogenesis.*	*Form*
72·0	1. **SIMPLE**	A. *Germinal Group.* Imperfect neuronic development due to germ abnormality (may be accompanied by gross lesions or special pathological processes).	PRIMARY.
5·0	2. **MONGOLISM**		
0·5	3. **MICROCEPHALIC**		
0·5	4. **SCLEROTIC**		
1·0	OTHER RARE VARIETIES—*e.g.*, NÆVOID, HYPERTELORISM, OXYCEPHALY, LAURENCE-MOON SYNDROME, etc.		
5·0	5. **TRAUMATIC** RH. BLOOD INCOMPATIBILITY	B. *Traumatic Group.* Arrest of neuronic development due to brain injury.	SECONDARY.
4·0	6. **MENINGITI**	C. *Infective Group.* Arrest of neuronic development due to lesions of brain or membranes consequent on infection.	
3·0	7. **ENCEPHALITIC**		
1·0	8. **HYDROCEPHALIC**		
3·0	9. **SYPHILITIC**		
0·5	10. **AMAUROTIC**	D. *Degenerative Group.* Arrest of neuronic development as an incidental phase in a degenerative process (which may be due to germ abnormality).	
1·0	11. **EPILEPTIC**		
1·0	12. **SCHIZOPHRENIC**		
1·5	OTHER RARE VARIETIES—*e.g.*, SCHILDER'S, WILSON'S, GARGOYLISM, CEREBRAL DIPLEGIA		
0·5	13. **CRETINISM**	E. *Deprivative Group.* Arrest or imperfection of neuronic development due to deprivation of hormones, nutritive or sensory stimuli.	
0·3	14. **NUTRITIONAL**		
0·2	15. **ISOLATION**		
100·0			

CHAPTER V

PSYCHOLOGY

In this chapter it is proposed to consider the psychological basis of mental deficiency. In order to appreciate this, however, it is necessary to have some knowledge of the constitution of mind; also, for the purpose of diagnosis, of the ages at which its various abilities become manifest in the normal individual. The chapter will therefore be divided into two parts. In the first I shall give a brief outline of the constitution and chief stages of development of the normal mind; in the second I shall describe the defective mind.

A. THE NORMAL MIND.

Constitution.

As has previously been stated, we have no certain knowledge of the ultimate and real nature of mind. It may be merely the sum of the activity of the highly complex brain; or it may be an independent form of energy which entirely transcends matter and which manifests itself through the medium of the brain. All we can say with certainty is that what we call " mind " is that part of our organism by virtue of which we feel, strive, know, understand, think, are conscious of ourselves and our surroundings, and are enabled to adapt our behaviour to the requirements of life. Numerous manifestations similar to those in man are seen in many of the lower animals, and, although there is a great difference between them, there is reason to conclude that the mind of civilized man, like his body, has been derived from the animal mind by a slow and gradual process of evolution.

Although mind consists of many abilities, or, as they were formerly termed, " faculties," it is no loose conglomeration of these. Its constituent parts are not independent and cannot act independently any more than can the component parts of a watch, an engine, or

any other complicated mechanism. Mind, in fact, is a closely integrated, organized, and dynamic whole, and it functions as a whole. Even its simplest manifestations, as seen in the infant and lower animals, are not manifestations of independent faculties, but of the whole of mind as it exists at that particular evolutionary stage.

But while the various attributes of mind are thus interdependent, yet many of them have a relative independence. This is shown by the variations in their degree of development in different individuals. One person, for instance, has a greater capacity for feeling, another for understanding and reasoning, another for striving, and so on. In view of this, the best way to describe the constitution of mind for our present purpose is to consider its various attributes separately. This, indeed, is the only satisfactory method of describing the failings of the defective mind. I shall therefore give an outline of the normal mind under the three headings of (1) Conation or Striving, (2) Affect or Feeling, and (3) Cognition or Knowing.

Conation.

The earliest manifestation of mind is conation, or the striving, it may be unconscious, of the organism to satisfy certain essential biological needs. This occurs in the lower animals and consists in the performance of particular actions which appear to follow automatically, and almost reflexly, upon an appropriate stimulus. The earliest and most important of these actions is directed towards the preservation of self; the next in importance is directed towards the perpetuation of the species and is manifested in sex activity. In course of time, owing to altered conditions of life and an increased development of mind, other manifestations of conation appeared, such as combativeness, self-assertiveness, acquisitiveness, inquisitiveness and gregariousness. It is probable, however, that these were derived from, and modifications of, the striving after self- and race-preservation, and are merely additional means of enabling the animal to achieve these two essential ends. There is reason to conclude that the repetition of these specialized acts, generation after generation, resulted in the formation of pathways within the nervous system and a definite brain pattern, which was hereditarily transmitted. These ingrained, inherited tendencies to the performance of specialized, purposive acts constitute what are known as **instincts.**

The normal offspring of man, by reason of his human and pre-human ancestral connections, is born with a strong tendency to these instinctive actions. They are, indeed, the prime source of his conduct, and they exert a powerful influence upon his behaviour from birth to the grave. In man, however, the manifestation of these instinctive tendencies differs in several important respects from those in animals. The increased development of his knowledge and understanding, and the greater range of his emotions, enable him to modify, delay, and even check the manifestation of his primitive instincts, so that they become less automatic and more under his control. We shall consider this question of the modification and inhibition of instincts more fully in dealing with the psychology of misconduct in a later chapter; it will be sufficient here to say that it is rendered possible in man by the very immature condition of his mind at birth, and the fact that it remains in a plastic state, and capable of being influenced by training and experience, for a considerable part of his life.

Affect.

The term affect includes the simple feelings, the more complex emotions, and the still more complex sentiments. While striving, and the thwarting of striving, are probably always accompanied by some degree of feeling, it is likely that in the lower animals and in the human infant this amounts to little more than vague sensations of pleasantness and unpleasantness. With the development of mind, however, simple emotions such as fear, anger, affection and jealousy are experienced; and with its still further development the individual becomes capable of experiencing the emotions of envy, disgust, contempt, shame, remorse, modesty, pride, gratitude and many others, together with the moods of elation, anxiety and depression.

In the same way that feeling and emotion become associated with striving, so, in civilized man with his higher intellectual development, do emotions become associated with thoughts. It is probable that most thoughts are in this way coloured by affect to some extent or other; but many of our thoughts about particular persons, things, or acts are always accompanied by the same emotion. Such a combination forms what is called a **sentiment.** These sentiments are of many kinds. When they relate to par-

ticular forms of behaviour, or to conduct in general, they constitute the social and moral sentiments of honour, duty, personal obligation, patriotism, charity, justice, moral rectitude and the like. Such sentiments are often called "conscience"; it is necessary to emphasize, however, that this conscience is not an innate quality of mind, it is an acquirement consequent on precepts, training, and experience having associated particular feelings with certain ideas. The combination of feeling with religious ideas is the basis of belief. Its combination with thoughts which are a goal for striving constitutes an ideal. There can be no doubt that the nature and strength of these sentiments, beliefs, and ideals exercise an important influence upon desires, social and moral aspirations, and the modification and inhibition of instinctive tendencies, and therefore upon human behaviour.

The term **temperament** is applied to the particular disposition (mainly affective) which is characteristic of the individual. This influences his outlook upon and mode of reaction to life; it gives colour to his thoughts; and it plays a considerable part in the formation of habits and the building up of the personality. Should the individual suffer from a mental breakdown, the nature of this, whether anxiety, depression, exaltation, or delusional, will be more determined by his temperament than by the conditions which caused the overthrow.

Temperament is mainly a result of innate tendencies and it persists with comparatively little change throughout life. Since the days of Aristotle it has been customary to speak of four types of temperament and his classification is still valid. These types are *choleric*, in which the initial excitability and the after-effect are both great; *sanguine*, in which excitability is great and after-effect small; *phlegmatic*, in which excitability and after-effect are both small; and *melancholic*, in which excitability is small and after-effect great.

Cognition.

The cognitive functions of mind are those concerned in comparing, relating, understanding, acquiring knowledge, imagining, planning, inventing, reasoning, and such other activities as are usually termed "intellectual," as apart from the instinctive and emotional constituents already referred to.

The essential basis of cognition is **perception.** This is a funda-

mental inherent quality of mind, although its degree obviously varies greatly in different stages of racial evolution and individual development. But even in its simplest form perception is a highly complex mental process. It involves attention, memory, comparison, discrimination, judgment, etc., so that it is necessary to refer to these separately.

Attention consists in the focusing of consciousness upon some one particular object or thought to the exclusion of others. It may be divided into two forms, spontaneous and deliberate, although the former often merges into, or is replaced by, the latter.

Spontaneous, involuntary, or passive attention occurs when an object is presented with such suddenness and intensity, or is of such an unusual nature, that it holds consciousness by itself. This type of attention is aroused, for instance, by a sudden flash of lightning, a clap of thunder, or any happening which is new and striking in the experience of the individual. Such attention is especially characteristic of animals and young children and takes place without any conscious mental effort.

Deliberate, voluntary, or active attention is the focusing of consciousness upon an object or thought by a willed effort. It may follow attention which has been aroused passively; but in its most typical form it occurs when the object in itself has no compelling force—it may indeed be repugnant to the individual—and consciousness can only be fixed upon it when it has a derived or remote interest. For example, the individual will attend to a subject which in itself is distasteful in order to pass a particular examination that is necessary for the achievement of an ambition. Deliberate attention is thus dependent upon the amount of present, or of derived, interest and of the feeling attached to it. It is therefore influenced by the individual's range of knowledge, his ability to look ahead and make plans, and his emotional disposition; in short, by his general mental development. The term *concentration* is applied to the degree of intensity with which such deliberate attention can be brought to bear upon a particular object and with which distracting influences can be resisted. Defect of deliberate attention is termed *aprosexia*.

It is clear that deliberate attention is essential for the acquirement of knowledge, the conduct of affairs, and intellectual development in general. The person in whom it is greatly lacking will cut

but a sorry figure in life. As will be seen later, it is often very feeble in defectives.

Memory is the capacity of mind by which perceptions which have been previously experienced are recalled and recognized. Without memory perceptions of objects would be limited to the impression they produced at the time; but by memory previous experiences of the object are recalled and these are incorporated into the present perception, so that the knowledge and understanding of it is enlarged. It follows that in the absence of memory no comparisons could be made, there could be no judgment or reasoning, no imagination or construction, no learning from experience and, in fact, no intellect at all. Memory is therefore an essential and fundamental quality of mind.

How, and in what form, perceptions are retained in mind we do not know; but it is clear that retentiveness, or the ability to retain experiences and to recall them, varies greatly in regard to different objects and with different persons. It has been ascertained that in the normal child of six months old retention lasts only a few days, during the second year it lasts a few weeks, in the third year it lasts several months, while experiences of the fourth year which have made a deep impression may be remembered for a lifetime. In some instances events which have happened during the second year have been remembered for the rest of life.

It is probable that the memory for particular occurrences is largely dependent upon how intense or striking they have been, or upon the amount of interest and attention they have evoked; but over and beyond this there would appear to be a general power of retentiveness which is probably physiological and peculiar to each individual. It is of interest to note that many events which happen around us whilst our thoughts are engaged upon other matters, and which have apparently not been registered at all, may yet subsequently be recalled with considerable fidelity.

Facility of recall is also dependent upon frequency of repetition and the number of mental associations which have been formed regarding the experience. The greater the number of connecting links between one particular and other experiences, the more readily will the one be recalled. It follows that, generally speaking, the richer the knowledge the greater will be the power of recall. Rote memory, which consists in the recall of catechisms, multiplication tables, or yards of prose or poetry learned by frequent

repetition, is more in the nature of a motor habit than of memory proper.

Comparison and Discrimination.—The ability to compare, contrast, relate, and discriminate appears to be a primary quality of the normal mind and is manifest in an elementary form in the early weeks of life. As a result of this attribute, the early vague and blurred perceptions of the world which the infant experiences gradually become clarified and differentiated, each object acquires its own special and particular significance, and orderly perceptions emerge out of chaos.

Apperception, or apperceptive synthesis, is the ability to perceive the essential qualities which may be possessed in common by several different objects and so to arrive at a generalization. Such generalizations are called concepts. Familiar examples are the qualities of sweetness, goodness, hardness, powerfulness, and the like.

Thought.—Mental images of objects actually present to the senses are commonly called percepts. We have seen, however, that memory enables us to think about things which are not present, and such thoughts are called ideas, and the process ideation. The essential difference between percepts and ideas, therefore, is that the former are due to stimulation from without, via one of the sensory pathways, whilst ideas arise by stimulation from within. Ideas are usually less detailed and vivid than percepts. If ideas follow one another simply as a result of associative recall—that is, if each succeeding image rises into consciousness merely in consequence of the haphazard stimulation by constituents of the one which has preceded it—we have the state known as fantasy, reverie, or day-dreaming. If, by an effort of attention, the stream of ideas is kept along a definite course, so that the series has a willed relationship, we have consecutive and, provided it follows certain rules, logical thought.

Prevision and Foresight.—By virtue of this quality the individual is enabled to look ahead, to relate ideas to the future, and to foresee the consequences of personal acts before those acts are committed. Such prevision is an essential preliminary to the formation of a judgment regarding the act, and consequently plays an important part in conduct. Prevision is necessary for *prudence*, also for *planning* and *inventiveness*.

Judgment and Reasoning.—Ability to compare, discriminate,

and relate is a pre-requisite to the formation of a conclusion or judgment regarding the thing experienced. Many animals show evidence of ability to arrive at simple judgments, chiefly with regard to the safety or harmfulness of things perceived, as also do young children. Reasoning is the reaching of a new idea by a series of connected and consecutive judgments. It consists in the comparison of two or more percepts or ideas by an act of deliberate attention, the analysis of these and the abstraction of their essentials, the comparison of these essentials, and finally the arrival at a conclusion. There is no doubt that simple judgments and even reasoning may take place in the absence of speech; but for the higher forms of abstract reasoning a vocabulary appears to be essential, although there are many persons with an extensive vocabulary and an extraordinary flow of speech—the so-called verbalists—who have little capacity for reasoning.

Inventiveness, Planning, Constructiveness.—The urge to construct is an innate instinct in many forms of animal life. It is seen, for instance, to an extraordinary degree in the homes made by bees, wasps and many other insects, in the nests of birds, and in the dwellings made by beavers, moles, rabbits and other animals. It may be that vestiges of this instinctive tendency play a part in the building propensities of children; but constructiveness as seen in adult man is usually an intellectual and not an instinctive process. It results from the conscious desire to achieve some definite end, the planning or inventing of a suitable means, and finally the construction of the plan made. Such construction may be a mechanical appliance, a work of art, or a line of conduct.

Intellect and Intelligence.—The sum total of the cognitive qualities of mind which have been briefly described constitutes what is commonly called " intellect "; it is now necessary to refer to this, more especially to its degrees and varieties, and its relationship to " intelligence."

A person in whom all these various attributes are present in well developed and balanced proportion will have a wide range of knowledge, be able to reason soundly, to foresee and provide for contingencies, to plan, to learn from experience, and, in general, to adapt himself in a satisfactory and efficient manner to any ordinary surroundings in which he may be placed. The bulk of the population possess the necessary amount of intellect to do this, while some have a considerably greater and others a less amount.

It is common knowledge, however, that not only are there different degrees of intellect, but also different types, and the explanation would appear to be that the respective cognitive abilities may be unequally developed in different individuals, and that their combinations may vary. I think we may recognize three such types. Thus, some persons have much learning and great ability for abstract thinking; but they have little or no capacity for looking after their affairs and adapting themselves to the ordinary problems of life; they are, in fact, learned fools. Other persons possess noteworthy ability of a special kind; they may be geniuses in music, painting, sculpture, mechanical invention, and the like; but these also are so lacking in the practical capacity to manage their affairs that without someone to stage-manage them they come to social disaster. The third group consists of persons who have very little learning and capacity for abstract thought, and who, judged by academic standards, would be regarded as intellectual dullards; but they have a sound knowledge and understanding of practical affairs; they possess foresight, prudence and a shrewd judgment; they have excellent capacity for business—which they may apply to the exploitation of the learned fools and geniuses; and they are often highly successful in life. Indeed, starting on the lowest rung of the social ladder, they may end in the House of Lords.

The existence of these different types of intellectual development raises the question of what is meant by the term " intelligence " and what is its relation to intellect. Regarding this, there are different views. Spearman considers that there is an innate general quality of mind, which he terms " g," together with a number of special abilities which are mainly acquired. He applies the term " general intelligence " to the resultant of the energizing of these various abilities by this general factor. Thorndike of Columbia, U.S.A., on the other hand, disagrees with this view of a general factor and considers that intelligence consists of specific abilities only. He thinks that these specific abilities may take three main forms, and so give rise to three distinct types of intelligence, which he designates respectively " abstract," " mechanical " and " social." In the main, these types correspond to those I have described above. Thus, Thorndike applies the term " abstract intelligence " to the capacity to understand and manage ideas and symbols; " mechanical intelligence " to the capacity to understand, invent

and manage mechanisms; and " social intelligence " to the capacity to act sensibly and wisely in regard to human relations and social affairs.

While one cannot deny the existence of a general energizing factor, it may be that this is really a fundamental quality of mind—varying in amount in different individuals—which is responsible for, if not identical with, what is termed conation. There would seem to be little doubt, however, that the various factors which go to the make-up of intellect are not acquired but innate, and that the different intellectual types, which unquestionably exist, are due to inequalities, or variations in the combination of these innate factors. As we shall see presently, the essential basis of mental defect is the incomplete development of that cluster which is concerned with social adaptation, and it is to this, rightly or wrongly, that the term " intelligence " is usually applied. From this point of view intelligence is therefore a department of intellect.

It is said that intellect has no driving force of its own and that were there no instinctive-emotional urges there would be no behaviour. Of intellect, purely as a cognitive aspect of mind, this is doubtless true. Although man has arrogated to himself a position of supremacy because of his intellect, the fact remains that his conduct is mostly at the behest of his instincts and emotions, and his intellect is mainly used to enable him to invent means to gratify their urges in the most convenient and satisfactory manner. But, as we have previously seen, the development of intellect has rendered possible the acquirement of certain sentiments. These have a large emotional content, and they are not evanescent but part of the structure of intellect. They consequently have a driving force which may equal that of the innate instincts.

The Personality or Self.

The weaving together, into one dynamic whole, of the various conative, affective, and intellectual factors which have been described makes up the *personality or self.* What is called the *character* of the individual is the general type which results from this total integration. What is called *will* is the strength with which this character can be transformed from potentiality into actuality; that is, with which it can be rendered effective. While will is therefore largely dependent upon character—it has been

termed by McDougall " character in action "—it is also influenced by the physiological state of the brain and it may undergo impairment in ill-health or fatigue. It would, however, be erroneous to assume that violence or intensity of action is necessarily indicative of strength of will. On the contrary, action of this kind is generally due to the yielding to an impulse, and real strength of will is more characterized by the inhibition of such impulses and, more particularly, by the steady persistence in a particular line of conduct towards a definite end, in spite of obstacles and distractions.

It will be clear that the personality is highly complex. Some of its attributes have been inherited from a remote human and prehuman ancestry. Others are elaborations and further developments of these which have been gained by the race in its slow progress towards civilization. Yet others are acquirements which have been made by the individual as a result of his training and personal experiences while his mind was in an unformed and plastic state. Undoubtedly, some attributes of mind are more closely woven into the personality than are others. The inherited tendencies, for instance, are more deeply ingrained and more firmly knit than are the individual acquirements. The experiences of childhood, while brain and mind are still plastic, are more closely incorporated than are those of later life. It is probable, however, that all experiences leave their mark upon mind, and that many are woven into, and become an integral part of, the total personality. Moreover, it appears probable that not only psychic, but also physical, factors play a part in the nature of the personality. This certainly appears to be so with regard to the endocrine secretions, and it may be so with regard to other metabolic conditions.

It follows, that although different members of the same family, nation, and race may have certain mental, just as they have certain physical, features in common, no two personalities are precisely alike. As a result of variations and re-arrangements in the chromatin filaments of the germ cells—of a shuffling of the genes not unlike that which occurs in the pieces of coloured glass of the kaleidoscope —children born of the same parents differ in their inherited tendencies. Even so-called " identical twins " are not absolutely identical. Again, the nature of the experiences in childhood and adolescence can never be exactly the same in any two individuals. It may happen that a particularly emotional and vivid experience produces a profound change in the personality, as is seen, for instance, in

some cases of religious "conversion"; generally, however, by the time they have reached the third decade, most individuals have developed a distinctive personality, which, with minor alterations, remains fairly constant throughout life.

It is the nature and degree of development of the personality—the innate trends and acquirements, the intellectual abilities, the sentiments, ideals, beliefs, and aspirations—which determine the capacity for striving, feeling and thinking, the ability for action, and, to a very large extent, the success or failure in life. Individuals within the range of normality differ greatly in these respects. With regard to intellect, they range from the poorly endowed and scholastic dullards to those of outstanding ability, and, as we have seen, similar variations exist in respect of particular intellectual abilities. With regard to general disposition there are equally wide variations; from the timid, doubtful, suspicious, submissive, immature, and dependent, to the buoyant, confident, self-assertive, aggressive, and independent.

These different personalities have been classified into types and, from the standpoint of psychological medicine, there are two which have received particular attention. These are (1) the self-centred, inward-reacting, tender-minded, or "shut-in" type known as introverts or schizoids; and (2) the open, expansive, outward-reacting, tough-minded type known as extraverts or cycloids. I think, however, that we may recognize other types which do not conform to these divisions and there are two which are of special importance regarding mental defect, namely, the *stable* and *unstable*. The former are characterized by a well balanced mental equilibrium which shows little tendency to marked oscillations; the latter by rapid and wide oscillations of thought and feeling with defective control over emotions and primitive instincts. It is probable that this instability is due to inequality or irregularity of development and abnormality in the physiological functioning of the brain.

While the personality which we regard as normal is the resultant of the adequate and harmonious development and integration of many factors, together with the healthy physiological functioning of the brain, there are many individuals in whom one or another factor preponderates, and so gives rise to a distinctive type. But, as we have seen, the mental and physical factors which go to the make-up of the personality are so many and complex, and their

possible permutations and combinations so numerous, that each individual is really a personality peculiar to himself. Each normal child, in fact, contains within him the seeds of many qualities, good and bad, and perhaps also of many abilities, and it is often the environment that determines which of these shall come to fruition.

Chronological Development.

After this brief outline of the constitution of mind we may now consider the emergence and development of its various attributes in the individual in their chronological sequence.

At *birth*, and during the first few days of life, the normal child can perform a number of acts, but comparatively few of them can be regarded as manifestations of mind. Such movements as the contraction of the pupils and the shutting of the eyelids under a bright light are reflex and merely dependent upon the integrity of the visual apparatus and nerves. Other movements, such as crying, sucking and grasping, although commonly called "instinctive," are also in all probability merely automatic and reflex responses to external stimuli, and have been observed in anencephalic monsters. But there are others which would appear to belong to a different category. If the tongue of a child only a day old be wetted with a solution of sugar his face will show every sign of contentment and he will usually make sucking movements; whereas if it be wetted with an acid or bitter solution he will scream, choke and show signs of repulsion. Many children in the first few days of life will also distinguish between the milk of the mother and of the cow, and will refuse to take the latter. Further, when placed at the breast they will nose round until the nipple is found, and should the milk be abnormal they may refuse it. They will also turn their eyes in the direction of a bright light. Some writers regard actions of this kind as also merely automatic and reflex responses to stimuli; but it seems to me that they may rightly be considered to denote some simple perception, discrimination and striving towards the attainment of a need, and consequently as manifestations of mind. It is interesting to note that perceptions of taste and smell appear earlier than those of touch, pain, or temperature. Petersen is of the opinion that these latter are also present from the day of birth; but I have often failed to obtain any reaction to pinching or to a moderate pin-prick in different parts of

the body until several days after birth, and it has often been some weeks before the infant has shown signs of disapproval if its bath was too hot or too cold.

The earliest weeks of life are spent mainly in feeding and sleeping, and there is little sign of further mental development until about the *fourth or fifth week.* At about this age there are indications of awakening interest and attention, and the infant will allow his gaze to rest for a few moments on a bright light or object in the room. These abilities gradually become more and more evident, and the child of *eight weeks* will show definite signs of interest in the ticking of a watch held to his ear.

By about the *twelfth week* mental development has advanced still further. The presence of a capacity to experience simple emotions is shown by variations in the infant's cry, according to whether he is hungry, angry, afraid, or in pain. He also shows signs of pleasure, indifference, or aversion in the manner he greets his mother, nurse or strangers, and such recognition implies the presence of memory. But the span of memory at this age is brief, and even if the mother goes away for a few weeks she will arouse the reaction of strangeness on her return. About this time indications of motor control and of definite willed movements are seen. The child will smack its lips and suck its tongue at the sight of the breast or bottle. It will lift up its head and turn it to follow the movements of a person about the room or in the direction of sounds. It will make movements of its hands towards an object held in front of it. Evidence of the awakening of speech is seen in the frequent cooing and babbling which now occurs, and that this is due to the spontaneous activity of the cerebral cells and is independent of auditory stimulation is shown by the observation of Stern that it occurs in deaf children. All these various manifestations clearly denote the presence, although still in a very rudimentary form, of abilities belonging to the conative, affective and intellectual aspects of mind.

By the *fifth month* the child recognizes the voices of its parents, and motor co-ordination has developed to such an extent that he is able to put out his hands, seize an object accurately, retain it in his grasp and carry it to his mouth. By the *sixth month* he is able to sit up without support for several minutes at a time. He understands the meanings of a number of words and can obey a few simple commands. By the *ninth month* he can sit erect, and if placed on

the floor he will make attempts to crawl, and shortly afterwards to stand. He now begins to imitate the movements of those about him and to show signs of curiosity and inquisitiveness. Thus, he is keenly interested in investigating the face of his mother and of his nurse; he puts his fingers into their eyes and nose; he tries to open their mouths and he fingers their teeth.

By the age of *twelve months* he has passed the stage of infancy and entered upon that of childhood. He is now able to walk a few steps alone. He can say five or six words; he can obey many simple commands, and can point correctly to various parts of his body, such as his mouth, nose, eyes, hair, fingers and toes. He has some perception of size, distance, relationship and meaning. He can hold a cup in his hand and drink out of it. He can unwrap a sweet from a piece of paper. He gives evidence that he experiences the emotions of fear, rage, joy, affection, jealousy, disappointment and anxiety.

The acquisition of walking and speech is of enormous assistance to further progress, and mental development proceeds rapidly during the *second year*. For a short time before this the child has shown a desire to make social contacts and to play with other children; now that he can walk a new world is opened to him, a world filled with things which he can see, hear and handle, so that each day provides him with new contacts and fresh experiences. His first perceptions of the objects around him were vague and misty, but now that his instinct of curiosity has fuller play and his store of experiences increases, he notices differences and resemblances and his perceptions become more clear and distinct. He distinguishes between different colours, such as red, green, blue and yellow. His memory enables him to compare his previous with his present perceptions and so to form simple judgments regarding their qualities. He is beginning, not only to distinguish between the various objects around him and to understand their uses, but also to differentiate himself from his environment and to build up a consciousness of himself as an independent personality. He is becoming more and more interested in doing things, in exploring and experimenting, and all this adds to his manipulative skill and furthers the development of his intellect. Early in the second year an intelligent child who wishes to climb into a chair which is too high will accomplish his purpose by carrying a footstool from another part of the room and scrambling up from it.

Intellectual growth is greatly helped by the ability which the child now possesses of associating objects with word symbols. He has now realized that everything has a name, and he wants to know what the name is and what each object is for. During the latter half of the second year he evinces a special interest in language, and by the time he is *two years old* he has a vocabulary of between 200 and 300 words. At this age also he is beginning to say short sentences of two or three words to express his feelings, his wants, or his thoughts. Generally the first words he learns are the names of objects, next come verbs indicative of actions, and these are followed by adjectives to express qualities and relations. The acquirement of language also enables him to make generalizations and abstract perceptions. He has now developed good control over his bladder and bowels.

The next few years witness a steady advance in the child's knowledge and understanding of the names, qualities, meanings, uses and relationship of the things around him; also in his motor co-ordination and manipulative skill. By the age of *four or five years* he has clear perceptions of size and shape; he can, for instance, say which is the longer of two lines. Some children have a general appreciation of size much earlier than this, even in the second year, and if playing with a group of three similar objects will miss one of them which has been taken away. There are also many instances of children in their third year, and long before they can read, being able to pick out unerringly each gramophone record from a series of a dozen or more. At *four years* of age the child may be able to make little drawings of many of the objects around him. He plays intelligently with his toys and with other children, " make-believe " and fantasy entering largely into his play. There is no doubt that this play is a very important factor in mental growth. It develops the child's sensory perceptions and muscular co-ordination, increases his range of general knowledge, helps him to learn from experience, and increases his ability to plan and construct; whilst games of " make-believe " stimulate his imagination. At this age he is also able in great measure to dress and undress himself. He can fetch articles from another room. He knows several letters of the alphabet and can count up to ten or more. He can describe and explain the meaning of actions in pictures. He has an almost insatiable curiosity and is constantly demanding to know the why and wherefore of everything.

But perhaps the most important development about this time is the appearance of the quality of mind which is the expression of character, and which is commonly called "will." Hitherto, the child's behaviour has been largely the result of his innate, unconscious trends; now, with the recognition of himself as an independent personality, with the increased clarity of his perceptions, his wider interests and desires, and his stronger feelings, he evinces determination and deliberate and conscious efforts to obtain his own ends. Those ends are mainly self-seeking, and as such are often at variance with the views of his parents and the routine and regulations of the home. The consequence is that repeated clashes take place between the child and his parents, so that the third, fourth and fifth years of life have not inaptly been termed the "years of defiance."

I think there is no doubt that the ultimate mental development of the child in regard to those qualities which affect his social behaviour will be largely determined by the way in which he is handled during these years. Mismanagement in the shape of spoiling, letting him have his own way, indifference, or even unreasonable punishment and ruthless repression, may make it very difficult, and perhaps impossible, for the child to acquire those higher emotional qualities and sentiments which are the basis of controlled and correct conduct. On the other hand, love, sympathy, and understanding, combined with good example, wise precept, reasonable admonition, and perhaps in some cases judicious punishment, will make him appreciate the advantages to himself of conforming to the standards and regulations of his environment, and the disadvantages of not so doing, and will prepare for the acquisition of those higher sentiments which are essential for correct social behaviour. Usually, by about the sixth year, the child who has been properly brought up will have acquired sufficient understanding and control over his self-seeking instinctive impulses to be able to conform in a reasonably satisfactory manner to the requirements of his home environment.

At *six years of age* the phase of later childhood is entered, and this continues until the advent of puberty at about the twelfth or thirteenth year. From six years onwards scholastic instruction plays an important part in the child's life, and this results in a steady increase of his knowledge and understanding. By the time he is *seven or eight years* of age he has developed all the attributes

necessary for simple reasoning. He not only easily perceives in what ways things are different, but also in what ways they are alike. He is capable of forming judgments, simple generalizations, and abstract concepts. He has learned in some measure to profit by his experiences, and is able to look ahead and make little plans for his immediate future. He has become more controlled and dependable, and is beginning to evince a capacity to apply his knowledge and experience to meet new situations. His temperamental disposition is also beginning to make itself evident. He shows clear indications of social feeling. His play is becoming less make-believe and more directly concerned with the realities of life, and he takes part in organized games.

By *nine or ten years* of age his mental activity is becoming directed into more definite channels. He is interested in, and occupies himself with, various hobbies. He co-operates with zest in the games of his school companions. He is able to make sensible judgments and to reason things out for himself. The next few years witness a considerable advance in his scholastic and general knowledge and understanding. By the age of *twelve or thirteen* years he is not merely capable of adapting himself in an intelligent manner to new situations as they arise in his daily life, but he shows signs of that higher development of intellect which is termed wisdom. He has become capable of making plans for the future and in some measure of controlling and shaping his conduct so as to achieve the plans he has made.

The onset of *puberty* is often accompanied by a certain amount of emotional disturbance, and while this is present intellectual development may be at a standstill. Once this is well passed, however, a considerable increase in intellectual ability takes place. The capacity for logical reasoning and for perceiving abstract relations increases; prevision, planning, inventiveness and constructiveness undergo a further growth, and by the age of *sixteen years* all the intellectual attributes of mind are present. It is generally considered that girls reach intellectual maturity somewhat earlier than boys.

The final stage consists in the formation of the higher sentiments and ideals and the knitting of these into mind to produce a dynamic whole. Usually, by the age of *eighteen years* the individual has acquired definite sentiments which will influence his behaviour throughout life; but there are great individual differences as to their

nature and the age of their development, these differences being partly due to innate factors and partly to the environment. With the formation of these ideals and sentiments the mental development of the individual may be said to be complete, and he is capable of adapting himself independently and in a reasonably efficient manner to the requirements of his social environment, and of conforming to the legal and moral standards of his community. I do not suggest, of course, that the mental capacity of the person of this age is equal to that of one of riper years. Obviously, this is not so. The increased knowledge and additional experience cause the latter to have a general mental capacity which is considerably greater than that possessed by the adolescent. There may also be an increased development of special aptitudes. But, to use a simple metaphor, we may say that by the age of eighteen years the normal individual is fully equipped with all his mental tools, and that from this age increase of ability is due to additional knowledge and experience and increased practice in the use of those tools. It is for this reason that the law has fixed eighteen years as the limiting age of mental deficiency.

It is of interest to note that the Statute of Artificers passed in 1563, in legislating for a seven years' apprenticeship of craftsmen, said, "Until a man grow into 23 years he for the most part, although not always, is wild, without judgment, and not of sufficient experience to govern himself." But I suspect this was really based upon social and economic rather than psychological considerations.

It will, of course, be understood that the above is only a brief outline, and that the ages given are approximate, there being many individual exceptions. My object has simply been to give a short account of the general course of mental development in the normal child as a preface to the account of the defective mind which will now follow. For convenience of reference these normal data are summarized in a table at the end of the book.

B. THE DEFECTIVE MIND.

It will be convenient to consider the defective mind under the following three headings: (1) The general course and nature of its development; (2) its characteristics; (3) the psychological basis of mental deficiency.

Course of Development.

We have seen that there are two chief forms of mental defect—namely, *primary*, due to an inherent incapacity for full development, and *secondary*, due to development having been arrested by some external influence. In this section we shall consider primary amentia only, since in the secondary form the development of mind proceeds in a normal manner until the incidence of the arresting factor.

The course and the nature of mental development in primary amentia vary considerably according to the degree of defect. These differences will be pointed out presently; but, in general, it may be said that the development of the defective differs from that of the normal mind in the following three respects; (1) it is generally retarded; (2) it is often irregular and unequal; and (3) it comes to an end at an earlier age. These peculiarities will be described separately.

Retardation of Development.—A general retardation of mental development is such a common feature of primary amentia that its existence in a child, provided there is no adequate external cause to account for it, is highly suggestive of defect. The amount of this retardation varies considerably with the degree of defect. It is greatest in the idiots and least in the feeble-minded; in fact, in many of the latter there is no backwardness of development at all in infancy and early childhood, and it is not until school age is reached, or even later, that any abnormality is noticed. In practically all idiots and imbeciles, however, retardation is present, often from the moment of birth. Indeed, it sometimes occurs before this; for it is not uncommon in the case of low-grade defectives for the mother to state that during pregnancy the child had been lacking in movement. Retardation shows itself in many ways. The infant may only be persuaded to take the breast or bottle with great difficulty; he may be unusually silent, placid and "good," and he does not look about him like a normal child; he does not recognize his parents; and he does not become clean in his habits at the usual time. The teeth may erupt normally; but there is usually delay in sitting up, walking and speaking. Many defective children, even where there is no paralysis, do not walk alone until the end of the second, third or even fourth year of life; and many do not make sentences until they are three, four or even five years old. A large number of

idiots never learn to walk or to talk at all. In the milder grades of defect, retardation, if not obvious before, is usually apparent when school life begins, and is often such as to necessitate attendance at a special school. It concerns not only the scholastic but also the social and practical abilities. In the mildest defectives of all, intellectual development may proceed normally until the tenth or twelfth year; but this is unusual, and in the majority of cases there is evidence of some amount of scholastic retardation due to inadequate development of the cognitive processes of mind.

Irregularity of Development.—When signs of backwardness are first noticed—and we have seen that this may be at different stages—the retardation is often fairly uniform and involves all the abilities of mind. But this is by no means invariably so, and there are many instances in which, with marked delay in the emergence of some abilities, others are well up to time. Thus, it may be found that a child who has little general intellectual capacity has a prodigious memory; and that another, who is unable to learn to read and write, has a remarkable capacity for drawing, or for taking to pieces and re-assembling a mechanical toy. Parents are apt to regard such accomplishments as the presage of genius and to congratulate themselves accordingly. But I am disposed to regard them, when they are accompanied by considerable backwardness in other directions, as even more indicative of defect than a general uniform retardation, for the latter may be due to some physiological or external cause. Such irregularity of development is characteristic of the *idiots savants* who will be described in a later chapter.

Duration of Development.—We have seen that in the normal individual the development of the intellectual functions is usually complete by about the age of sixteen years. It is commonly assumed that, where this development of intellect has been retarded, this time will be extended and an opportunity afforded for making up the arrears. It must therefore be emphasized that where the backwardness is due to inherent dulness, and still more where it is due to mental defect, this is not the case. Not only is there no period of grace and no extension of the time limit in these conditions, but this is actually less, and mental development usually comes to an end two or more years earlier in the defective than in the normal. In the low grades it ceases at a still earlier age.

Characteristics of the Defective Mind.

The most convenient way to describe the characteristics of the defective mind will be to deal separately with each ability or process under the headings of conation, affect, and cognition, as was done in treating of the normal.

Conation.

We have seen that conation, or the imperative urge to strive towards the attainment of the needs of the organism, is a fundamental and primary quality of mind; it is not only the source of all instinctive-emotional behaviour, but it also plays a part in the development of intellect. Conation is decidedly weak in most defectives. This shows itself in the weakness of their instinctive-emotional tendencies, in their lack of ambition and desire, and in the paucity and feebleness of their interests. There are, of course, many exceptions, especially among the higher grade and unstable defectives, but feebleness of drive and urge is a characteristic of most, and this feebleness is, on the whole, directly proportionate to the degree of their intellectual defect.

Instinctive-Emotional Urges.—In the lowest aments there is often a marked defect of the primitive instinctive impulses which are necessary for *self-preservation*, such as crying, sucking, and moving away from discomfort or danger, and were it not for the extreme solicitude of parents and nurses there is no doubt that a large number of them would succumb in the early weeks of life. It will be remembered that the legal definition of idiocy is that of inability to guard against common physical dangers, and this is often due to a defective instinct for self-preservation. In such extreme grades of defect one would naturally not expect to find a normal development of other primitive instincts and idiots are usually devoid of *sex* instinct. *Aggressiveness* occurs in all grades above idiocy: it is not usually pronounced, but some imbeciles show it towards particular persons. *Acquisitiveness* occurs in the imbeciles and feeble-minded, but is not usually strongly marked. Children suffering from mild defect may hoard their little possessions and apparently feel a certain amount of pride in them and resent their being taken away; but their pride of possession and resentment is far inferior to that shown by the normal child. The instinct of

curiosity is seen to some extent or other in most aments above the grade of idiocy. Usually, however, it is decidedly weak and fleeting, and it is rarely that it leads to the determined investigations of which the normal child is capable and which often get him into trouble with his parents. But it may do so occasionally, as, for example, in a feeble-minded boy of ten years I knew who was so curious as to the contents of an iron water-pipe in the kitchen that he could not rest until he had succeeded, after much labour, in boring a hole in it—with rather disastrous consequences.

Assertiveness and self-display is rarely seen in imbeciles, but is often present in the feeble-minded. In most cases it is little more than a rather childish desire to attract attention and be in the limelight, and sometimes a certain amount of trouble and ingenuity may be evinced in achieving this end, especially in the higher grades. Occasionally in these latter it is manifested in a definite domineering tendency and an open defiance of authority.

Submissiveness is more common than self-assertiveness. It is seen as a persistent timidity and shrinking; also in the usually ready recognition of, and conformity to, authority. It is probable, however, that the former is more often due to fear and the latter to habit, rather than to any real feelings of humility and subjection. As we shall see later, absence of submissiveness and marked assertiveness are usual characteristics of the moral defective.

The *social or gregarious* instinct appears to be present in most defectives except the moral, since they show signs of loneliness when away from their companions for any length of time, and of satisfaction and pleasure on rejoining them. Moreover, these feelings appear to be more connected with the presence of the herd as a "herd," than with particular persons or places. Although there are exceptions, relatively few defectives appear to be capable of very strong or lasting feelings of friendship or affection towards individuals, and when they leave home for boarding school homesickness is seldom seen, and they very quickly settle down in their new surroundings.

The *sex instinct* varies considerably. In some defectives it appears to be absent, but in others, even imbeciles, it is strongly marked and may lead to persistent masturbation, and in feeble-minded males to violent sexual assaults upon little girls or unprotected women. From time to time cases of this latter kind come before the Courts. In the case of feeble-minded females, even when their sex instinct

is not abnormally strong, their suggestibility may make them a ready prey to unscrupulous men. Where, as is sometimes the case, sex feeling is strongly developed, it inevitably causes them to drift into a life of prostitution if they are not carefully supervised.

Affect.

Although even some idiots exhibit anger and rage, yet on the whole emotion is weaker in aments than in the normal. Imbeciles show signs of pleasure, fear, anger, surprise, hate, and, possibly to a slight extent, affection, envy and jealousy; the feeble-minded show evidence of shame, joy, awe, contempt, disgust, indignation, grief, and possibly other emotions; but in practically none of them do these emotions have the duration or reach the same intensity as in the normal, although they may at times be violently expressed. The feeble-minded will distinguish between things which are "pretty" and "ugly"; but few of them have any pronounced æsthetic feeling. Most of the milder grade of defectives can be taught to repeat creeds and catechisms, and to perform at the proper time and place religious observances; they may have a sort of verbal religion, and be able to tell one that after death the good people go to heaven and the bad ones to hell, and this may not be without effect upon their daily behaviour; but they have little real religious feeling. They are capable of the simple social feelings of tenderness and friendliness, and they learn that they are allowed to do certain things and forbidden to do others; they can also experience some degree of pleasure when they do what is allowed, or is for them "right," and of discomfort and shame when they do what is forbidden or is for them "wrong"; but few of them have any real *feeling* of duty and of obligation due from them; of self-respect, honour, uprightness and the like; in short, although they may possess a certain amount of verbal morality, they have little real social and moral sentiment. It results from this that their behaviour is very largely dependent upon the nature of their surroundings and of their companions. If strong instinctive urges are present, they will usually have unchecked play; but, with the exception of the special class of the moral defectives, aments in general are a-social and a-moral rather than anti-social and immoral.

Temperament.—Aments vary in temperament as do the normal;

but since few of them are capable of sustained emotion, that is of persistent after-effect, they are rarely of either the choleric or melancholic type. Probably the majority of them are best described as phlegmatic, being apathetic, indifferent and comparatively unexcitable; but there are many who are excitable and demonstrative and these approximate to the sanguine type.

In regard to their temperament, the most useful division of defectives is into the *stable* and *unstable* groups. I shall give examples of each of these in later chapters; but it may here be said that from the point of view of administrative disposal and employability, the question of temperament is often of more importance than intelligence. Many intellectually low-grade, but stable, defectives can be cared for satisfactorily and to a certain extent usefully employed in the outside community; whilst individuals of much greater intellect, but of unstable temperament, will need the supervision and control of an institution.

Cognition.

Perception.—In general, the sense-perception of aments is inferior to that of normal individuals and this inferiority is directly proportionate to the degree of defect; but since variations occur in regard to the different senses it is necessary to consider these separately.

Taste.—In the milder aments there does not appear to be any marked impairment of this; although I doubt whether they have the delicacy of taste possessed by a normal person. They have their likes and dislikes with regard to food, and they appreciate sweets and object to nasty medicines. In the more severe grades perception of taste is often very poor, and in idiots it may be markedly perverted.

Smell.—This is closely related to taste. The mild defectives show no difficulty in distinguishing most common odours, although they lack the delicacy of discrimination possessed by an intelligent person; but in the more severe grades there often seems to be a complete imperception of smell. Many idiots will sniff the most disgusting odours without the slightest sign of repugnance. Some will even sniff strong ammonia without any reflex movement, but it is probable that in these there is abnormality of the olfactory mucous membrane.

Vision.—In the medium degrees of amentia, defect of visual perception chiefly consists in an inability to discriminate between the slighter differences of form, size or colour. An octagonal will be confused with a hexagonal figure; no difference will be noticed between the various triangles, or between the size of a florin and a half-crown. They will distinguish the primary colours, but are often unable to detect the finer differences of shade. As we proceed down the scale of amentia these defects become more marked until, in the idiots, they reach an extreme degree. The colour perception of the low-grade imbeciles and idiots often seems limited to the recognition of red, and it is interesting to note that this is the colour usually most attractive to, and first recognized by, the normal child. Voisin states that in most imbeciles the perception of relief is lacking. A few low-grade aments are congenitally blind in consequence of a peripheral defect; but colour blindness does not appear to be commoner than in the normal.

Hearing.—Defects of hearing are fairly common in aments, and include complete deafness, tonal deafness, and word deafness. Some of these conditions may be due to developmental anomalies or disease of the peripheral organ, but others are of central origin. Even where no actual deafness is present the acuity and range of auditory perception is usually below the normal. It not infrequently happens, however, that a defective child is thought to be deaf who is not really so, for many defectives who pay no attention to commands, to the sound of a whistle, or to noises of many kinds, will at once turn when a spoon and plate are rattled, showing that the cause is not deafness, but lack of interest and attention. The conditions of word-deafness and tonal-deafness will be described more fully in dealing with educational defectives.

Touch, Temperature, Pain.—Sometimes *touch* is extraordinarily delicate, instances of which will be given in describing idiots savants. As a rule, however, although the milder aments can differentiate between substances which are hard or soft, rough or smooth, they cannot appreciate the finer gradations of these qualities so well as can the normal child. In the imbeciles this sense of discrimination is still less acute, whilst in the idiots such a test is practically impossible. Alterations in *temperature* are certainly appreciated by the mild aments, although here also sensibility would seem to be less acute than in the normal. In the lower grades this capacity seems to be wanting, and such will sit in front of the

hottest fire, under the most blazing sun, or exposed to the coldest wintry blast, without showing any concern. *Pain* is experienced by feeble-minded children; they will complain of headache, tooth-ache, or stomach-ache; but here again it is exceedingly doubtful whether they have the same appreciation as has the normal child, and many feeble-minded persons will suffer the extraction of teeth and other operations of minor surgery with relatively little concern. In imbeciles, and to a still greater extent in idiots, inability to feel pain is often a very marked characteristic. Many of these persons will knock themselves against the floor and wall, poke their fingers into their eyes, pull out their hair, teeth, or toe-nails, and injure themselves severely in many ways, without showing the slightest indication that the process is painful. I knew a boy who had such an incurable habit of sucking his finger that the bone had been completely denuded of flesh, yet the practice seemed to afford him extreme pleasure rather than discomfort.

Perceptions of *pressure and muscular movements* are not only of importance in manipulative skill, but are also concerned in spatial perception. The majority of aments, even of mild grade, are decidedly inferior to the normal in this respect, as can readily be shown by requiring them to make a comparison between the weights of pill-boxes, each containing a different quantity of small shot, held in the open palm. Under the term *organic perceptions* are included sensations of thirst and hunger, as well as various other impressions from the internal organs. In the mildest aments there would not appear to be any marked abnormality of these. They feel the pangs of thirst and hunger, they are conscious of bodily aches and pains and general discomfort, and they have sexual feelings. Nevertheless, I am disposed to think that the organic perceptions of aments in general are less acute than are those of the non-defective, and it is often surprising to find how seriously ill they can be without making any complaint or showing any sign of suffering. This want of feeling is usually directly proportionate to the degree of defect.

In concluding this account of the sensory perceptions of aments, it is necessary to state that while, as we have seen, these are usually inferior to the normal, very remarkable exceptions occasionally occur. These will be described in a later chapter; it will be sufficient to say here, that in some aments of even comparatively low grade, perception of touch, hearing, vision or smell is developed to a degree,

not merely equal to, but greatly surpassing that present in the ordinary normal person.

Interest and Attention.—Idiots are practically devoid of interest and attention. They are even unattracted by food in front of them and would starve if they were not fed. All imbeciles are capable of involuntary attention and will look up and take a brief interest in some sudden or unusual sight or sound. Many of them, in addition, appear capable of a certain amount of deliberate attention, in that they will continue at some routine task with steady persistence for hours together. But it is possible that this may be due more to habit than to real interest and attention. The feeble-minded have a wider range of interests and a greater capacity for active attention, although in neither respect do they come up to the normal.

This defect of interest and attention is obviously a serious hindrance to their education and training, and renders necessary the employment of special methods and specially trained teachers. Moreover, defective attention means defective perception and discrimination, and defect of these necessarily interferes with intellectual development in general. On this account some writers regard a defect of attention as the essential cause and psychological basis of mental deficiency. But, whilst fully admitting the great importance of this defect in the training and intellectual development of defectives, I cannot agree that it is the prime cause of their condition. It undoubtedly produces a vicious circle, inasmuch as the faulty perception arising from it means a restriction of interests and consequently fewer things to attend to. But there are aments in whom attention is not markedly lacking, and it seems to me that defective attention is not the prime cause, but merely part and parcel of the weak conation and affect, and the feebleness of mind generally, which characterize amentia.

Memory.—Retentiveness, or the tenacity of memory, does not seem to differ greatly in the majority of defectives from the normal. But the readiness with which experiences can be recalled is usually inferior, as would be expected from their limited range of interests, poor understanding and defective attention. If a mild ament and a normal child of the same age be given a number of simple tasks to perform, or told to fetch several things from a shop, this defect of memory will usually be very clear, since the ament will almost certainly forget a third or half of them. This may also be demon-

strated by requiring them to repeat sentences or a series of haphazard numerals. Miss Norsworthy, using the tests of related and unrelated words, found that only 5 per cent. of feeble-minded children came up to the average of the normal.

Defect of recall is characteristic of so many aments that, like attention, it has been held to be the prime cause of their condition. But I cannot agree with this view. There are many aments whose memory, far from being defective, is really extraordinary, as we shall see in describing idiots savants; and the defective child can often remember isolated happenings, which have impressed him at the time, quite as long and as faithfully as can the normal. Dr. E. O. Lewis, as a result of some special observations on the subject, came to the conclusion that the memory of defectives was inferior to that of normal persons, primarily because of its poverty of rational associations; I think there is no doubt that this is true, and that the defective memory of aments is much more often a consequence than a cause of their general imperfection of mind. The defective child does not register, and therefore cannot retain things, because he is not interested in them; or he does not understand, and consequently does not attend to them.

Comparison, Discrimination.—The ability to compare, discriminate and relate is defective to some extent or other in all aments. In the lower grades it is manifest in their inability to compare and discriminate between simple concrete objects, to which we have already referred in describing their sense-perceptions; but even aments of the mildest degree, whose sense-perceptions may not be markedly sub-normal, almost invariably show a defect of this quality in regard to mental images or thoughts. *Apperception*, by which the individual is enabled to generalize, is also markedly defective in most aments. In the medium grades this shows itself in their inability to say in what respects such things as an apple and a plum, or a railway train and a motor car, resemble one another; although they can often say in which respects they differ.

Thought.—In view of their poor ability to compare, discriminate and generalize, it inevitably follows that the ideas of aments are of a simple nature. This can readily be shown by asking them to give a description of some simple object, such as a cat, chair or table. It will usually be found that the description given by an intelligent child of three or four years is far more detailed and correct than that given by even a comparatively mild defective of twelve or fourteen

years. Such tests as the " part-wholes," " genus-species," and " opposites," also afford clear evidence of the general paucity of the ideation of aments. There is also no doubt that the thoughts of the majority are chiefly concerned with objects actually present rather than with memories of them; that is to say, they are simple perceptions. It follows that although fantasy and reverie may occur in some of the milder defectives, it does so in a much simpler form than in the normal. It consists of a random thinking about concrete objects and simple past happenings, and perhaps sometimes of things they have been promised in the future; but it is largely haphazard, it can rarely be sustained, consecutive or logical thought, and probably never abstract thought.

Imagination and Inventiveness are also usually very poorly developed. It is true that some of the idiots savants may possess a very considerable inventive ability, as we shall see later; also that some high-grade aments may show a certain degree of cunning in the commission of thefts and of ingenuity in the invention, apparently on the spur of the moment, of plausible lies to screen themselves and incriminate their companions; but these are exceptional cases and, speaking generally, aments are neither very imaginative nor inventive. Some of the milder ones may copy a drawing or design, they may produce faithful plasticine models of flowers or fruit, and may have a considerable degree of manipulative skill; but their work is generally a slavish imitation devoid of any originality. It is only necessary to set defective school-children to draw, build bricks, or make coloured patterns, to see that they follow the same stereotyped plan and show none of the originality of which the normal child is capable.

It is the same with **symbolic imagery.** As is well known, even primitive savages are able to appreciate that a particular totem or tattoo mark is symbolic of a particular tribe, that a particular headdress or ornament is symbolic of office or power, and that certain rude hieroglyphics represent certain ideas. In civilized peoples the higher development of this ability renders possible the appreciation of such symbols as alphabetical signs, figures, musical notation, and the like; it is consequently of the greatest value in learning and intellectual development. The symbolic appreciation of many aments appears to be little greater than that of the primitive savage, in the lower grades not nearly so great, and this is an important contributory factor of their scholastic ineducability. It is interest-

ing to note that even many of the milder aments find it easier to express their ideas by a crude drawing than by a written description.

Prevision is also usually very poorly developed in aments, and the lack of this is a factor in their characteristic want of *prudence*, and inability to manage their affairs. This defect of prevision, combined with their feeble inventiveness, necessarily results in defective *planning* and constructive ability.

Judgment and Reasoning.—In view of the various defects of the cognitive processes which have been described, it necessarily results that the judgment and reasoning of aments are also defective. It is true that many of them, even imbeciles, are able to form simple judgments, such, for example, as that a certain object is hot or cold, dry or wet; but very few of even the higher grades are capable of the consecutive and logical thought, the abstraction of essentials, and the comparison of such essentials, which constitute reasoning. Defect of reasoning, indeed, is probably one of the most outstanding characteristics of aments of every grade and class, and largely responsible for their incapacity for social adaptation. We shall see numerous examples of this in the descriptions of cases in subsequent chapters.

The Personality.—Finally, we have to refer to the resultant of the integration of all the attributes of mind which have been described and which constitutes the personality or self. While mental defectives differ among themselves just as do the normal, so that no two of them are precisely alike, nevertheless, as a class, they approximate much more closely to one another. Each of them, it is true, has his own personality, his own little ways and habits, his likes and dislikes; but few of them possess any pronounced individuality, and most aments are comparatively colourless personalities, with poorly developed sentiments and ideals, weak in character, and feeble in will. It follows that they are usually very amenable to suggestion and easily influenced by those about them. Amid the ordered routine and supervision of a well-managed home or institution, the majority lead well conducted lives and give little trouble; but the same individuals, if placed in unsuitable surroundings and allowed to mix with unprincipled companions, may readily drift into immoral, vicious, and criminal habits. This has been shown repeatedly in the case of defectives discharged from institutions without satisfactory arrangements having been made for their supervision.

The Psychological Basis of Mental Deficiency.

Having now given an outline of the general course of development and the characteristics of the defective mind, we have to consider what is the essential psychological basis of that incapacity for independent social adaptation which constitutes legal mental deficiency. We have also to ask whether this consists of a defect of mind as a whole, or is primarily dependent upon a defect of any one or more particular attributes of it.

In the first place, it is clear that independent social adaptation necessitates some capacity for attention, memory, and simple ideation; for perceiving and appreciating the uses and meaning of simple objects; and for avoiding those which are inimical. The individual who is devoid of these elementary attributes will be unable to guard himself against the common physical dangers which threaten life, and will be an idiot. In addition to these, the maintenance of existence necessitates some ability to make simple mental comparisons and discriminations; to understand to some extent the relationship between simple causes and their effects; to acquire items of elementary knowledge, and to utilize this knowledge in the performance of some kind of useful work. The individual who is devoid of these attributes will be incapable of performing anything more than the simplest routine tasks, and will be an imbecile. But the maintenance of independent existence requires still something more. The individual must not only be able to acquire and understand simple items of knowledge, but he must be able to apply such knowledge so as to adapt himself to new situations; he must not only be able to compare and differentiate, but must be capable of forming judgments and of simple reasoning; he must be capable of learning from experience so as to avoid repeating the same mistakes; he must be able to look ahead, to appreciate the consequences of his acts upon himself and upon others before those acts are committed; he must be able to make prudent plans to meet inevitable happenings, and he must be able to exercise such a general control and co-ordination over his conduct as to achieve these reasonable plans. Lastly, he must have some appreciation of social obligation and of the difference between right and wrong, and be capable of controlling his emotions and instincts so as to refrain from violating, and conform to, the laws of the community. If, by reason of the imperfect development of his mind, any individual fails in these

things to the extent of needing care, supervision, and control, he is a mental defective within the meaning of the law.

It is seen, then, that an essential requisite for efficient social adaptation and the maintenance of independent existence is an adequate development of certain intellectual attributes of mind. The sum of these constitutes the quality which is often termed " intelligence," and tests used in the diagnosis of mental defect are termed " intelligence tests." As has been pointed out, however, this word is used by psychologists with such different meanings, that, to avoid misunderstanding, it might be advisable to discard it and to use *wisdom or common sense.*

By wisdom or common sense (what is popularly known as " nous " or " gumption "), therefore, I mean that combination of attributes and that department of intellect which enables the individual to adapt himself to the requirements of his environment in such a way as to be able to maintain an independent existence without the need for external care, supervision, and control. In my view it is a lack of this which is the essential basis of mental deficiency.

It must be emphasized, however, that common sense is relatively independent of those groups of intellectual faculties which are concerned with the higher manipulation of thought and with special abilities, although there are, of course, certain basic processes common to all. It thus follows that while lack of common sense, of scholastic capacity, and of any special aptitudes, often coexist, this is not necessarily so. Just as there are some non-defective persons with few scholastic acquirements and no particular special aptitudes, but with abundant common sense, so are there some feeble-minded persons whose scholastic attainments are very little, if at all, below the normal, and others, known as *idiots savants*, who possess special aptitudes to a remarkable degree, but all of whom lack common sense. Further, this common sense, as we have seen, is itself a composite quality, and clinical experience suggests that there may be variations in the degree of development of its constituent parts. While, therefore, all aments are deficient in common sense, there are individual psychological differences. Some high-grade feeble-minded persons fail mainly because they lack discrimination and judgment, others because they lack previsision and prudence, and others because they cannot make sensible plans for the future or learn from experience.

There is, however, another aspect of mind which must be considered. It has been seen that social adaptation not only demands an ability to acquire and utilize knowledge, to learn from experience, to reason, foresee consequences, and make prudent plans; but that it also necessitates a sense of personal responsibility, an ability to appreciate social obligations, and to exercise such a control over emotions and instincts as to conform to the laws of the community. As we shall see later, defective control over emotions and instincts is a marked—indeed often the dominating—feature of some aments, and the question arises as to the psychological basis of such defect and its causal relationship to mental deficiency.

There is no doubt that the character of the individual is largely dependent upon the nature of his instinctive tendencies and their correlated emotions, and some psychologists postulate a factor of "general emotionality" comparable to that of "general intelligence." They contend that this general emotionality may be in excess or defect, and that either of these conditions may give rise to a degree of social incapacity sufficient to necessitate care and control. They further suggest that this condition should be called "temperamental defect." Now, if it could be shown that any imperfect development of mind, even if such were limited to the emotions and did not involve the intellect, was responsible for a degree of social incapacity sufficient to necessitate care and control, then I think such an individual would undoubtedly be certifiable as a mental defective. The definition in the Act says imperfect development of *mind*, and there is no justification whatever for limiting the imperfection to any one aspect of mind. Unquestionably, the higher sentiments play a very important part in inhibiting the primary emotions and the anti-social or a-social primitive instincts; but these sentiments are not purely emotional, they are compounded of emotional and intellectual factors. On the whole, the view that mental deficiency may in some cases be due solely to a failure of purely emotional development cannot be regarded as established, and, as a matter of fact, I have not yet met a mental defective of either the most emotional or most callous type in whom there was not also a lack of prevision and judgment, an incapacity to appreciate that their misconduct was to their own disadvantage, and an inability to learn from experience. There may not be, there often is not, any defective range of knowledge or any want of common understanding; but in all the cases I have seen there has

been some defect of the higher controlling and co-ordinating intellectual factors of mind. Such persons belong either to the unstable group of feeble-minded or to the group of moral defectives, and they will be described under these headings.

We see then, that the essential psychological basis of mental defect is an incomplete development of certain of the intellectual abilities of mind. But the intellect does not emerge fully formed like Minerva from the head of Jupiter. It is made up of many factors and its component parts evolve at different age periods; it is not until late adolescence that it is sufficiently developed for the individual to lead a responsible and independent life. It follows, that while severe defect may be recognized in infancy or childhood, a milder degree may not become manifest until much later, when parental care is relaxed and the individual has to take the responsibilities of life upon his own shoulders.

As we have seen, however, defects other than intellectual are frequently present. There is often a marked lack of conation, of urge, drive and desire; while the emotions and particularly the higher sentiments are feebly developed. In short, while defect of intellect stands out most prominently, there is usually also an inadequate and irregular development of the whole structure of mind.

In conclusion, I would repeat that this account refers only to the primary form of mental deficiency, which is the result of an inherent incapacity for complete development. Individuals suffering from secondary amentia, in which the growth of mind has been arrested by external causes, often present psychological differences from those of the primary form; these differences will be described in later pages.

CHAPTER VI

PATHOLOGY

As we shall see later in describing their physical features, many primary aments are characterized by marked imperfections of the body. But their imperfection of mind is of far more importance, and in the present chapter it is proposed to give an account of the material basis of this so far as it is yet known.

Whatever may be the ultimate nature of mind, it is now well established that its manifestations are conditioned by the anatomical structure and physiological functioning of the brain—that the brain is the organ for the manifestations of mind. It is also established that the structures of the brain which are mainly concerned in these manifestations are the neurones of the cortex, and that the highest mental activities are subserved by the neurones of the outer mantle of this cortex which was named by Elliot Smith the *neopallium*. Thus, comparative anatomy shows that in mammals below the status of man the capacity for learning from experience, for making new adaptations, and for behaving in what is regarded as an intelligent manner is, in general, proportionate to the size and complexity of the cerebral hemispheres and thickness of the neopallium, and that this latter attains its greatest thickness and development in man. The examination of human brains at various ages and stages of growth shows that mental development proceeds with the development and maturation of the neurones of the neopallium. Lastly, examination of the brains of persons who have suffered from long-standing mental deterioration shows that these same neurones are in a state of degeneration.

It would be justifiable to conclude from these facts alone that the material basis of mental deficiency consists in an inadequate development, or persistent imperfection of function, of the neurones of the mantle of the brain. This conclusion has been amply confirmed by numerous histological findings which will presently be

described, and the general statement may be made that primary amentia is the result of an inherent incapacity of these neurones to attain an adequate degree of development and function, while secondary amentia is due to their development having been arrested by some external cause. Before describing these changes, however, it is advisable to give a short account of the normal brain cortex.

Architecture of the Normal Cortex.

At a very early stage of embryonic development it is possible to distinguish two types of cells surrounding the wall of the primitive neural canal from which the brain and spinal cord are developed; these are spongioblasts and neuroblasts. The former are the precursors of the different forms of neuroglia cells, and their function is mainly that of affording a scaffolding or support for the neurones, although it has been suggested by Cajal* and others that they may also provide a ferment which is necessary for the nutrition and functioning of the neurones. The neuroblasts are the precursors of the nerve cells which, with their ramifying processes, constitute the neurones. The essential function of the neurones is the reception, association and co-ordination, and transmission of nerve currents, and the manifestations of mind result from these combined activities. The neurones vary greatly in size and shape according to the particular function they have to perform, and the development of the neuroblasts into three main types of neurones begins about the fourth month of embryonic life; prior to which they are of one undifferentiated type.

This development of neuroblasts into nerve cells of different types occupying definite positions in the brain cortex, the outgrowth from them of processes, the medullation of these processes and their aggregation into bands of fibres, gradually cause the cortex to be divided into several strata or laminæ. The number of these layers and the details of this lamination differ in different regions of the brain, dependent upon the particular function subserved. Whilst the older views as to a rigid demarcation of cortical functions have been considerably modified in recent years, it is still recognized that certain brain areas are largely sensory or receptive, others largely motor or executive, and others largely associative and co-ordinating. Doubtless, the manifestations of mind are the resultant of the activities of the whole cortex; but there is good reason to

* Cajal, "Histology," 1933.

conclude that certain regions are specially concerned in the higher intellectual manifestations, and that these regions are the pre-frontal, parietal, and probably part of the temporal lobes.

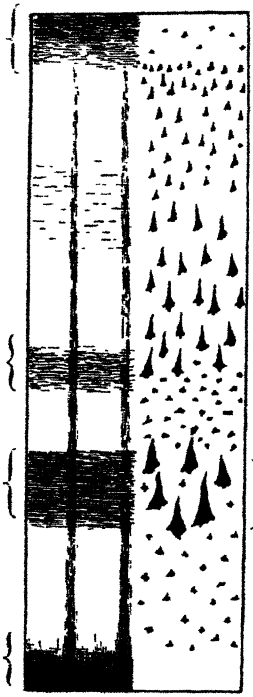
We may accordingly take the pre-frontal lobe as the type of "psychic" cortex, and its histological structure is represented in the accompanying diagram. This is based upon the researches of J. Shaw Bolton,* who divides this cortex into five laminæ. Bolton's work, in the main, is confirmed by the more recent studies of von Economo;† but the latter divides Bolton's second lamina into two, and regards the outer portion of this as a granular one. Considered as a whole, the cortex consists of three chief parts—namely, a granular, an infra-granular and a supra-granular—and there are important differences between these. According to Bolton, the order of phylogenetic evolution and of ontogenetic development of the cortex is from within outwards, and he considers their respective functions to be as follows. The infra-granular layer, which is the predominant layer in lower mammals, subserves the organic and instinctive activities and is not influenced by education. The granular layer is chiefly concerned with the reception and association of sensory impressions. The supra-granular layer, which constitutes the neopallium, is peculiar to the higher mammals, reaches its greatest development in man, and is concerned with the processes of selection, co-ordination, control, and all the higher intellectual functions. It is "the last layer of the cortex to be evolved, the last to commence to develop, the last to attain maturity, and consequently the first to undergo retrogression."

It is significant to note that the transformation of neuroblasts into nerve cells does not take place simultaneously in all regions of the brain. Those of the pre- and post-central (motor and sensory) areas are amongst the first to become mature, and are fully developed at birth, or very shortly afterwards. On the other hand, the neuroblasts of the pre-frontal lobe are considerably later in maturing. At birth the majority in this lobe are still in an embryonic condition, they contain no Nissl bodies, and the supra-granular part of this region is only about half the thickness of that of the normal adult.‡

* J. S. Bolton, "The Brain in Health and Disease," 1914; and other papers.

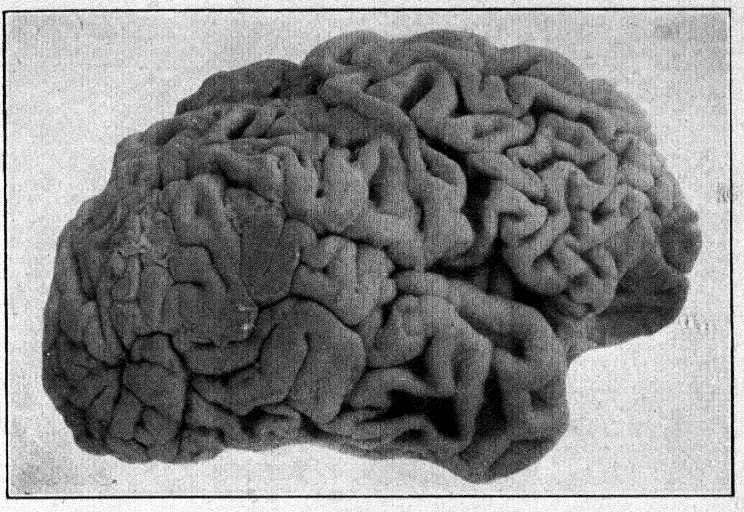
† C. von Economo, "The Cytoarchitectonics of the Human Cerebral Cortex," 1929.

‡ For a recent account of the developmental condition of the cerebral cortex in the new-born child see "The Post-natal Development of the Human Cerebral Cortex," by J. Le Roy Conel, Cambridge, Mass., U.S.A., 1939.

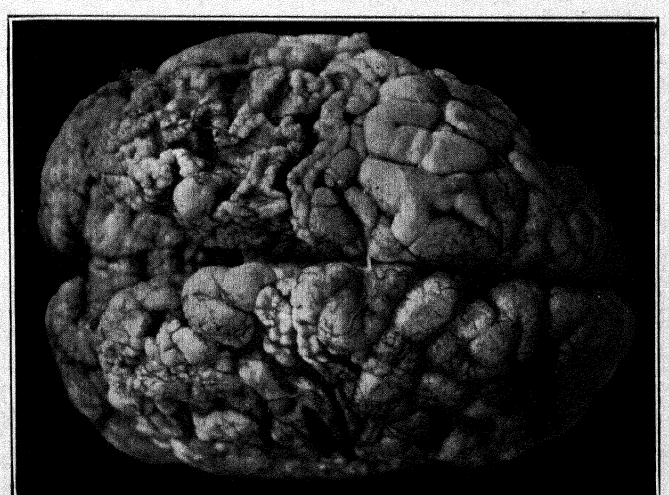


Diagrammatic Section of Pre-Frontal Cortex in Man. (Mainly based upon the researches of J. Shaw Bolton.)

BRAINS IN AMENTIA.



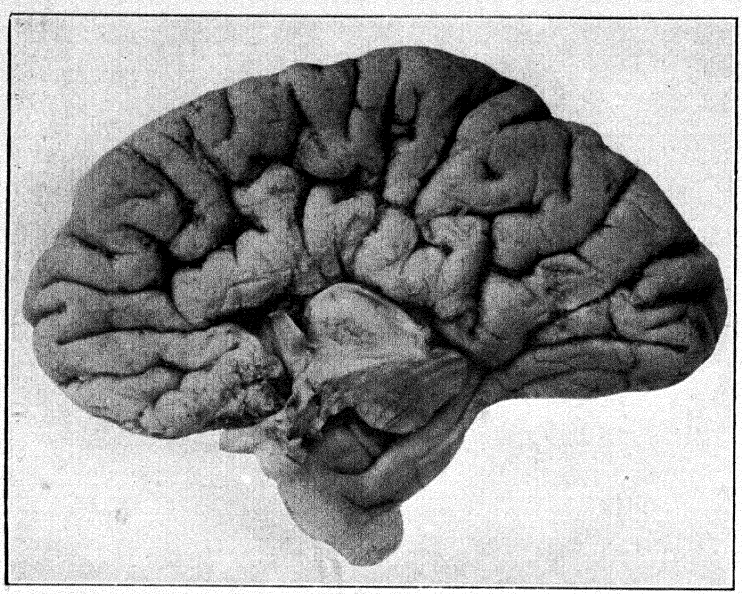
Brain of imbecile, showing convolutional hypoplasia with external hydrocephalus.



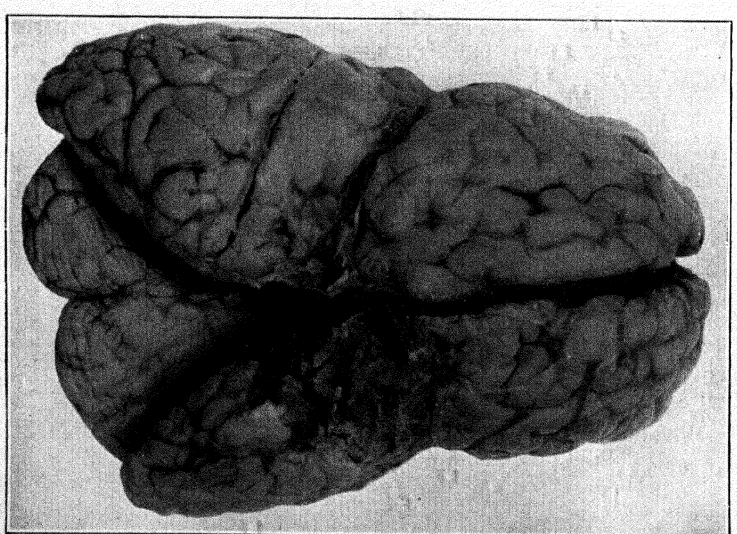
Brain of low-grade imbecile, showing microgyria and convolutional irregularity.

(Photographs by Dr. Brushfield and Mr. J. E. Stevens.)

BRAINS IN AMENTIA.



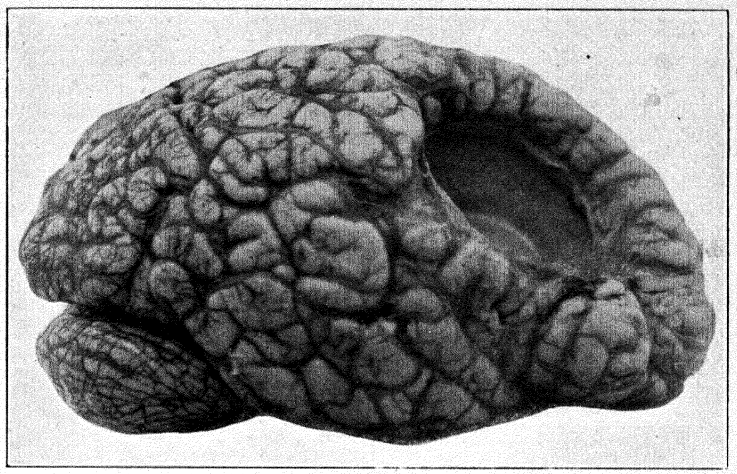
Imbecile brain. Mesial surface showing absence of corpus callosum.



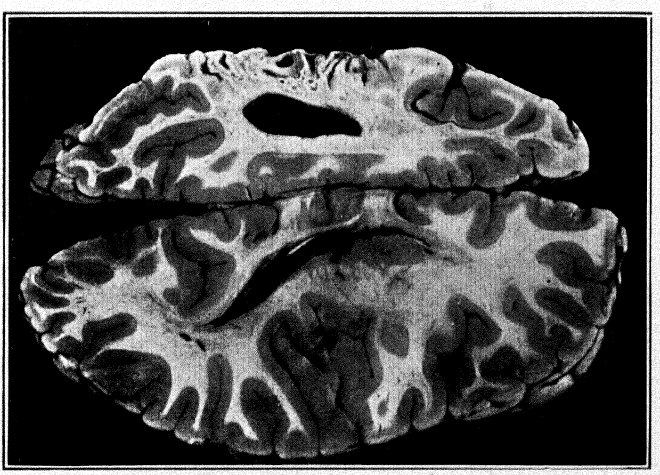
Imbecile brain, showing convolutional irregularity and hemiatrophy due to vascular occlusion.

(Photographs by Mr. J. E. Stevens.)

BRAINS IN AMENTIA.



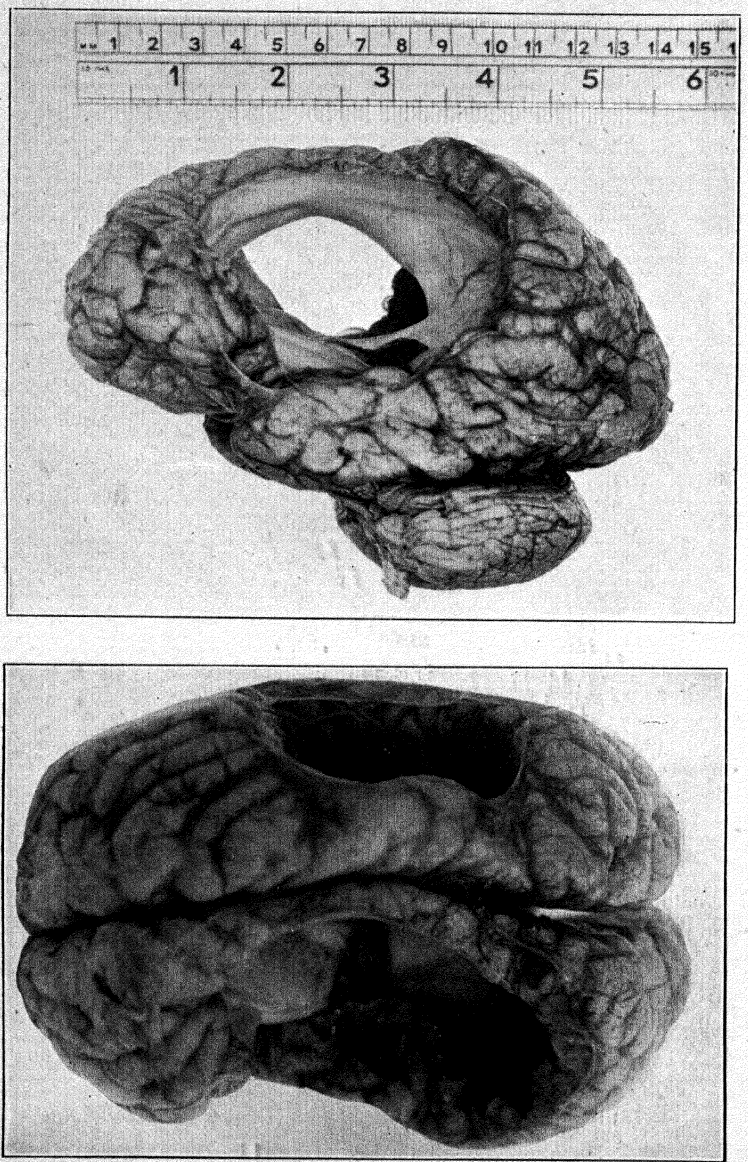
Idiot brain, showing porencephaly due to agenesis.



Imbecile brain, showing cerebral hemiatrophy due to vascular occlusion.

(Photographs by Mr. J. E. Stevens.)

BRAINS IN AMENTIA.



Side and upper view of idiot brain, showing double porencephaly due to developmental agenesis.

(*Photographs by Mr. J. E. Stevens.*)

The medullation of the cell's processes, whereby they are converted into functioning paths of conduction, is an important part of neuronic development, and has been carefully studied by Flechsig, Brodmann and others. In general, it may be said that at birth the only cerebral neurones which are medullated are those leading from the sense organs to the cortex. The medullation of these takes place in the later months of embryonic life in the following order: touch and muscle sense, smell and taste, then vision and, last of all, hearing. At birth the motor cerebral tracts are still very immature. The medullation of the fibres concerned in association takes place still later; and there is evidence that this, and possibly also an increase in their number and complexity, may be continued for many years of life. Thus, it was shown by Kaes* that a progressive increase in the number of these fibres takes place up to middle age, after which growth ceases and eventually a gradual diminution occurs. Doubtless the amount of increase is dependent to some extent upon the stimulus afforded by education, and it is an important factor in intellectual capacity.

It was estimated by von Economo that the total number of cells in the normal human cortex is fourteen thousand millions; while in the gorilla there are only three to four thousand millions. It is important to note that no increase in number takes place after birth. There is evidence, however, that the transformation of existing neuroblasts into mature nerve cells may be continued after birth, and I think it is likely that, for a short period, and in intrinsically healthy brains, this process may compensate for the loss of nerve cells which may have been accidentally destroyed, as, for example, by birth trauma. Apart from this, in the brain there is no replacement of dead cells by new ones, such as is constantly taking place in other tissues and organs of the body.

THE BRAIN IN AMENTIA.

We may now consider the condition of the brain in amentia. Since the many different causes of the secondary form produce a variety of pathological conditions it will be more convenient to describe these with each clinical variety; in this chapter I shall deal

* T. Kaes, *Monatsschrift für Psychiatrie und Neurologie*, 1897; also "Die Grosshirnrinde," etc., Jena, 1907.

chiefly with primary amentia. As would naturally be expected, imperfection of the brain is more marked in severe than in mild cases; it is therefore advisable to consider these grades separately.

Low-Grade (Severe) Amentia.

In practically all idiots and imbeciles there are changes in the brain which are obvious to the naked eye. In general it is considerably smaller than normal; its convolutions are less complex and often markedly irregular and abnormal; and it often presents gross developmental anomalies. But it is necessary to sound a note of warning in regard to these features. Although some, or all, of them may be found in the brains of low-grade defectives, they are occasionally seen in persons who during life have shown no obvious mental abnormality. They are not therefore, in themselves, necessarily indicative of amentia.

Size and Weight of Brain.

While the average weight of the brain of the normal adult male is about 1,375 grammes (roughly 48 ounces), and of the female about 1,245 grammes (roughly 44 ounces), variations from these norms in the non-defective, and even in persons of marked ability, are very wide. Thus, of large brains, the heaviest recorded healthy one is that of Turgenieff, the Russian novelist, which weighed 71 ounces. The brain of Cuvier weighed 64½ ounces, of Dr. Abercrombie and Daniel Webster 63 ounces, of Prof. Goodsir 57½ ounces, of Spurzheim 55 ounces, and of Napoleon 53 ounces. On the other hand, the brain of Gambetta weighed but 40·9 ounces, that of Anatole France only 39 ounces, and there have been a number of men of considerable intellectual capacity with decidedly small skulls, Shelley for instance.

Amongst less distinguished, but still non-defective, persons we find similar variations. Peacock found that the brain weights of four ordinary individuals who showed no particular intellectual ability ranged from 62·75 to 61 ounces. One of the lightest brains on record is that described by Dr. Wilder.* Although this only weighed 680 grammes, or approximately 24 ounces, it belonged to a man of forty-six years, who was 5 feet 6 inches in height and

* B. G. Wilder, *Journal of Nervous and Mental Diseases*, February, 1911.

weighed 145 pounds, and who had worked as a labourer in one situation for twenty years and had never presented any mental or physical abnormality. At the other extreme, probably the heaviest brain recorded is that described by Dr. Watson,* which weighed 2,130 grammes (75 ounces). This belonged to an adult male who became epileptic and died in Rainhill asylum. Before the epilepsy appeared he was described as of quite average intelligence, with considerable musical ability, and the large weight of the brain could not be accounted for by any pathological abnormality. It may further be added that a whole race, the ancient Peruvians, attained to a very considerable degree of social development and artistic and mechanical ability with a mean average brain weight of only 40·1 ounces.

No doubt, for normal mental capacity the brain must be not less than a certain size and weight, and, in general, it may be said that the adult whose cranial circumference is no more than 13 inches will be an idiot; that the one whose cranial circumference is no more than 17 inches will be an imbecile; and that a circumference of more than 2 inches below the normal will probably denote feeble-mindedness at least. It is, however, necessary to remember that the size of the brain must be considered in relation to the size of the body and that most defectives are of smaller stature than the normal. But although, as we have seen, there is no constant relationship between the size of the brain and the degree of mental capacity in the non-defective, and though even amongst defectives there is no constant relationship between the size of the brain and the degree of defect, I think it is true to say that, in general, and even allowing for differences in body weight, the brains of low-grade aments are smaller, and often decidedly so, than the normal.

Pattern and Complexity of the Brain Convolutions.

In normal individuals the arrangement of the various fissures and convolutions of the brain tends to conform to a general pattern, so that it is a comparatively easy matter to identify them. In many low-grade aments there are considerable departures from this pattern, and topographical localization may be very difficult. But it is to be remarked that, even in the normal, considerable variations occur in the arrangement of the smaller convolutions, and I do not

* G. A. Watson, "Report of Lunacy Commissioners." 1913.

think that mere alterations of pattern have the significance which some writers attach to them.

The same may be said regarding the complexity of the convolutions. In general, this is simpler in aments than in the normal, and, on the whole, simplicity of convolutions goes with simplicity of mind. I have seen the brain of an idiot which was perfectly smooth and devoid of all secondary fissuration, clearly showing that its development had not proceeded beyond the fourth month of embryonic life. Simplicity of convolutions is also particularly marked in the Mongols and microcephalics. On the other hand, the brain of the non-defective is sometimes very poorly convoluted, and in some aments the convolutions are remarkably complex. Occasionally this occurs to such an extent as to resemble the cetacean brain; but microscopical examination of the cortical cells shows that the condition is really one of defective development.

Gross Developmental Anomalies.

In addition to the features above described, the brains of low-grade aments are often characterized by gross abnormalities of development and even absence of important structures. These may occur in any part of the central nervous system, but are mostly situated in the hemispheres; this is doubtless owing to the fact that in these the greatest amount of growth and transformation takes place in the course of the development of the brain from the primary cerebral vesicles.

Most of these gross anomalies take the form of localized hypoplasia, and are probably the expression of a defective developmental potentiality of the primitive brain rudiment, although occasionally vascular occlusions and imperfections may be responsible for them. A very common form is the rudimentary development of a group of adjacent gyri, which may have the appearance of membranous folds, constituting the condition known as *microgyria*. Another condition not infrequently seen is due to agenesis of the brain tissue lateral to the basal ganglia, which normally forms the opercular convolutions round the Sylvian fissure. The non-development of this produces a funnel-shaped cleft extending from the surface of the brain to the wall of the lateral ventricle, with which it may sometimes communicate, known as *porencephaly*. It is occasionally bilateral. In some brains there is a marked hypoplasia of the greater part of one hemisphere constituting *cerebral hemiatrophy*.

The affected hemisphere may be 200 or 300 grammes less in weight than the non-affected one. This condition may be due to vascular occlusion.

Other less common developmental anomalies are malformations of the basal ganglia; deficiency or complete absence of the corpus callosum, fornix, corpora quadrigemina, and corpora mammillaria; abnormalities of the pons and medulla; and general or localized hypoplasia of the cerebellum. Some forms of internal *hydrocephalus* are also due to a general hypoplasia of the brain matter on the lateral aspects of the ventricles. Brown and Jacobson* have described a case of primary amentia in which, in addition to numerous other developmental anomalies of the body, two small pedunculated angiolipomas were attached to the pia on the ventral surface of the pons.

Cortical Layers.

The exact measurement of the depth or thickness of the various cortical laminæ is a difficult matter, requiring much patience and technical skill. Such measurements of normal and abnormal brains have been made by a number of observers, but the results are conflicting. Bolton and several others concluded that in defectives, while the infra-granular layer showed no appreciable difference from the normal, the supra-granular layer was usually diminished in depth. On the other hand more recent investigations by Ashby and Stewart,† and by R. M. Norman‡ have failed to demonstrate any such differences.

Nerve Cells.

Bevan Lewis§ was one of the earliest to make careful microscopical examinations of the nerve cells, and since then such have been made by Hammarberg,‖ Tredgold,¶ J. S. Bolton,** Berry and Norman,††

* G. Brown and J. N. Jacobson, "Metropolitan Asylums Board Annual Report," 1927-28, p. 302.

† W. R. Ashby and R. M. Stewart, *Journ. Neurol. and Psychiat.*, 1933, xiii.; also *Proc. R. Soc. Med.*, April, 1935.

‡ R. M. Norman, *Journ. Neurol. and Psychiat.*, July, 1938.

§ Bevan Lewis, *Brain*, October, 1879; also "Textbook of Mental Diseases," 1899.

‖ Hammarberg, "Studien über Klinik und Path. der Idiotie," Upsala, 1895.

¶ A. F. Tredgold, *Archives of Neurology*, 1903, vol. ii.

** J. S. Bolton, "The Brain in Health and Disease," 1914; and other papers.

†† R. J. A. Berry and R. M. Norman, Stoke Park Studies, 1933; *Journal of Neurology and Psychopathology*, 1934, xiv.

Stewart and Ashby,* von Economo† and others. There is general agreement that the cortical nerve cells in the gross defective differ from those in the normal brain in three respects—namely, their number, arrangement and condition.

The *number* of fully developed cells is less. I found this paucity particularly marked in the layer of small and medium pyramids (Lamina II.); but it also occurs in the granular layer (Lamina III.); and in pronounced idiots it may involve the whole of the cortex and even the spinal cord.

The *arrangement* of the cells is irregular and haphazard. In some areas they are greatly overcrowded, in others they are practically absent, and the individual cells show marked abnormalities of position. This is particularly noticeable in the pyramidal cells, although this, of course, may be due to the fact that the shape of these cells causes any such irregularity to be more apparent. Throughout the brain, pyramidal cells, which should normally lie at right angles to the surface, are found lying obliquely, horizontally, or completely upside down. This occurs in the absence of gliosis, but is much more marked where extensive gliosis is present.

Many of the cells are in various stages of *incomplete development.* A large number of them are little more developed than neuroblasts, consisting of a round nucleus with nucleolus, a limiting membrane, and surrounded by a few strands of protoplasm, but without definite cell body. In others, the nucleus is larger and either globular or ovoid in shape, the nucleolus is eccentric, so that in some sections it cannot be seen, and there is a ghost of a cell body which is usually devoid of processes or occasionally with the beginnings of an apical one. Other cells are somewhat more advanced and possess a definite cell body, but the nucleolus is often eccentric and the cell processes very few, the apical one being invariably the best developed. I have compared these various types of cells with those of two embryos of seven and eight months, and two children of two and four weeks old respectively, and think there can be no doubt that they represent various stages of immaturity, although in many of them development has evidently come to an end (see Plate V). I have not seen cells of a similar type in any brain other than that of an ament.

In addition to these embryonic and immature nerve cells, others,

* R. M. Stewart and W. R. Ashby, *Proc. Roy. Soc. Med.*, April, 1935.

† C. von Economo, *op. cit.*

which are more developed, contain a considerable amount of pigment. This is yellow in Nissl and dark brown or black in Marchi stained sections, and is evidently of a fatty nature. It is usually associated with a diminution in the number and size of the Nissl bodies and is probably due to some fault of metabolism. It may very likely represent the beginning of a senile or degenerative process, and nerve cells in a more advanced stage of degeneration are often to be seen in the brains of adult defectives. This neuronic degeneration is probably related to the well-known clinical fact that in the ament senility sets in earlier, and the expectation of life is usually considerably less, than in the normal. I have seen similar collections of pigment in the nerve cells of patients who have suffered from chronic degenerative processes such as disseminated sclerosis, amyotrophic lateral sclerosis, progressive muscular atrophy and dementia following long-standing insanity.

In low-grade amentia incompletely developed cells are found in all the cortical layers and in all parts of the brain; they also occur in the spinal cord. But in my experience they are decidedly more abundant in the granular and supra-granular cortical layers of the pre-frontal and parietal lobes of the brain. As has been seen, the cells of these layers and regions are the last to attain full development; they are also the earliest and most affected in dementia.

It is necessary to point out that undifferentiated neuroblasts are not peculiar to the brain of the ament; they occur in that of the normal adult. Also, even the brain of the idiot contains some cells which appear to be perfectly developed. My own histological examinations have led me to conclude that the difference in this respect is largely one of proportion, and that, whereas in the normal brain the number of neuroblasts is relatively small and the great majority of the cells are fully developed, the reverse is the case in the low-grade ament, in whose brain the majority of the cells are in various stages of immaturity.

Dr. R. M. Norman* has made counts of the number of cortical cells in 30 defective and 30 normal brains. His findings are in general agreement with what has been stated—namely, that there are fewer fully developed cells in the ament and that their grouping and arrangement are very much more variable and irregular than in the normal. He agrees with Bolton that " amentia is commonly

* R. M. Norman, *Journ. Neurol. and Psychiat.*, July, 1938.

associated with structural abnormalities of those parts of the neopallium which have been most recently acquired."

It is of interest to compare the findings above described with those of an investigation into the condition of the brain of the East African native made by Dr. F. W. Vint.* In this it was found that whilst the weights of 351 adult brains ranged from 35 to 57 ounces, the majority were between 43 and 47 ounces, and definitely less than the brain of the European. Histological examination showed that the thickness of the pyramidal cell layer (Lamina II.) of the pre-frontal cortex was only 84 per cent. of that of the normal European, and Vint states: " This diminution in thickness is accounted for by the marked reduction in the number of pyramidal cells present, and further, those pyramidal cells which are present in the native cortex are smaller in size and do not show that great regularity in shape and position which is such a characteristic of the brain of the white race. The other outstanding feature of the native supra-granular layer is the great number of small undifferentiated cells which are present in comparison with the number seen in the white brain."

Cell Processes.

Most of the histological investigations which have been made have related to the state of the cell body. Whilst there is no doubt that the condition of this affords a reliable index as to the healthiness or otherwise, and in many instances the degree of development, of the whole neurone, it is now generally considered that the function of the cell is largely a nutritive one, and that the quality of mental activity is really dependent upon the number of its processes and the wealth and complexity of their associations. It is clear, therefore, that the investigation of these is of particular importance in amentia. Unfortunately, the difficulty of securing evenness of staining and the intricacy of their arborizations make it impossible to study the wealth of the fibre content as accurately as that of the cells. Nevertheless, it can be said that in gross amentia there is a decided diminution in the number and complexity of the cell processes.

As we have already seen, the condition of a large number of the cells is quite incompatible with the presence of a normal number of processes. This is still more apparent in sections stained by the

* F. W. Vint, *East African Medical Journal*, May, 1932.

TYPES OF BRAIN CELLS

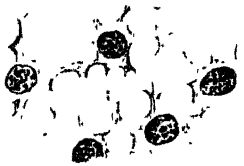


FIG. 1.—NORMAL
Frontal lobe, 7 months' fœtus.



FIG. 5.—AMENTIA, AGE 24.
Cells from Layer II of frontal lobe.



FIG. 2.—NORMAL
Frontal lobe 8½ months fœtus.



FIG. 6.—AMENTIA, AGE 30
Cells from Layer II of frontal lobe.

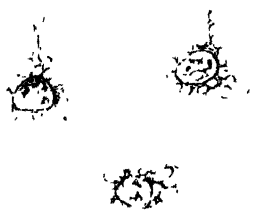


FIG. 3.—NORMAL.
Pyramidal cells from Layer II of frontal lobe of 2 weeks' child.



FIG. 7.—AMENTIA, AGE 30.
Cells from Layer II of frontal lobe.

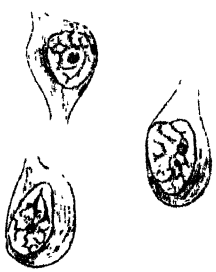


FIG. 4.—AMENTIA, AGE 34.
Pyramidal cells from Layer II of frontal lobe.

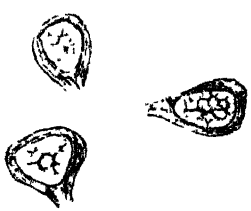


FIG. 8.—AMENTIA, AGE 24.
Cells from Layer II of motor cortex.

To face page 112.

Drawings by A. K. F.

silver method, by which it is seen that there is a deficiency both of cell processes and of the gemmules which form the synapses of their terminal arborizations. Further confirmation of this is afforded by the examination of sections stained to show the various bands of fibres which run parallel to the surface of the convolutions. Most observers are agreed that in pronounced amentia these bands of fibres are considerably narrower and less dense than in the normal. In my own cases the diminution was most marked in the lines of Baillarger, the fibres of the superficial layer being somewhat less affected.

Another important associational structure of the brain is the *corpus callosum*, which consists entirely of medullated fibres connecting similar regions of the two hemispheres. There is a large amount of clinical evidence to the effect that lesions of it are attended with a marked degree of mental impairment; indeed, Willis, the celebrated brain anatomist, was so impressed by its importance that he regarded it as the seat of the soul. Attempts have been made to measure the thickness of the corpus callosum, and Ashby and Stewart,* as a result of a series of such measurements in sixty defective and nine normal brains, were unable to find any relation between its size and the intellectual status of the person; they concluded that the differences which existed were related to differences of body and brain weight. As against this, however, Spitzka,† on comparing the brains of ten eminent men with those of ten ordinary labourers, found that without exception the corpus callosum in the former was definitely larger. It is a fact that, whilst this structure has been found to be absent in a few persons who presented no marked intellectual defect (in which case it is possible that connection between the two hemispheres may have been established by other tracts), in the great majority of cases in which the corpus callosum has been absent or markedly under-developed, the persons have been aments, and many of them of severe grade.

Neuroglia.

The interstitial, or neuroglial, cells of the brain are of three chief kinds—namely, (1) microglial, which are probably mesodermal in origin, (2) astrocytes, and (3) oligodendrocytes, both of which are

* W. R. Ashby and R. M. Stewart, *Journal of Neurology and Psychopathology*, January, 1934.

† Spitzka, *Trans. Amer. Phil. Soc.*, 1907.

ectodermal in origin. The function of the microglia is phagocytic—that is, the clearing up of debris from degenerated neurones—and an increase of it occurs in dementia paralytica and other infective forms of degeneration. No marked increase of microglia has been observed in amentia. On the other hand, increase of glia cells of ectodermal origin is a very common condition in the brain of the ament, and many years ago Dr. Wilmarth* found it present in a quarter of the hundred brains he examined. More recently Meyer and Cook† have drawn attention to a marked increase of glia which they found in 22 cases of various types of amentia, most of which, but not all, being accompanied by gross neurological lesions.

Increase of glia takes two main forms—namely, diffuse and localized. In the *diffuse* form the gliosis involves all parts of the brain, the weight and size of which are in consequence considerably increased. This constitutes the clinical variety of amentia known as hypertrophic sclerosis. In the *localized* form the increase of glia involves certain areas only, and occurs in the form of circumscribed patches or nodules of varying size, constituting nodular or tuberous sclerosis. The histological appearances of these two forms will be described more fully in dealing with their clinical features.

The cause of this gliosis in amentia is much disputed. Some writers regard it as a consequence of complicating vascular or inflammatory lesions, others look upon it as a substitution product consequent on the defective development of the neurones, others regard it as due to a primary developmental anomaly of the glia itself. Where it occurs the nerve cells are usually markedly few in number and those which are present are in various stages of immaturity, distortion or degeneration; but whether these changes in the nerve cells are the cause or result of the gliosis is unknown. The fact that gliosis is by no means the invariable accompaniment of defective neuronic development suggests that there is probably some abnormal tendency to proliferation in the glia itself.

Bloodvessels.

Investigations made by Hindze‡ and others tend to show that there is a direct relationship between the wealth of the ramifications of the smaller bloodvessels of the brain and the mental grade of

* A. W. Wilmarth, " Report on the Examination of 100 Brains of Feeble-minded Children," *Alienist and Neurologist*, October, 1890.

† A. Meyer and L. C. Cook, *Journ. Mental Science*, May, 1937.

‡ Hindze, *Bull. et Mém. de la Soc. d'Anthropologie*, December, 1926.

the individual. This, of course, is no proof that defective neuronic development and function are the result of a subnormal vascular development; they may well be its cause. Apart from this, the bloodvessels of the ament's brain rarely show any marked departure from the normal. Occasionally hyaline degeneration is present; and where pigmentation occurs in the nerve cells there is often a similar collection of pigment disposed around the nuclei of the capillary endothelium. In the nævoid type of amentia there are extensive venous angiomata of the meninges.

Skull.

In most cases of primary amentia the skull is thicker and denser than normal, the dioloë often being non-existent. In some instances the sutures are found firmly and prematurely united, from which arose the erroneous notion that premature synostosis was the usual cause of idiocy. In cases of amentia due to, or complicated by, disease of the pituitary gland, X-ray photographs may show abnormality of the sella turcica. Where extensive cerebral hemiatrophy exists, whether from disease or congenital anomaly of development, there may be considerable asymmetry of the cranium as seen from the outside; but it often enough happens that no external malformation is noticeable in this condition, the deficiency being associated with a considerable enlargement of the inner table of the skull only. In some of these cases there is no bony overgrowth at all, the space being merely filled with an excess of cerebro-spinal fluid. The various anomalies of external configuration will be described in subsequent chapters.

Chemistry of the Brain.

In recent years a considerable amount of work has been done upon the chemistry of the brain, and it has been ascertained that during its growth there is a gradual decrease in the proportion of water and an increase in lipoids. Tilney and Rosett* extended these investigations to the brains of defectives; but they were unable to find any marked difference from the normal. More recently, Ashby and Glynn† have made a chemical analysis of the grey matter of the frontal lobes of 62 defectives and 9 normal adults

* F. Tilney and J. Rosett, *Bull. Neurolog. Inst.*, New York, 1931.

† W. R. Ashby and Ada Glynn, *Journal of Neurology and Psychopathology*, January, 1935.

and found that there was a significant increase of water and of protein-phosphorus in the defective as compared with the normal brains, and that the amount of these was directly proportionate to the mental age of the patients; there was no significant change of the lipoids. The authors conclude that these results point either to the nerve cells of the defective brains being immature in form, or to the presence of an excess of neuroglia, or to both of these conditions.

High-Grade (Mild) Amentia.

Most of the histological investigations which have been made have been upon idiots and imbeciles, for the reasons that these form the bulk of institution cases and that the death-rate amongst them is very much higher than amongst the feeble-minded. In general, the brains of the milder aments are a little less in size and weight than the normal, and their convolutions tend to be wider and simpler; but they rarely present any of the gross abnormalities which characterize those of lower grade. Further, microscopical examinations do not show the marked paucity and imperfection of neurones which occur in idiots and imbeciles, and with our present methods of investigation the brains of many high-grade feeble-minded individuals would pass muster as normal.

This, however, is not surprising. When we consider that the clinical difference between the mild ament and the normal is often so slight as to cause difficulty in diagnosis, and merely consists in a defective judgment, prevision, planning and inferiority of the highest processes of mind; and when we further consider that these abilities are in all probability dependent, not merely upon the quantity of neurones, but upon their quality and the complexity of their associations, it would hardly be expected that our present methods of histological investigation would show any marked differences of cortical architecture between them and the normal.

Nevertheless, as we have seen, there are no definite clinical lines of demarcation between the various grades of mental defect. Many of those of lower grade, it is true, suffer from disabilities consequent on gross neurological lesions; but this is by no means invariable, and, apart from these, and considered merely in regard to their intellectual capacity, the various grades of defect merge imperceptibly into each other. It cannot be doubted, therefore, that the material basis of mild, as of severe, amentia consists in an imper-

fection of neuronic development and function. In some cases there may be an actual paucity of cells; but I am disposed to think that in many mild aments the condition is due, not to any diminution in the number of brain cells, but to an inherent defect of their vitality, in consequence of which the growth of their processes is prevented, their terminal arborizations are less abundant and their associations less complex. There is need for further investigation regarding these points, although this obviously presents considerable difficulty.

The Pathology of Secondary Amentia.

It has been stated that the essential difference between primary and secondary amentia is that, whereas in the former the complete development of the neurones cannot take place by reason of inherent and germinal factors, in the latter their development has been arrested by some external cause. These causes are many and varied, and they give rise to different histological conditions which it will be more convenient to describe in dealing with the various clinical types. In this place it is only necessary to make a few general remarks on the subject.

These external causes may affect the brain generally or locally. Perhaps the best example of the former is cretinism, in which there is a widespread neuronic imperfection. Examples of the latter are the vascular lesions resulting from birth trauma and the inflammatory lesions caused by meningitis and encephalitis. If these localized lesions occur sufficiently early they interfere with the maturation of the nerve cells; but usually when the case comes to post-mortem examination the chief histological changes are those of cellular degeneration. In such cases the structural arrangement of the affected area is markedly distorted so that the normal laminæ are almost indistinguishable, the cortex consisting of a haphazard collection of cells of various shapes and sizes. In some cases there is a considerable increase of glia cells in the affected area; in others there are foci of softening. The pia-arachnoid over the site of a cortical lesion is usually thickened, opaque, unduly vascular and firmly adherent to the underlying brain tissue, from which it cannot be detached without causing decortication.

Whilst the localized nature of these lesions and their histological features usually suffice to show that they are the result of external pathological causes, it is to be remarked that similar pathological

processes occasionally complicate cases of primary amentia. Hydrocephalus is a case in point, since this occurs in both the primary and secondary forms. In the primary form it seems likely that it may result from developmental anomalies obstructing the circulation of the cerebro-spinal fluid or, as in many microcephalics, from greatly enlarged ventricles due to the defective development of the surrounding brain substance. On the other hand, acquired hydrocephalus is always the result of an extrinsic morbid process. Usually, a careful examination of the macroscopical and microscopical features of the brain will enable a distinction to be drawn between primary and secondary amentia; but it must be remembered that gross lesions, whether due to faults of development or to disease, are very likely to interfere with the growth, or to cause degeneration, of other portions of the nervous system with which the affected areas are functionally related. Thus, in lesions of the motor cortex there is sclerosis of the corresponding efferent tract throughout the pons, medulla, and cord, and corresponding to this there is often a numerical diminution of the anterior horn cells of the cervical and lumbar enlargements. Lesions of the basal ganglia may give rise to secondary changes in the cerebellum and its superior peduncle of the opposite side, also in the fillet and interolivary layer of the pons and medulla of the same side. Lesions of the motor cortex may even interfere with the development of the great association centres. In examining the brains of aments, it is thus not always easy to disentangle those lesions which are primary from those which are secondarily produced.

* * * * *

In concluding this account of the condition of the brain in primary amentia it must be admitted that there are many details regarding which our knowledge is still very incomplete. Nevertheless, the main facts are clear, and the net result of the many investigations which have now been made is to the effect that amentia is the result of an imperfection of neuronic development which is particularly marked in the granular and supra-granular layers of the cortex of the pre-frontal and parietal lobes of the brain; that on the whole there is a direct correlation between the extent of such imperfection and the degree of defect; and that in the lower grades of defect such neuronic imperfection is usually accompanied by gross anomalies of anatomical development.

CHAPTER VII

THE PHYSICAL CHARACTERISTICS OF AMENTIA.

In considering the physical characteristics of aments it is first of all necessary to point out that there is usually a considerable difference between those of the primary and secondary forms. In the latter, the mental defect in most of the clinical varieties is due to a lesion confined to the brain. This often results in localized paralyses or maldevelopment; further, in course of time the facial expression may become vacuous; but there is usually little interference with the development of the body as a whole, and, apart from such abnormalities, the patients are well grown, well formed, and often comely in appearance. Their characteristics will be described more fully in treating of secondary amentia; the present account refers in the main to those of the primary group.

In some primary aments of mild degree there is also little departure from the normal, and many of them might, and do, pass muster as ordinary individuals so far as their general appearance is concerned. In such cases we may conclude that the inherent germ defect is confined to those genes which are concerned with the development of the brain. In the majority of defectives, however, it is otherwise. The germ change is clearly much more widespread, with the result that many organs and tissues, or the body generally, are marred by defects of anatomical structure and disturbances of physiological function. These defects are often termed *stigmata of degeneracy*.

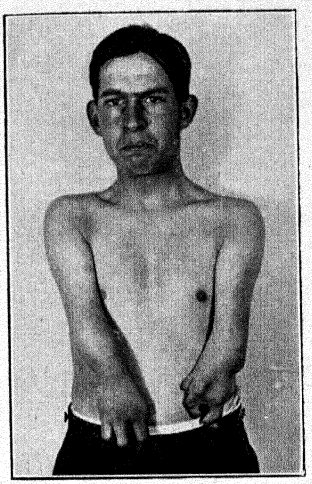
A great deal has been said and written about degeneracy, and elaborate tables of its " stigmata " have been compiled. These have been divided into social, psychological, physiological, anatomical, and other groups, and some writers would seem to look upon any departure from their conception of what is or should be the normal social, psychological, physiological, anatomical or other condition, as a " stigma " of degeneracy. I do not think this view is justifiable.

In the first place, there are so many variations within healthy limits that the " normal " becomes exceedingly difficult to define. Moreover, it by no means follows that a condition which is uncommon, or even " abnormal," is on that account a mark of degeneracy, or that it is even pathological at all. We have not yet reached finality, and manners, morals, mind, physiological function, even anatomical structure, are, we trust, still in process of evolution; so that it is possible for some of these anomalies described as " stigmata " to be not retrogressive, but actually progressive.

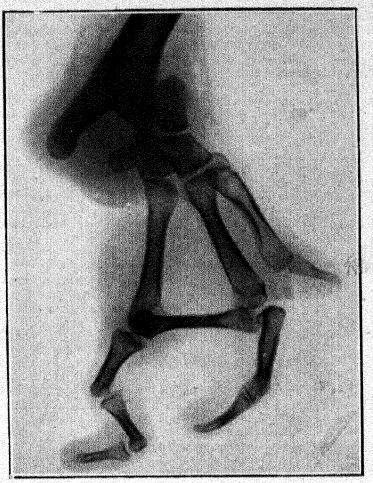
But even where they are undoubtedly pathological or indicative of a diseased condition, it does not follow that they are on that account stigmata of degeneracy. As has already been shown, there are some diseases and toxic states of intra- or early extra-uterine life which may cause secondary amentia, and in these cases, although the germ plasm is healthy, there may nevertheless be produced physiological and anatomical anomalies. There are also other diseases, such as rickets and syphilis, which may not produce mental deficiency, but which commonly result in body abnormalities. Even in cases of primary amentia, some of the body conditions which are commonly called " stigmata " seem to me to be not the direct effect of the germ imperfection, but the result of imperfect nervous action. This is probably the case with such physiological abnormalities as faulty body balance and carriage, defective co-ordination, and even peculiarities of physiognomical expression. Lastly, the examination of normal children in public elementary schools, as well as of ordinary healthy members of the general population, will often reveal the presence of so-called " stigmata." In fact, if we are to class as degenerates all persons coming within the territory defined by some writers on this subject, there are few of us who will escape.

I am far from denying the existence of degeneracy and its stigmata. In fact, I consider primary amentia itself to be a true degeneration, and many of the physical anomalies present in these persons may rightly be described as " stigmata " of degeneracy. But I think we should be careful to restrict this term to such anomalies as are really manifestations of this state —that is, to peculiarities which are due to inherent defects of the germ plasm. In the present state of our knowledge this differentiation cannot always be made. Some—perhaps many—of the physical characteristics of amentia to be described are almost

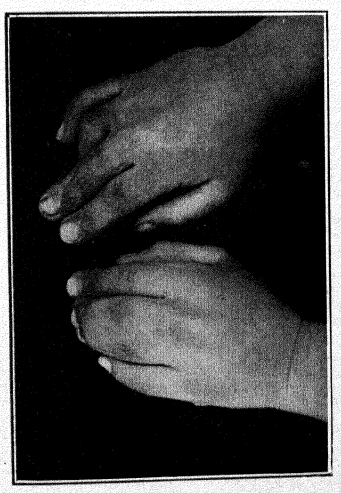
DEVELOPMENTAL ANOMALIES.



A.—Maldevelopment of hands and arms.

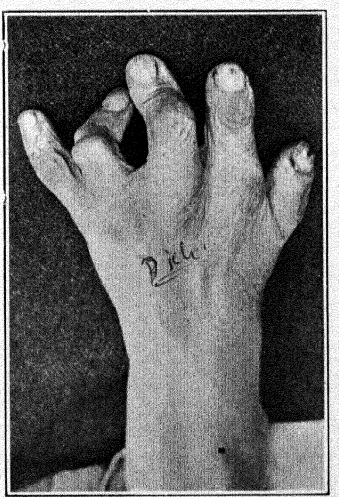


B.—X-ray photograph of left hand of A.



Syndactyly. The fingers of the right hand have been separated by operation.

(Photograph by Mr. J. E. Stevens.)

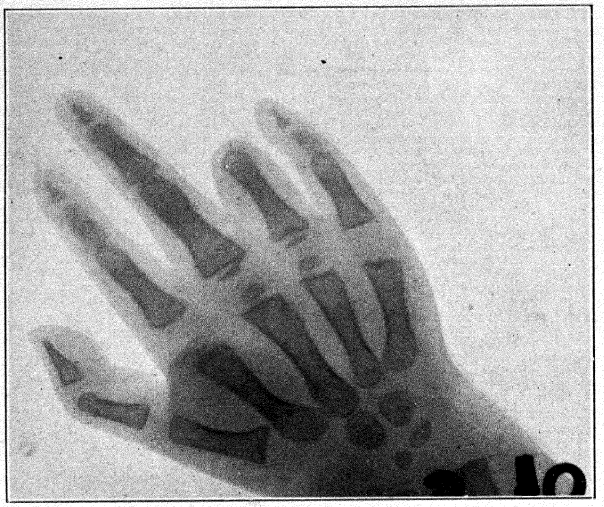


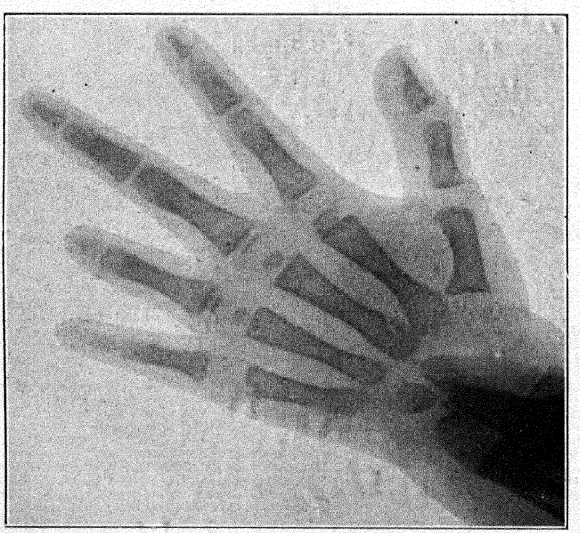
Congenital deformity of hand in oxycephaly.

(Photograph from Mr. D. M. Greig, Edinburgh.)

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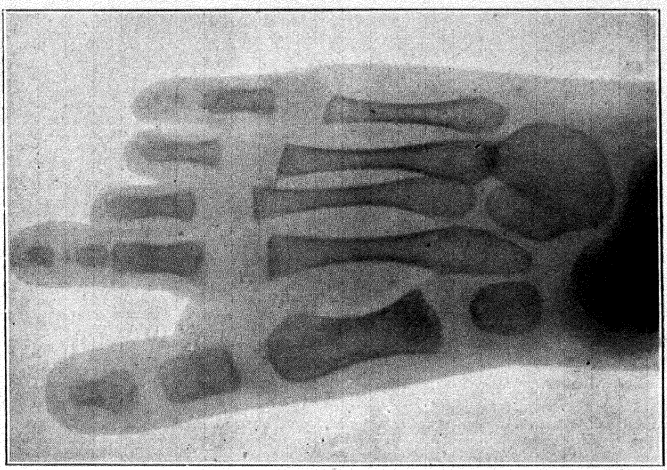
DEVELOPMENTAL ANOMALIES OF HANDS.

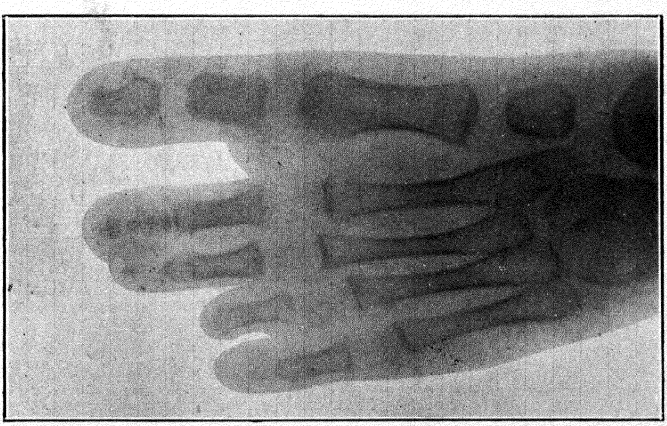




(Photographs by Mr J. E. Stevens.)

DEVELOPMENTAL ANOMALIES OF FEET.

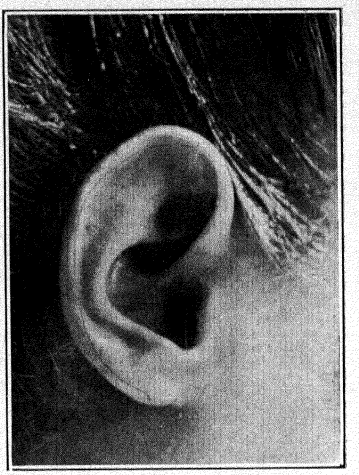




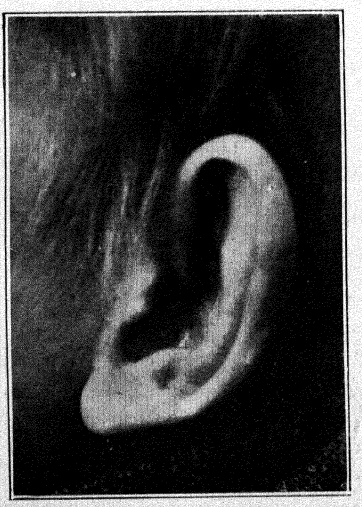
(Photographs by Mr. J. E. Stevens.)

EAR ANOMALIES.

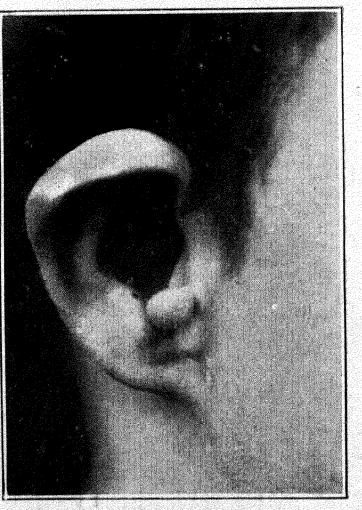




Asymmetry.
Left and right ears of the same patient.



Deformed and elongated.



Deformed with supernumerary auricle.

(*Photographs by Mr. J. E. Stevens.*)

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certainly germinal in origin, and it is not surprising that such should be numerous and severe in this condition, in the lower degrees of which degeneracy reaches its culminating manifestation. But some of these characteristics are not directly germinal, and therefore I think it better to describe them all simply as " anomalies " until such time as more accurate differentiation is possible.

It has been remarked that similar anomalies occur in persons who are not otherwise abnormal. Nevertheless, there can be little doubt that they are more numerous in psychopaths and aments than in the general population. Further, their number and severity are, on the whole, directly proportionate to the degree of defect. Whilst, therefore, the presence of a single anomaly has little or no diagnostic importance, the presence of two, three, or more may be of considerable significance.

The table in the Appendix shows the various anomalies which have been noted in amentia; the chief of these may now briefly be described.

Anomalies of Anatomical Development.

A. **Osseous System.**—Abnormal conditions of the skeleton are of common occurrence in aments; the cranium, palate, jaws, and teeth being the parts most frequently affected.

Cranium.—Anomalies of the cranium are revealed by inspection, palpation and mensuration. Provided there is no marked abnormality of shape, measurement of the maximum circumference of the skull is sufficient for ordinary purposes; but if it is desired to ascertain the cranial capacity other measurements must be taken. In former editions of this book I have described a simple method which needs nothing beyond a tape measure, but as the Lee formula* is now generally used for this purpose it will be given instead. It requires calipers and a special instrument known as the auricular radiometer.

The maximum length of the skull (L) is measured by calipers from the prominence in the midline of the forehead between the eyebrows to the most distant part in the midline at the occiput. The maximum breadth (B) is measured wherever it can be found above the ears, care being taken to keep the points of the calipers

* Alice Lee, *Phil. Trans.*, 196A, 1901; also Report of the Anthropometric Committee of the British Association, 1908, p. 355.

exactly opposite each other. The height (H) is ascertained by placing the radiometer in the external auditory meatus and measuring from this to the highest point of the skull. The measurement must be vertically upwards, and to ensure this the subject must be looking horizontally forwards. All the measurements are taken in millimetres and allowance for the thickness of the scalp is made by deducting 11 mm. from each measurement of L.B. and H, as ascertained by the calipers. The total cranial capacity is estimated by the following formula after making this deduction:

$$\text{Males: } \cdot 000337 \times L \times B \times H + 406$$
$$\text{Females: } \cdot 0004 \times L \times B \times H + 206.6$$

The general conclusion that I have reached, as the result of an extensive series of measurements of the crania of normal, insane, epileptic, and defective persons, is that, whilst the majority of aments present some abnormality in size or shape, there is no particular type of skull which is characteristic of that condition. The chief anomalies are the following: *Circumference*:—The average circumference of the normal male adult is 22 inches, and of the female 21¾ inches. The circumference at other ages will be seen by reference to the table of Developmental Data. Occasionally the skull of the ament exceeds the normal, particularly where hydrocephalus or sclerosis is present; and cases presenting cranial enlargement are sometimes grouped together as a clinical variety under the term "macrocephalics." But macrocephaly may arise from so many different causes that I think this is to be deprecated. More often the cranial circumference is decidedly less than the normal, and in one clinical variety of amentia (microcephaly) it is often as little as 15 inches. There is often a diminution of the frontal and parietal eminences, whilst a subnormal development of the occipital portion of the skull is common. *Symmetry*: The two halves of the normal skull not infrequently differ slightly in size, but this is much commoner and far more marked in aments. Where paralysis has existed from an early age, this condition is often present, the lessened measurement corresponding to the area of brain destroyed or arrested in its development; but asymmetry of the cranium is often observed in the absence of any paralytic signs. Usually the left half is the smaller. Lapage found that asymmetry occurred in 158 cases out of a total of 198, the left half of the skull being the smaller in 122, and the right in 36. *Cranial bosses* are frequently

present, probably as a result of rickets, the most common situations being the ossific centres of the frontal and parietal bones. In a few cases an interfrontal ridge is seen.

The whole conformation of the skull may be so unusual as to merit a special designation, and the following chief varieties may be described: *Oxycephalic*, or tower-shaped skull, in which there is a marked increase in the height of the skull in the frontal region, with a lessened development of the supra-orbital ridges and frontal eminences. *Scaphocephalic*, in which the cranium is relatively long from before backwards, flattened from side to side, and converges upwards to a central "keel" situated in the sagittal line, thus resembling an overturned boat. *Spherical*, in which the whole skull is small, globular, and devoid of the usual cranial prominences; this is a characteristic of mongolism. In addition there are the special shapes peculiar to the microcephalics, hydrocephalics, hypertrophics, and other varieties which will be described in subsequent pages. These various anomalies of shape and symmetry, as well as the total capacity, can be roughly gauged if the palm and outstretched fingers of the observer's hand are placed over the vertex of the skull.

Palate.—The association of abnormalities of the palate with mental deficiency has long been recognized, and there is no doubt that it is one of the commonest malformations occurring in this condition. Many years ago Langdon Down* drew attention to the subject, and later Clouston† recorded a large number of observations which showed that, although deformed palates occur in the normal, they are more frequent in psychopaths and the mentally defective. He stated that deformed palates are present in 19 per cent. of the ordinary population, 33 per cent. of the insane, 55 per cent. of criminals, but in no less than 61 per cent. of idiots. Petersen,‡ who has made an exhaustive study of this question, and has compiled an elaborate classification of the various anomalies, found palatal deformities present in no less than 82 per cent. of aments, in 76 per cent. of epileptics, and in 80 per cent. of the insane.

Without going into ultra-refinements, it may be stated that the majority of the anomalies met with may be arranged under two headings as follows:

* J. Langdon Down, *Transactions of the Odontological Society of Great Britain*, 1871. † T. S. Clouston, "Neuroses of Development," 1891.
‡ Petersen and Church, "Nervous and Mental Diseases," 1904.

1. *Saddle- or Keel-Shaped Palates.*—In these, the commonest type, there is a contraction of the alveolar arch between the bicuspid and molar teeth, the palate at the same time extending upwards to a considerable distance, at the expense of the nasal cavity. In consequence an appearance like the inside of a saddle or boat's keel is produced. It is sometimes marked by a narrow central antero-posterior furrow, but the front teeth do not usually protrude in this type of palate.

2. *V-Shaped Palates.*—These are not so frequent as the former, and are produced by a gradual narrowing of the dental arch from the first molars to the central incisors, the point of the V being thus directed forwards. Palates of this type may also be higher than normal, and the narrowing of the fore-part of the arch usually causes considerable overcrowding and protrusion of the front teeth.

A great deal of discussion has raged round the cause and manner of production of these anomalies.* It has been contended by E. S. Talbot that they only appear during the second dentition, between the sixth and twelfth years; but this is denied by Clouston, John Thomson, and other physicians of great experience, and I have seen numerous instances before this period. I think there can be little doubt that most of them are developmental anomalies. At the same time it is to be remembered that the palate, like the external ear, is probably undergoing considerable evolutionary changes, and some of the slighter anomalies may be due to this cause, or be merely an expression of defective nutrition during the developmental period.

Cleft palate appears to be on a different footing, and neither this nor its common associate, hare-lip, can be regarded as a stigma of degeneracy. It is but rarely met with in amentia, Langdon Down finding it only in 0·5 per cent., and Ireland in 1 per cent., of idiots; whilst Talbot† examined 1,977 feeble-minded children without meeting a single instance. These proportions do not differ materially from the normal, for Grenzer (quoted by Talbot) found 9 cases on examining 14,466 presumably normal children.

Jaws.—Many aments have a receding, others a protruding, mandible, the former being very common in microcephalics. Asymmetry of the upper or lower jaw is not uncommon.

Teeth.—Considering the frequent occurrence of deformities of

* See the chapter on "Genetous Idiocy" in Ireland's book.

† E. S. Talbot, "Degeneracy," 1898.

the palate, it is not surprising to find that anomalies of the teeth are very common, and a good set of teeth is somewhat rare in mental defectives. They are often late to appear, malformed and unhealthy when present, and prone to early decay and disappearance. Where a **V**-shaped palate is present, the upper incisors and canines are generally huddled together and protruding, in some cases to such an extent as to be left uncovered by the lip. The remaining teeth may be very irregular in arrangement, and there are often large gaps between them. The wisdom teeth are seldom seen. It sometimes happens that the teeth erupt at different planes of the alveolus, and I have occasionally seen a complete double row of incisors. In addition, the teeth are individually ill-formed, and often honeycombed or marked by transverse striæ.

Other defects of the osseous system are talipes, polydactylism, syndactylism, and various deformities of fingers and toes. It is not rare to find two fingers on each hand welded together, and occasionally the hand consists of thumb and an ill-shaped mass composed of the blending of the four fingers—the so-called "lobster" hand. In one mentally deficient child presenting this last anomaly I found, on inquiry, that it has existed in the antecedents and collaterals for three, and possibly four, generations. The arms are often disproportionately long, and the little fingers short and incurved; knock-knee and flat-foot are common. Absence or malformation of the cervical vertebræ is occasionally seen, causing the condition known as "no neck," in which the head is set directly upon the trunk between the shoulders.

With regard to *stature*, gigantism may be present; but this is exceptional, and as a rule the stature is diminished, the average height of aments being several inches less than that of the ordinary population. This was shown in the Final Report of the Anthropometric Committee of the British Association, issued in 1882, from which it appears that of all the various classes of the community investigated, aments are both the smallest and lightest in weight. Dr. H. H. Goddard,* in an interesting paper on this question, finds that not only do aments as a class compare very unfavourably in these respects with the normal population, but that the greater the degree of defect, the more marked is the discrepancy. In the case of the feeble-minded, he finds that whilst growth takes place in a practically normal manner during the earlier years of life, it tends

* H. H. Goddard, *Journal of Nervous and Mental Disease*, April, 1912.

to cease at an earlier age. I have noticed this fact myself, but only in the case of the mildest grade of defect; and it may be said of aments in general that growth is usually defective from the earliest years of life.

In this place mention may be made of the curious anomaly of growth known as *hemihypertrophy*, or abnormal enlargement of one side of the body. This is a relatively rare condition, and Dr. A. Gesell,* of Yale University, after a careful study of the literature, was able to discover only 53 instances up to the year 1927. It is worthy of note, however, that in 8 of these the mental development was subnormal, and Gesell considers that the condition should be added to the list of the developmental anomalies connected with amentia.

B. **Special Sense Organs**—*Ear.*—Anomalies of the external ear are very common in the general population. They certainly cannot be regarded as evidence of degeneration, and I must dissent from the dogmatic statements of some writers that a particular type of ear can be labelled "criminal," another "insane," and so on. Nevertheless, frequent as they are in the mentally sound, they are still more frequent and of a more marked form in the mentally defective.

With regard to the frequency of auricular defects, the figures ascertained by Gradenigo,† although they do not relate specifically to amentia, are of interest. As the result of his examination of several thousands of persons of both sexes, this observer found that the external ears were regular and normal in 56 per cent. of males and 66 per cent. of females of the *ordinary* population; in 36 per cent. of males and 46 per cent. of females of the *insane* population; and in 28 per cent. of males and 54 per cent. of females of the *criminal* population. Also that in the insane and criminal classes, not only were ear anomalies more frequent, but they were of greater gravity. As tending to show that some ear anomalies may be progressive rather than retrogressive, it may be stated that Talbot found certain varieties were more frequent in ordinary persons than in degenerates.

The varieties of malformation of this structure which occur in

* A. Gesell, *Archiv. of Neurology and Psychiatry*, October, 1921; and *American Journal of the Medical Sciences*, April, 1927.

† Gradenigo (*Arch. de Psychiatria*, 1890 and 1892), quoted by Talbot in "Degeneracy."

persons suffering from amentia are so numerous that a detailed account of them all is impossible. There is no portion of the external ear which may not be affected, but the following are the chief conditions met with: Defects of the lobule are the most frequent; it is often unusually large and fleshy; it may, however, be smaller than usual, and at times even absent; it is occasionally adherent to the face. Another very common deformity is that in which the whole ear is excessively large, prominent, and out-standing, with a marked convexity as seen from behind. Another common type is the reverse of this, the entire pinna being small, thin, and circular, recalling the ear of the chimpanzee. With or without any of these gross changes there may be numerous minor malformations of the helix and antihelix, the tragus and antitragus. Supernumerary auricles are occasionally present, but I do not think that anomalies of the Darwinian tubercle are more frequent in aments than in the normal population. It is very common to find the ears markedly different on the two sides. Occasionally, the auditory apparatus is so imperfectly developed that total or severe deafness results. This, however, is uncommon, and deafness, when present, is usually the result of disease, especially suppuration of the middle ear.

Eye.—Anomalies of the eye and its appendages are very common in aments, the most frequent being the following: Epicanthus, a ridge of skin continued from the upper eyelid around the inner canthus; it is apparently due to an unusual redundancy of skin in this region, and disappears when the skin over the bridge of the nose is pinched up between the fingers; it may be unilateral, but usually affects both eyes, and is a tolerably frequent anomaly in aments, although not unknown in normal children. Palpebral fissures which are small and obliquely placed, so that the inner is lower than the outer end, are a characteristic feature of, and give the name to, the Mongolian variety of amentia. Differently coloured and speckled irides are common, as also are strabismus, astigmatism, hypermetropia, myopia and nystagmus. Irregularity in the form of the pupil, due to malformations of the iris, is not uncommon in the lower grades. Corneal opacities are frequent, and a small proportion of the lower grades are congenitally blind; but colour-blindness does not appear to be more prevalent than in the ordinary population. A rudimentary condition of the eyeballs with complete blindness termed microphthalmia is occasionally seen.

Nose.—A clear-cut, well-formed nose is not often seen in aments, and this organ is usually either considerably flattened or depressed, or is large and prominent, with wide fleshy nostrils which look forwards rather than downwards. Deviation of the septum and nasal bones also occurs.

The *Lips* are often thick, coarse, prominent, and unequal in size. The mouth is heavy and flabby-looking, generally open, and devoid of either refinement or firmness. Hare-lip is not common.

The *Tongue* is often abnormally large, fissured, and its papillæ hypertrophied, particularly in the Mongolian variety. In some aments it is small, thin and pointed.

C. **Muscular and Cutaneous Systems.**—Various anomalies of the skeletal muscles have been found upon dissection, but they are hardly of sufficient importance to merit description. Abnormalities of the skin are frequent, and consist of coarseness of the integument, excessive and unpleasant secretion, webbing of the fingers, moles, and nævi. There is often an excessive development of hair upon parts usually hairless, and a lack or deficiency upon those which are generally covered, particularly the face and chin in males. The finger- and toe-nails are often very imperfectly formed. Dr. Brushfield* has drawn attention to the frequency with which the creases on the plantar surface of the foot persist in aments as compared with normal persons. The hands of the Mongol present characteristic features which will be described later. The peculiar growth known as " adenoma sebaceum " occurs on the face in many cases of tuberous sclerosis.

D. **Circulatory and Respiratory Systems.**—The most important anomalies are stenosis of the pulmonary artery and defects of the auricular and ventricular septa. The heart is usually smaller than that of a normal person of corresponding weight.

E. **Alimentary System.**—Numerous anomalies of the various abdominal organs have been observed upon dissection. Meckel's diverticulum is not very rare, and Talbot states that the appendix is larger in degenerates.

F. **Urinary and Generative Systems.**—Lobulation of the kidneys is not uncommon, and occasionally a " horse-shoe " kidney occurs. Anomalies of the genital organs are often found; they consist, in the male, of epi- and hypospadias, infantile condition of the penis, and cryptorchism; in the female an infantile condition of the uterus is

* T. Brushfield, *Brit. Journ. Children's Dis.*, Oct.-Dec., 1925.

generally present, and the ovaries are often fibrous. Cloacal openings have been observed in both sexes. Supernumerary mammæ are common.

G. **Nervous System.**—The chief developmental anomalies of this system have already been described in the chapter on Pathology.

Anomalies of Function.

Although anomalies of function are not usually so obvious as are those of anatomical structure, nevertheless they are present to an equal, if not to an even greater extent. The various maldevelopments of the central nervous system give rise to a variety of neurological abnormalities such as local paralyses, tremors, convulsions, alteration of reflexes, nystagmus and strabismus, athetosis, ataxia and other forms of inco-ordination, deformities and irregularities of body growth. Doubtless in some instances these are due to super-added disease; but in many they are indications of defective and inharmonious function consequent on developmental errors. In addition, there are four groups of abnormalities to which special reference may be made—namely, (1) generative, (2) motor, (3) speech, and (4) metabolic and vital.

1. Anomalies of Reproductive Functions.

Whilst some males of idiot grade are impotent and some idiot females never menstruate, I think such cases are exceptional. In the male, puberty is sometimes late in appearing; but there are many low-grade males who masturbate regularly and many idiot females in whom the first menstruation appears at the normal age and who continue to menstruate regularly. Amenorrhœa and dysmenorrhœa do not appear to be more frequent in aments than in the normal; indeed the latter seems to be less so. Those of feeble-minded and imbecile grade can certainly reproduce their kind, and there are unfortunately only too many instances where they have done so.

2. Anomalies of Movement.

Anomalies of movement are very prevalent in mental defectives of all grades, but most so in the idiots and imbeciles. Even from early infancy there is often delay, or defect, of the first spontaneous

movements termed " microkinesis " by Dr. F. Warner, and which consist in the spreading of the fingers and toes and, at a little later stage, in the cooings and babblings which denote the first activity of the motor neurones concerned in speech. Such children often remain abnormally inert and placid throughout the whole of childhood, and at a later age their movements still tend to be slow, laboured and clumsy.

There are other defectives the reverse of this and who, from birth onwards, evince an unusual amount of motor restlessness. Children of this type are often markedly lacking in the capacity for sustained attention, and they form the bulk of the unstable type of defectives. As they grow up they are very liable to develop special motor tricks and habits, the most common of which are: spasmodic frowning and knitting of the eyebrows (which may be uni- or bi-lateral), blinking, grimacing, head nodding and shaking, shoulder shrugging, opening and shutting of hands, and many other semi-automatic, repetitive movements.

Closely related to these automatic actions are others of a somewhat higher character, inasmuch as they are always voluntarily performed. Dr. John Thomson* enumerates the chief of these as pica, or dirt-eating, sucking the tongue, thumb, etc., biting the nails, head-rolling, head-banging, rocking and swaying movements of the body, and masturbation. Dr. Thomson says that " the normal act causes little pleasure to the healthy child, whilst its morbid counterpart has an extraordinary fascination for the children who practise it. . . . The essential character which serves at once to distinguish these habits from certain motor neuroses (*e.g.*, spasmus nutans and habit spasm), which some of them superficially resemble, is their *deliberateness*. The child's will is implicated; and what he does is done intentionally—at first, at least—because he likes doing it. They have a strong tendency to occur when the patient is feeling dull and not being interested by his surroundings. They are almost always stopped when the child's attention is taken up with anything that interests him."

Finally, another type of excessive movement is seen in the impulsive volitional actions which are of such frequent occurrence in certain mental defectives. With these persons, an idea is no sooner presented than it is acted upon, quite regardless of right or wrong

* John Thomson, " On Certain So-called ' Bad Habits ' in Children," *Archives of Pediatrics*, April, 1907.

or possible consequences. Many of them belong to the milder degrees of amentia, and some are by no means unintelligent; but their whole life is actuated, not by intelligence, but by impulse. The essential basis seems to be an undue motor excitability, and the defective deliberation and control allow this to have free play.

Probably, however, the most frequent and marked abnormality of movement in defectives is *inco-ordination*. The co-ordination of movement aims at securing the desired end with a maximum of precision and a minimum of effort. It is dependent upon a proper development of both sensory and motor pathways; but even where this exists, as in the normal child, perfect co-ordination is only attained by constant practice.

In persons suffering from even the mildest degree of amentia, co-ordination is often acquired with difficulty, and remains imperfect; and although many of them may learn to use their hands with a considerable amount of dexterity, the balance and movement of the body often continue clumsy and ungainly. It is frequently years before the mentally defective child manages to lace his boots, button his clothes, or manipulate his spoon at table. Even the best of them (with a few remarkable exceptions) rarely attain to the precision and neatness of movement of which an ordinary well-trained child is capable.

In the lower degrees this defect is still more marked, and many imbeciles experience the greatest difficulty in picking up a pin or a coin, and are incapable of any but the coarsest movements. Dr. Ireland remarks that considerably more imbeciles than normal people are ambidextrous; but I think it is not that both hands are used equally well, but rather equally badly, and I should prefer to say that they were a-dextrous. Many of their defects of speech are due to imperfect muscular co-ordination.

A useful test of the delicacy of sense perception and control over muscular action is afforded by the " transfer " and " imitation " movements of Dr. Warner. In performing imitation movement the child stands a little distance in front of the observer, who performs a series of extensions, flexions, and other movements with his own arm, forearm, hand, and finally individual digits, each of which the child must imitate as it is performed. In the transfer movements the child stands with closed eyes and extended hands. The observer then performs passive movements upon the digits, etc., of one limb of the child, who is required to make corresponding

movements with the other. Dr. Warner told me that he considered these tests to be extremely delicate, and that even in a healthy person slight imperfections may be observed as the result of fatigue.

3. Anomalies of Speech.

Abnormalities of speech, of one kind or another, are present in a large proportion of aments. As we have previously seen, its advent is nearly always delayed, and in some cases it is not until the child is five, six, or even more years, that he is capable of speaking a sentence of two or three words. Many idiots are unable to speak at all, others can say a few monosyllables, but none of them can form sentences. Imbeciles are usually able to understand and to speak short sentences; but their vocabulary is very small and their articulation often very imperfect. Most of the feeble-minded have a larger vocabulary and can speak better, but few of this grade can form or understand a sentence which is at all complicated in its construction.

It is thus seen that, on the whole, defect of speech tends to be directly proportionate to the degree of mental defect, and this led Esquirol to suggest that speech might be used as a basis of classification. There are, however, many exceptions to this general rule. Thus, some low-grade imbeciles are capable of good articulation and fluent speech, whilst a few feeble-minded are limited in their utterance to a few words, and even these may be almost unintelligible. The genius of Earlswood, of whom a description will be given in a later chapter, is a case in point. It is true that those imbeciles whose speech is so fluent often have little or even no idea of the meaning of the poetry or sentences they so glibly repeat, and it is quite open to question whether their articulatory capacity properly comes within the strict meaning of the term "speech." But even apart from this, I am of the opinion that there is no such constant relationship between wealth of ideas and capacity of expressing them as would justify us in accepting speech as a means of differentiation; and the physician must be on his guard against judging of the degree of mental deficiency by the amount of speech.

In the investigation of speech it is essential to make sure that deafness is not present. In the absence of hearing there can be no understanding of works and no speech, unless the child is specially educated through the senses of touch and sight by lip-reading.

It would appear that even if deafness is acquired before the age of five years, speech will be destroyed. It is also important to note that even though a child may hear many ordinary sounds, he may still suffer from tonal-deafness or word-deafness. It should also be remembered that delay in the advent of speech occasionally occurs as an hereditary peculiarity, and I have seen several cases in which the members of different generations of the same family did not speak until one or two years after the normal age.

The anomalies of speech found in aments are of various kinds. *Motor aphasia* may be diagnosed when the individual can understand and obey commands, but is unable to speak, or at most only able to say a few words. I have seen numerous cases of this, but they have all been of secondary amentia consequent on a traumatic or inflammatory lesion of the brain. *Stammering* is seen in a small proportion of defectives; lisping and lalling are more frequent. *Lisping* is mainly the defective enunciation of certain sounds, particularly *s*, which is pronounced *th*; whilst *lalling*, or baby language, consists in the substitution of one consonant for another. The accompanying table, which is mainly based upon a study made

TABLE VI.

CONSONANTAL DEFECTS.

	Consonant.	*Commonly replaced by*	*As in*
Most frequently defective	1. Th	F or T	*F*umb, tee*f*, mou*f*, *t*ank.
	2. R	Y or L	*Y*abbit or *l*abbit, pa*ll*ot.
	3. Y	R or L	*L*ellow.
	4. S	T or Ts	*T*issors, *ts*oap.
	5. G	D	*D*un, do*d*, su*d*ar.
	6. Ng	D	Strin*d*.
	7. Sh	Tsh or T	*Ts*heep, *Ts*hu*d*ar, *T*irt.
	8. K	T	*T*at, *t*oat, bla*t*.
	9. V	B	Bel*b*et.
	10. L	Y	*Y*eg, *y*ad.
Less frequently defective	11. F	T	To*tt*ee.
	12. Z	Dse	No*dse*.
	13. W	M (or omitted)	*M*indow.
	14. P	T or D	*D*a*d*er.
	15. N	D	*T*ose, Pe*d*, Pe*dd*y.
	16. D	T	*T*oor, la*t*.
	17. T	D	*D*ee*f*.
	18. M	B	Ja*b*.
	19. B	P	*P*ag.

by Dr. Lapage,* shows the chief of these consonant substitutions and the order of their frequency.

Idioglossia is another form of speech disturbance which is occasionally met with in mental defectives, although it is not confined to them. At first sight it appears to be an extreme form of "lalling"; but it is evident that it is something more than a mere persistence of baby language, and it is probable that in many cases it is a consequence of congenital word-deafness. It consists in such an extensive substitution of sounds for the correct ones that the child speaks a language peculiar to himself, hence the name; but he generally uses the same sound for the same word. As an example I may quote the case of a boy aged six years described by Dr. Colman who repeated the Lord's Prayer as follows: " Oue tabde ne nah e nedde, anno de di na; i dede ta, i du de di ou eeth a te e edde. Te ut te da oue dade de, e didde ap tetedde, a ne adiu to tetedde adase us, ne notte tetate, mime, utte enn, to i aitevene, pore e dande, to edde e edde. Ame."

It is of interest to compare this defective power of pronunciation, which is so common in aments, with the marked aptitudes in this respect of some of the lowest savages. Darwin, in his " Voyage of the *Beagle*," related that the Fuegians " could repeat with perfect correctness each word in any sentence we addressed to them, and they remembered such words for some time. . . . All savages appear to possess, to an uncommon degree, this power of mimicry. I was told of the same ludicrous habit among the Caffres; the Australians, likewise, have long been notorious for being able to imitate and describe the gait of any man, so that he may be recognized." In exceptional cases ability of this kind occurs in aments, and these will mimic speech and other sounds, such as the humming of a tune or the repetition of sentences in a foreign language, with extraordinary accuracy.

Another curious anomaly sometimes seen in aments is *echolalia*. In this, although the child can use the proper words to express his feelings and thoughts, questions put to him are followed, not by a reply, but by a repetition of the question, or of the last few words of it. Sometimes, after the question has been repeated once or twice, the child will answer it; but often he is merely repetitive, and he may copy the tone and manner of the questioner with remarkable exactitude.

* C. P. Lapage, " Feeblemindedness in Children," *Medical Chronicle* ,1905.

In some aments the condition known as *coprolalia*, or "filthy speech," exists. This is a more or less sudden outburst of language of the most vile and disgusting character, and it is remarkable that it often occurs in persons brought up amid every refinement. It is usually accompanied by a state of mental excitement, for which, however, no cause may be discoverable, and it has considerable analogy to the motor convulsions of the epileptic. It is also common in the insane.

Another peculiarity which is occasionally found in aments, and which may be mentioned here, is that of *mirror-writing*, so called because, instead of being written from left to right in the ordinary way, the writing is reversed, and must be placed in front of a mirror to be read. The condition is not very common and is frequently associated with left-handedness. I recently observed a variation of this peculiarity in an imbecile of ten years old. Upon giving him a sentence to copy, he did so from right to left in the usual manner of mirror-writers, but all the letters except one were formed in the proper way, so that the production ran thus:

rorriM yliaƆ ehT

4. Anomalies of Metabolism and Vitality.

Apart from cases of definite endocrine disturbance which are occasionally seen, many low-grade aments are characterized by a widespread physiological inadequacy. Their circulation is poor, their heat-regulating mechanism is imperfect, their assimilation is so defective that, in spite of abundance of wholesome food, they remain small, stunted and ill-nourished. The late Dr. Langdon Down remarked that "many cases of imbecility, particularly those of the Mongolian variety, lose a large amount of intellectual energy in the winter—go through, in fact, a process of hibernation, their mental power being always directly as the external temperature."

Whilst there are numerous exceptions, it may be said of aments in general that their physiological margin and power of resistance are decidedly less than in the normal, with the result that they are unusually prone to contract disease, and such disease quickly proves fatal. In fact, the life-history of many of them may be stated in two words—*defective vitality*—of both body and mind.

Mortality.

This inherent weakness is evidenced by the mortality rate amongst defectives. Doubtless, during recent years improved conditions of care and other factors have contributed to increase the expectation of life in aments as in the general population; but even in well-managed modern institutions and colonies there are comparatively few who reach the allotted span of life. This defective vitality is directly related to the degree of amentia, and, in general, the greater the mental defect the shorter will be the life.

The earlier death of aments as compared with the general population is well shown by figures which have been very kindly supplied to me by Dr. Douglas Turner, Dr. W. H. Coupland, and Dr. A. M. McCutcheon relative to patients who have died in their respective institutions over a period of five years. These figures, it is true, only refer to a relatively small number of cases. Further, owing to the impracticability of ascertaining the total number of aments living at each age period, they are based upon the total number in residence; they are therefore not comparable with official statistics which relate to the proportion of deaths in regard to persons living at the various age periods. There are also considerable differences in the age and degree of defect of the patients in different institutions. Nevertheless, the figures show one very important fact—namely, that whereas in the general population the death rate between five and twenty years is at its lowest, the death rate amongst defectives between these ages is at its highest, and many times more than that of the general community.

I think that if one could obtain reliable figures relating to the death rate of aments below the age of five years, this discrepancy between defectives and the general population would be found to be even more marked. It is impossible to do this with any degree of accuracy, for the reason that few institutions admit children so young as this, and, in the case of those which do, it is highly probable that the children are not a fair sample, but contain an undue proportion of more serious cases. Through the kindness of Dr. T. Brushfield and Dr. George Brown, however, I have obtained some statistics from the Fountain Mental Hospital which are of considerable interest. This hospital contains about 600 patients, most of whom are young children, and there is no lower age limit; roughly it may be said that about two-fifths are below five years, two-fifths

between five and ten years, and one-fifth over ten years of age. The figures which have been supplied to me show that during the ten years 1918 to 1927, the average annual death rate was 81 per 1,000 inmates; whereas in the general population the total death rate of children below the age of ten years is only about 25 per 1,000 children living at those ages.

Causes of Death.

In order to show the chief causes of death, I have compiled the accompanying table from particulars obtained from four institutions. These figures are not, of course, comparable with the ordinary mortality rates from these diseases among the general population as furnished by the Registrar-General. They are merely intended to give an idea of the relative frequency of the different causes of death in aments, and, to some extent, in children as compared with adult defectives. The inmates of institution A in this table are all

TABLE VII.

SHOWING THE PRINCIPAL CAUSES OF DEATH IN AMENTS RESIDENT IN INSTITUTIONS.

Causes of Death.	*Percentage of Deaths due to the Various Causes in Different Institutions—viz.:*		
	A Inmates mostly Children under Ten Years	B Inmates Children over Ten Years, Adolescents and Adults.	C Inmates mostly Adolescents and Adults
1. *Diseases of central nervous system:*			
(*a*) Congenital malformations	30·0	4·5	—
(*b*) Acquired disease ..	4·7		
(*c*) Epilepsy	10·0	10·0	39·4
2. *Tuberculosis*	9·4	38·8	17·0
3. *Pulmonary diseases* ..	21·5	20·7	25·3
4. *Infectious diseases*	14·5	9·9	1·4
5. *Cardiac diseases*	5·0	4·2	5·6
6. *Abdominal diseases*	2·0	6·2	2·8
7. *Various other causes* ..	2·8	5·7	8·5
Totals	99·9	100·0	100·0

children, most of them being under ten years of age; the inmates of institution B consist of children over ten, adolescents and adults; whilst those in C are for the most part adolescents and adults.

It is seen from this table that, considered in the mass, the four main causes of death in order of frequency are (1) tuberculosis, (2) pulmonary diseases, (3) diseases of the central nervous system, and (4) infectious diseases. There are, however, differences according to age. In children the most frequent cause is congenital malformations of the nervous system, although a large proportion die of pulmonary and infectious diseases and of epilepsy. In adolescents and adults, on the other hand, the chief cause of death is epilepsy, being followed in order of frequency by pulmonary diseases and tuberculosis. In the mixed group, tuberculosis takes the largest toll, being followed by pulmonary diseases, mostly pneumonia. But it is unquestionable that, although the defective vitality of aments renders them especially prone to succumb to tuberculosis, a great deal depends upon the nature of their surroundings. This is shown by the fact that Dr. Douglas Turner, of the Royal Eastern Counties Institution, has been able to effect a very marked reduction in the death rate from tuberculosis by a rigorous attention to ventilation and general hygiene. In the year 1935 the death-rate from this cause in his institution was only 0·18 per cent. of the inmates in residence, whereas it had formerly been 4·6 per cent.

It is of interest to compare the above figures relating to mortality and the causes of death with some ascertained by Dr. E. W. Martz* regarding the Columbus Institution for Feebleminded, Ohio. His figures relate to 1273 deaths and cover the twenty-five-year period 1091-25 inclusive. I have grouped Dr. Martz's particulars as to the causes of death so as to correspond with Table VII.; their order of frequency and percentages are as follows: *Tuberculosis*, 42·5 per cent.; *diseases of the nervous system*, 13·2 per cent. (including 7·9 per cent. from *epilepsy*; the small proportion due to this cause is accounted for by the fact that most epileptics are under care in a separate colony); *pulmonary diseases*, 13·0 per cent.; *infectious diseases*, 10·0 per cent.; *cardiac diseases*, 9·4 per cent.; *abdominal diseases*, 4·9 per cent.; *various*, 7·0 per cent.

With regard to mortality in general, Dr. Martz found that, as in my figures, the largest number of deaths occurred between the

* E. W. Martz, *The Training School Bulletin*, February, 1934.

ages of fifteen and twenty years, a period during which, as in England, the death-rate among the general population is at its lowest; also that the death-rate of patients in the institution was more than twice that for the general population of the State of Ohio.

Oscar Kaplan* has made a study of the life duration and causes of death of 768 idiots and imbeciles dying in the Sonoma State Home, California, between the years 1917-1939. He finds that the average span of life of 344 idiots was 19·04 years, and of 424 imbeciles 26·6 years, the greatest number of deaths occurring before 20 years of age. With regard to sex there was no marked difference among the idiots, but the life span of female imbeciles was 5·65 years onger than that of males. He found that 15·8 per cent. of imbeciles and 7 per cent. of idiots survived beyond 50 years and one microcephalic female imbecile with a brain weight of 530 grammes lived to the age of 89 years. The chief causes of death were pulmonary tuberculosis and pneumonia, while arterio-sclerosis accounted for the greater proportion of those dying at later ages.

* O. Kaplan, "Life Expectancy of Low-grade Mental Defectives," *Psychological Record*, Indiana, March, 1940.

CHAPTER VIII

IDIOCY

THE lowest and deepest grade of mental deficiency is idiocy, and the depravation of these persons is indeed such as fully to justify the use of this term (idios=a person "private," "apart," or "solitary").

Definition.—As we have already seen, there is no natural or clear line of demarcation between this grade and the one immediately above it—the imbeciles—and as a matter of fact the two are sometimes described together as low-grade defectives. It is, however, useful both for descriptive and administrative purposes to differentiate between them, and a distinction is recognized by the law. The dividing line has been variously drawn by different writers. Some have suggested the presence or absence of speech, others that of attention or volition; but none of these is entirely satisfactory, and on the whole I think the best line of demarcation is that adopted by statute, namely—capacity or incapacity for self-protection against ordinary physical dangers. In the Mental Deficiency Act, 1927, idiots are therefore defined as "*persons in whose case there exists mental defectiveness of such a degree that they are unable to guard themselves against common physical dangers.*"

It is convenient to divide idiots into two sub-grades. In the lower the defect is so profound as to involve even the instinct of self-preservation. These are termed *complete, absolute,* or *profound idiots.* In the other, the instinct of self-preservation is present, but there is not sufficient intelligence to understand, and consequently to avoid, the common physical dangers which threaten life. These are termed *partial or incomplete idiots.* The higher members of this group approximate to the imbeciles.

Number.—About 5 per cent. of the total number of aments of all ages belong to this degree of defect. This ratio is considerably greater in childhood, but it gradually decreases owing to the higher

mortality rate of idiots. According to Dr. Lewis' findings, this amounted to an approximate total of 12,000 idiots in England and Wales in the year 1926.

Sex.—There is a preponderance of male over female idiots. The inquiries of the Royal Commission showed that of a total of 585 there were 303 males and 282 females. Dr. Lewis found that of a total of 215 there were 121 males and 94 females. This preponderance of males is more clearly evident when the incidence of the two sexes is shown in relation to the number of each sex in the general population. Dr. Lewis found that there were 0·4 male idiots per 1,000 male population, but only 0·29 female idiots per 1,000 female population.

Description.

Partial or Incomplete Idiocy—*Physical Condition.*—The various anatomical and physiological anomalies which have been described as occurring in mental defectives reach their maximum in the idiots; and the members of this degree consequently present an appearance which is in itself distinctive. Some of them are grotesque, but the majority are such stunted, misshapen, hideous, and bestial specimens of morbid mankind that they arouse feelings of horror and repulsion rather than of levity. (See illustrations.) Paresis or paralysis is very often present, and this tends to aggravate their defective physical condition still further. In some cases this paralysis is due to a non-development of the tracts of the cord; but in the majority it is the result of disease or severe gross lesions of the brain or nervous system superadded to the original developmental defect, such as porencephaly, hydrocephaly, microgyria, localized atrophies, and anomalies of the internal ganglia. The paralysis may be slight or severe. It may involve a hand or foot, or be a complete hemiplegia or diplegia. Many of these creatures are in consequence chair- or bed-ridden. Occasionally the condition known as " scissor-legs " is seen, in which there is paralysis of both lower limbs, with dislocation of the hip-joints, so that the legs are permanently crossed like a pair of scissors. Most of these paralyses are the result of lesions occurring before or shortly after birth; consequently the limb involved is stunted in its growth and development.

Epilepsy occurs in about 56 per cent. of simple idiots; various forms of tremor and athetosis are also frequently seen.

Many idiots are extraordinarily voracious, and gulp down their food with such haste as to be in imminent danger of choking. In a number of cases, where they have not been spoon fed, tracheotomy has had to be performed for the removal of a lump of food from the larynx. In a few cases rumination is seen. Troublesome diarrhœa is a common result of the gluttony of these persons. Ireland mentions two cases in which inordinate thirst was present, the patients drinking almost any kind of liquid in enormous quantities. Idiots sometimes pull out and swallow their hair, and if continued long enough this practice may cause death by filling the stomach with a hair cast. A cast of this kind which was found in a patient of Dr. Brushfield's at the Fountain Hospital weighed 9 ounces and measured 10 inches along its greater curvature. Idiots are usually sterile and prone to early death.

Mental and Nervous Condition.—Defects of sensation are very common in idiots, and although morbid conditions of the end-organs of special sense are frequent, nevertheless the lack of perception seems to be more often due to a central than to a peripheral defect. All the senses may be affected, but usually one in particular. We thus find some idiots especially impervious to sounds, others to sights, tastes, or odours. Marked perversion of taste is often present. Thus, some idiots will munch sugar, quinine, or even soap, quite indifferently, and without the slightest indication that they distinguish one from the other. Others will eat and drink anything within their reach, including wood, leather, grass, earth, stones, even urine and fæcal matter or offal of the most putrid kind. Dr. Noel Burke, of Cell Barnes Colony, showed me a large, thick, sorbo-rubber mat from which a considerable portion had been bitten in huge chunks and eaten by an idiot patient. Dr. Burke had another patient whose intestines were found blocked by an enormous mass of swallowed rags. Appreciation of form and size is very imperfect, and although they will distinguish between a child and a grown-up person, and between a man and a woman, many of them are incapable of any more delicate differentiation.

It is difficult to test the memory of these persons, but on the whole I am inclined to think that it is usually in default. Imagination seems to be entirely absent, but some of the milder types have a certain capacity for imitating the actions of those around them. Active attention is very deficient, but spontaneous attention is often present. Such thoughts as exist must be of the simplest

description, and limited to objects immediately present to their senses. They have no power of reasoning, and although a few can connect simple words with the objects to which they relate, the majority cannot. Idiots have to be washed, dressed, and fed like little children; many of them are utterly inattentive to the calls of nature, but some can be taught habits of regularity and cleanliness in this respect. They are by no means lacking in energy and volition, and many of them apparently experience satisfaction in destroying anything they can get hold of; but their energy cannot be directed into any useful channel, nor are they even capable of intelligent play.

Tears are seldom seen, but there is no doubt that some of milder degree can experience the simpler emotions. They evince anger, passion, and fright, and some of them will run away with a look of alarm upon the entrance of a stranger They seem to be absolutely lacking in any sense of right or wrong, and this cannot be implanted in them.

Speech is usually absent, although a few do learn to articulate such simple monosyllables as *man, cat, eat,* etc., but none of them can form sentences. Their utterances mostly consist of inarticulate grunts, screeches, and discordant yells; but there can be no doubt that these often express their feelings, just as do the cries of animals, and an observant physician or attendant is able by this means to discern whether they are satisfied or dissatisfied, contented or annoyed, sometimes even to interpret their simple wants. It is noteworthy that, although quite unable to articulate, some idiots will hum a tune which they have heard with tolerable accuracy.

Movement is often abnormal in quantity and quality. In the apathetic type of idiots it is deficient; in the excitable, excessive. Co-ordination is usually very imperfect in both these forms, and they are hardly ever capable of any delicacy of manipulation. In standing, walking, or running the same defect of co-ordination is seen.

Apathetic and Excitable Idiots.—We shall see that the less-pronounced grades of defect are divisible into two classes according to whether they are of stable or unstable mental equilibrium; the same is true of the idiots, some of these being apathetic and others excitable. The former are mild, placid, inoffensive creatures who give little trouble, and who even evince a certain amount of affection

for those who feed and attend to them. The excitable type, on the other hand, are passionate, violent, untrustworthy, and intractable. Many of them are so exceedingly destructive that nothing is safe within their reach. They will destroy clothes, toys, picture-books, even furniture, and, if left alone for a few hours, the probability is that they will either wreck the room, set fire to, or seriously injure themselves in some way. I have seen several of this class in cottages where the only available means of curtailing their activities within a reasonable sphere of influence was to tether them to the table leg. Often they are exceedingly cruel to animals, and seem to experience pleasure at the cries of their unfortunate victims.

Those of this type who are chair-ridden still manage to find an outlet for their excitability in the almost ceaseless performance of automatic actions. Thus, some will spend the day turning the head from side to side or nodding it up and down; others rock the body to and fro, or beat upon the chest with the hand, often keeping time to the movement with a monotonous, inarticulate chant; others suck their fingers unceasingly. These movements do not occur during sleep, and they cease at feeding-time or upon the entry of a stranger, although at times a visitor seems to stimulate them into still more violent activity. It is evident that they are attended with satisfaction, for the patients commonly resent forcible interruption, and resume the movements again the moment they are free. In a proportion of cases this condition of restless activity is not constant, but intermittent, and resembles the periodical outbreaks of maniacal excitement which occur in some of the milder aments. Such persons will rush about the room or dormitory uttering hideous screeches and yells. In moments of passion they will even hurl themselves violently against walls or floor, and in so doing often sustain serious injuries. But the process seems to be pleasurable rather than painful. Even in those of the apathetic type, the advent of puberty often ushers in a marked alteration of character and behaviour, and there are many idiots who, having been fairly manageable and inoffensive until this time, then become so destructive and unreliable that the restraint of an institution has to be sought.

The following are illustrative cases:

E. J., female, aged thirty-two years A pronounced history of insanity and epilepsy on the maternal, and alcoholism on the paternal side. Has been in the mental hospital since seven years of

age. A repulsive-looking woman, with a muddy, freckled face, coarse red hair, and numerous stigmata; cranial circumference, 21 inches. She can walk, but spends the day sitting in a chair turning her head from side to side, rocking herself to and fro, and biting her hands. She is of unclean habits and unable to do anything for herself. She is quite deaf in the right ear, but listens attentively to the ticking of a watch held close to her left one. She seems to have no knowledge of time or place, and no understanding of anything said to her. But when the piano is played, she at once ceases her rhythmic movements and listens attentively. She cannot speak, but she will hum the tunes she has heard so accurately that they are readily recognized. As a rule she is harmless, but upon any attempt at examination she makes violent resistance and tries to bite; she is spiteful at times and interferes with the other patients.

A. D. P., female. Has been in the institution since childhood, but the family history is not obtainable, as there are no friends living. On admission she was unable to dress or feed herself, and had no apparent understanding of anything said to her. She showed no curiosity, no imitativeness, and no power of attention. Her habits were unclean, and she was constantly dribbling from her mouth. She was a voracious eater. Though unable to speak, she was addicted to violent yells, often interspersed with a peculiar sound like the braying of a donkey. She was at times exceedingly violent, kicking, biting, and scratching the nurses and other patients indiscriminately, and, in fact, was generally a source of endless trouble to the whole ward. She remained in practically the same condition until thirty-five years of age, when she had an epileptic attack. From this time until her death she was subject to occasional recurrences of the fits, and she died at the age of thirty-six of gangrene of the lung, resulting from the aspiration of a small portion of food. The cranial circumference was 20 inches, and there were numerous developmental anomalies.

On making a post-mortem examination, I found a very thick, dense skull with an absence of diploë. The brain was small, weighing 1,022 grammes, but, beyond being very simply convoluted, there were no naked-eye anomalies. Microscopical examination, however, revealed extensive imperfections of the cells of both brain and spinal cord like those already described.

Absolute, Complete, or Profound Idiocy.—In this condition we

see humanity reduced to its lowest possible expression. Although these unfortunate creatures are, indeed, the veritable offspring of *Homo sapiens*, the depth of their degeneration is such that existence —for it can hardly be called life—is on a lower plane than even the beasts of the field, and in most respects may be described as vegetative. They come into the world without even the instinct of sucking. As they grow up they have to be fed, and would die of inanition amid abundance of food were it not put into their mouths. They respire, assimilate, and excrete, but they have no sexual instinct. They may be capable of inarticulate cries, but they cannot speak. They possess the power of muscular movement, but locomotion is absent. They have eyes, but they see not; ears, but they hear not; they have no intelligence and no consciousness of pleasure or pain; in fact, their mental state is one of entire negation. The short existence of most of these creatures is spent in bed, where they lie huddled up in an ante-natal posture.

CHAPTER IX

IMBECILITY

THE term "imbecility" (Latin *imbecillus*, doubtfully derived from the prefix *im* or *in*, and *bacillus*, a staff—one without a stay or support, hence feeble, helpless) is applied to the medium grade of amentia. Those at the top of this grade merge into the feeble-minded, and those at the bottom into the idiots; it is nevertheless a grade of defect which, as a whole, has tolerably well-defined characteristics. In general, it may be said that imbeciles stand above the idiots in that they possess the instinct of self-preservation and some capacity for protecting themselves against ordinary physical dangers; and that they stand below the feeble-minded in that they are lacking in the capacity to perform work which will enable them to contribute appreciably towards their maintenance.

Definition.—Imbeciles are defined by the Mental Deficiency Act of 1927 as "*persons in whose case there exists mental defectiveness, which, though not amounting to idiocy, is yet so pronounced that they are incapable of managing themselves or their affairs, or, in the case of children, of being taught to do so.*" Although this is the statutory definition, and therefore the one which must be used for the purpose of certification, it is by no means a satisfactory one. Not only does it give a very inadequate idea of the disability of this grade of amentia, but it is really just as applicable to the feeble-minded The Royal College of Physicians defined imbeciles as "those persons who . . . are incapable of earning their own living, but are capable of guarding themselves against common physical dangers," and I consider this is a more accurate description of the class.

Number.—About 20 per cent. of all aments belong to this grade of defect. Imbeciles are thus four times as numerous as idiots, and slightly more than one-fourth the number of feeble-minded. According to Dr. Lewis' findings, the total number of imbeciles in England and Wales in 1927 was estimated at approximately 52,000.

Sex.—There is a slight preponderance of the male sex, the ratio being roughly five males to four females. Dr. Lewis found that the average incidence of male imbeciles was 1·75 per 1,000 males in the general population, whilst the average incidence of female imbeciles was 1·30 per 1,000 females in the general population.

Description.

Physical Condition.—Imbeciles may be of either the primary or secondary form of amentia and may belong to any of the special clinical varieties of defect. It follows that while as a class they agree in regard to their mental status, they differ considerably in their physical condition and general appearance. Many of those of the secondary form, whose condition is due to the accident of some traumatic or inflammatory lesion of the brain, present no obvious physical or physiognomical abnormality. They are well grown and pleasant looking, and their pronounced mental incapacity comes as somewhat of a shock to those who are unacquainted with this type. Other secondary cases show the signs of their brain lesion by the presence of such conditions as a marked squint, facial paralysis, or a mono-, hemi-, or di-plegia. A proportion of these latter are also subject to epileptic fits. With the lapse of time, however, the mental defect usually makes its mark upon the facial expression, so that even cases of secondary imbecility gradually acquire a vacuous and unmistakable " imbecile " look.

On the other hand, those who belong to the primary form and to the simple or undifferentiated clinical group present a physical appearance which, whilst not so pronounced as in the idiots, is nevertheless distinctive. With a few exceptions they are less in height and weight, and the average stature of imbeciles is several inches below that of the normal. Their bodies are ill-formed and marked by numerous developmental anomalies. Their balance and carriage are clumsy and ungainly. Oddities of walk and general demeanour are usually present, and their facial expression is vacant and foolish. It results that even the layman at once dubs these persons as " dafties " or " naturals." In addition, they have a diminished capacity for resisting disease and a lessened expectation of life. Probably about 40 per cent. of all imbeciles have epileptic fits at some time or other, and these are one of the chief causes of death. The special peculiarities of the different clinical varieties will be described in later chapters.

Mental and Nervous Condition.—The mental defect of the primary imbecile usually attracts attention in the early years, or even months, of life. As infants most of them have either been abnormally placid, unresponsive, lacking in curiosity and initiative, or they have been unusually fretful and restless. With either of these conditions there has been a marked retardation of development. They have been late in acquiring habits of cleanliness, in feeding themselves, in sitting up, in learning to stand alone, in taking their first steps and in saying their first words. Inquiries will often show that an imbecile did not walk alone until he was three or four years of age, and that he did not use any words until he was five or six. It will usually also be found that at a time when the normal child would be playing intelligently with his toys, the imbecile was not only incapable of play, but was tearing to pieces anything he could get hold of. In short, inquiries will reveal that even in infancy imbeciles have shown signs of mental defect and have been incapable of adapting themselves to their simple surroundings in an intelligent manner.

By the time school age is reached the defect has become still more marked, and it is found that the imbecile is incapable of making any satisfactory response to the teaching of the ordinary school. As a result of special and individual instruction, a proportion of them learn to read and spell a few two- or three-letter words, also to add and subtract the smallest units, and a few can even be taught to read and write simple sentences. But they cannot perform simple calculations in change, they cannot copy geometrical figures correctly, they usually cannot recognize missing parts in pictures, and they cannot give even a simple description of a familiar object such as a pencil, key, table, etc., although they will probably be able to name these and to say for what they are used. They can often name the primary colours, they can understand and carry out simple commands, they can say whether it is night or day, and perhaps morning or afternoon; but they cannot tell the time from a clock. While some of them are voluble, and say a good deal in a childish and inconsequential way, they are usually incapable of carrying on a conversation. They can feed and partially dress and undress themselves, and they can be taught to understand and avoid many of the simple physical dangers which threaten life. For instance, an imbecile can understand that the fire will burn him, that he may be drowned if he falls into the river, or killed by a

moving train, and he has sufficient sense to get out of the way of an approaching motor-car. In general, it may be said that if a child of school age has a mental ratio of not more than from forty to forty-five, he will prove to be an imbecile.

The capabilities of the adult imbecile will, of course, be very considerably influenced by the nature and amount of training he has received as a child. There are still many adults, especially in country districts, who, owing to the lack of training, are quite incapable of performing any kind of useful work. There are others who, although they have never received any systematic training, have yet developed a limited amount of usefulness in particular directions, such as fetching and carrying. As a result of training, a considerable proportion can be employed in such simple duties as sweeping and scrubbing floors, polishing brasses, weeding garden paths, collecting potatoes, helping in the laundry, and so on. But they can only do these things under supervision. They are quite incapable of adapting themselves to anything out of the routine to which they have been accustomed, and it is doubtful whether the work they do, from the economic standpoint, is worth the supervision it entails. None of them can contribute at all appreciably towards the cost of their keep. In fact, the majority of imbeciles, even as adults, have to be supervised in their washing, dressing, feeding, and general behaviour, very much like young children. In spite of their defect, some of them evince a considerable amount of vanity and conceit, not only of their clothes and general appearance, but even of their mental attainments.

I have stated that the behaviour of many imbeciles is abnormal even in infancy, some being unusually placid and unresponsive, others being markedly restless and excitable. These abnormal reactions are constitutional; they persist throughout life, and they enable us to differentiate two clinical types which we may term the *stable or apathetic* and the *unstable or excitable*. We have seen that a similar difference exists in the idiots, and we shall see that this is also the case in the feeble-minded. The stable imbeciles are harmless, inoffensive, stolid, and well-behaved persons who give no trouble, and who are tolerably industrious within the limits of their capacity. The unstable imbeciles, on the other hand, are constantly chattering, running about, and generally interfering with everything and everybody. Their restlessness and defect of active attention make it quite impossible for them to be employed in any

kind of work, and some of them are so destructive and troublesome as to need almost constant supervision.

The following are examples of this grade of defect:

C. H., a fat, smiling man, forty years of age, who has been in a mental hospital since boyhood. He has no friends living, and, beyond a note in the case-book to the effect that there is insanity on the father's side, there are no particulars. He understands and can carry on a simple conversation, but he cannot read or write, and has no conception of figures. He can, however, appreciate pictures, and will laugh immoderately at anything funny. He is good-tempered and obedient, but a perfect glutton, and will devour any scraps he comes across. He is too defective to be entrusted with any work without supervision, but is very willing, and spends most of his time with the gardener in the grounds.

J. F., male, twenty years old, is the last born of a family of seven, of whom three died in early childhood (one of convulsions); two are said by the mother to be " all right," whilst another is mentally defective. The father is alive, but has twice been in a mental hospital; one of his brothers died insane. The mother is alive, but in delicate health. Two of her sisters and one brother died of consumption.

James has always been " delicate "; he did not stand until turned two years, and did not walk until his fourth year. He was over five before he spoke, and even now his vocabulary is limited to about a dozen words. These he uses very sparingly, and it is rarely that he can be got to reply to questions, although he understands a good deal of what is said to him. He never attended school, as the headmistress refused to have him. He remained at home quite unoccupied until fifteen years of age, when he became unruly and more than his mother could manage. Since then he has been in a mental hospital.

He is a short, stumpy, fat youth, with coarse features, large outstanding ears, and a typical imbecile expression. He has a high saddle-shaped palate and very irregular and malformed teeth; but these cannot always be demonstrated, as he usually obstinately refuses to open his mouth. Cranial circumference, 22½ inches. There is no paresis, but he is clumsy and heavy in all his movements. There is no marked defect of the special senses, but as he usually takes not the slightest notice of any question addressed to him, he has been thought to be deaf. This, however, is not the case,

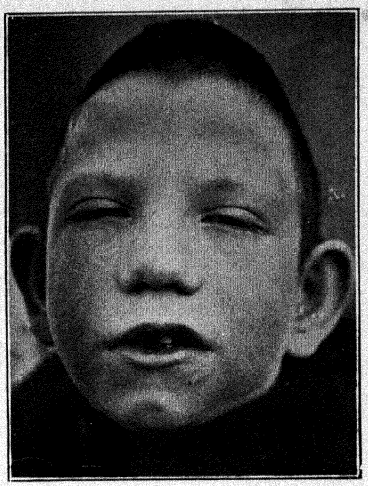
as I have succeeded in making him turn round at the sound of a whistle, and have occasionally managed to get him to execute a simple command. He does not seem to know or care where he is, is apparently unconscious of the flight of time, and is, as a rule, perfectly stolid and inoffensive. But occasionally he has a noisy outbreak, and then he will rush about the ward grunting, yelling and interfering with anyone whom he meets. I saw him one day munching biscuits out of a paper bag which had been brought him by his mother. I intercepted each biscuit on its way from the bag to his mouth. He did not seem to mind, and placidly got another out of the bag. When I had succeeded in getting them all, he stood still in a vacant, perplexed sort of way, without seeming to understand or care, and after a time he walked away.

H. C., female, seventeen years; is the fourth of a family of eight, three of whom died in infancy; insanity and epilepsy on father's side. No others are mentally affected, but mother says they are all delicate. The patient never seemed the same as the other children from birth, and did not walk until her fourth year. She has never talked properly. She went to school for several years, but never learned anything, and finally the mistress said she had better not come any more, so she has since been at home. She understands a good deal of what is said to her, and can execute simple commands, such as to shut the door or fetch a chair. She can answer simple questions in monosyllables, but her articulation is so defective as to be unintelligible to a stranger. She has no idea of number, and everything is "two." She has no knowledge of letters, but can make strokes and ciphers on a slate. She also knows the names of the common objects in the house. On the whole, she is quiet, obedient, and good-tempered. She is not actively destructive, but will always pick a patch off her clothes if they have been mended; her chief joy is to have a piece of cloth given her to fray out. She cannot wash or dress herself, but can feed with a spoon, and is of clean habits. Her chief peculiarity seems to be that, as soon as she takes the first mouthful of food, she invariably goes to sleep, and has to be wakened to finish her meal.

The above persons are low-grade imbeciles. There are others who, after training, can perform more useful work; but this work is of only a simple, routine nature, and has little or no economic value.

TYPES OF LOW-GRADE PRIMARY AMENTS.



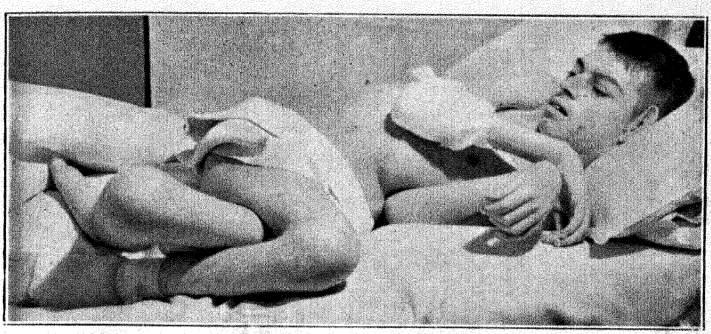




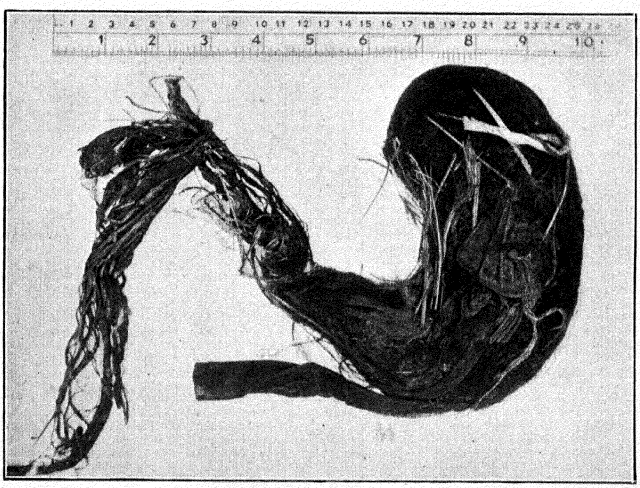


(Photographs by Dr. Brushfield.)

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QUADRIPLEGIC IDIOT.



CAST OF STOMACH AND DUODENUM.

In addition to hair plucked from the patient's head this cast contained grass, tape, wool, string, bootlace, a linen safety strap from restrainer, heavy linen tab from napkin, a rubber band, and a wide elastic band from knickers.

(*Photographs by Mr. J. E. Stevens.*)

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CHAPTER X

FEEBLE-MINDED CHILDREN

IN considering the feeble-minded or mildest grade of defect I shall deal with " children " and " adults " separately, for the following reasons: In the first place, the definition in the Mental Deficiency Act makes a distinction between these two groups, and this alone would necessitate their separate description. Secondly, the problem presented by the feeble-minded child is largely an educational one, whilst that presented by the adult is largely a social or economic one. Thirdly, although the degree of defect remains the same, the advent of puberty and adolescence often brings about certain mental changes which considerably modify the personality, so that the description of the child ceases to be entirely applicable to the adult. Since the jurisdiction of the Education Authority in these cases ends at the age of sixteen years, this is usually taken as the line of separation. The present chapter will therefore deal with the feeble-minded below sixteen years, whilst those above this age will be described in the chapter on feeble-minded adults.

Definition.

The Mental Deficiency Act, 1927, Sect. 1, defines the feebleminded as " persons in whose case there exists mental defectiveness which, though not amounting to imbecility, is yet so pronounced that they require care, supervision, and control for their own protection or for the protection of others, or, *in the case of children, that they appear to be permanently incapable by reason of such defectiveness of receiving proper benefit from the instruction in ordinary schools.*"

It will be seen from this definition that the chief criterion of feebleminded children is a particular degree of permanent educational incapacity. As I read the definition, however, this incapacity must be due to " *such defectiveness* " as exists in feebleminded

persons, that is, to social incapacity; it follows that a feeble-minded child will, after school age, be certifiable as a feeble-minded person. As I have previously pointed out, although social and educational defect are often associated, they are not identical and may exist independently. On the one hand, there are children who subsequently prove to be socially defective who are capable of being educated in ordinary schools. On the other hand, there are children who are incapable of being educated in these schools who are not socially defective. The class of feeble-minded children, with whom I am now dealing, suffer from this double defect. Children who are educationally, but not socially, defective will be described in a subsequent chapter.

Number.

The incidence of feeble-minded children is usually stated in regard to the school population, which, broadly, is the number of children of the public elementary school class between the ages of five and fourteen years. Since 1913 the Local Education Authorities have been charged with the duty of ascertaining the number of these children, but the returns furnished have shown such remarkable differences that little importance can be attached to them. Thus, they have ranged from 1·25 to 0·15 per cent. in urban areas which are practically identical in situation and character, whilst in rural districts the number ascertained has been much less, in one instance being as low as 0·07 per cent. The Departmental Committee of 1898 estimated the number of these children as approximately 1 per cent. of the school population, and this has hitherto been the usually accepted figure.

The special investigation conducted by the Joint Mental Deficiency Committee in 1926, however, showed that this estimate was rather too low. This inquiry in respect of school children was most complete and thorough, and no child was classed as defective until, after selection by the teacher and examination by group tests, he had also been personally examined by Dr. Lewis. I think, therefore, that his figures may be accepted as the most accurate it is possible to obtain. According to this inquiry, feeble-minded children between seven and sixteen years may be estimated as approximately 1·2 per cent. of the school population of the country. This incidence, however, is not uniform, and not only are there

small local variations, but it is definitely and consistently greater in rural than in urban areas. Thus, the mean average incidence in urban areas is roughly 1·0 per cent., whilst in rural areas it is 1·9 per cent. It may be calculated from Dr. Lewis' figures that the total number of feeble-minded (socially defective) children, between the ages of seven and sixteen years, in England and Wales in 1926 was approximately 70,000. Of this number, roughly 50,000 would be in urban areas and 20,000 in rural areas. Although the inquiry in regard to children below the age of seven years was necessarily less complete (for there are obvious diagnostic difficulties in regard to these), it is nevertheless clear that their number cannot be less than those over seven, so that we may estimate the total number of feeble-minded children below the age of sixteen years in the country as roughly 140,000.

The difference of incidence between urban and rural areas is very striking, and is further exemplified by some joint statistics ascertained by Dr. Lewis and Dr. Cyril Burt regarding the intelligence quotient of children in the two classes of areas. Thus, in urban areas it was found that 5·5 per cent. of the school population had an I.Q. below 70, whilst in the rural areas the proportion of such children was 11·4 per cent. This higher incidence of feeble-mindedness in the country, as against the towns, is, of course, merely part of the higher prevalence in country areas of mental deficiency generally to which I have already alluded, and of which an explanation has been given in the chapter dealing with causation.

Sex.—The incidence of feeble-mindedness is greater amongst males; the proportion of boys to girls being roughly as 8 to 7.

Social Status.—It is impossible to give any precise figures on this point, but while feeble-minded children occur in all social grades, they would appear to be decidedly more numerous in the lowest stratum of the community.

Description.

Since the lower members of the feeble-minded group of children merge into the imbeciles, and the higher members are but little removed from the dullards of the normal population, it follows that any description can only be a general one of the class as a whole, and that it will not necessarily apply to every feeble-minded child.

In a small proportion of cases it is not until school age is reached that anything abnormal is noticed about the child. Such cases,

however, are exceptional, and in the majority the presence of mental defect may be suspected, or even definitely diagnosed, in the pre-school years. As in the case of the imbeciles, although to a less marked extent, there is usually delay in walking, speaking, and learning to play. The child does not evince a normal degree of interest, curiosity, attention, or understanding; he is less capable of profiting by his experience, and he shows less ability to adapt himself to the simple routine of the home than does the normal child. By the age of five or six years it is usually fairly obvious that his range of general knowledge is decidedly meagre in comparison with his compeers in age and social class, and upon going to school it is usually found that he is decidedly defective in educational capacity. The chief characteristics of feeble-minded children, as seen during school age, are as follows:

Physical Condition.—Whilst a proportion of these children might pass muster as normal on a casual inspection, the majority present more or less definite peculiarities which serve to distinguish them from the ordinary school child. Anatomical anomalies, or so-called stigmata of degeneracy, are not usually as pronounced as in the lower grades of defect; they nevertheless occur in a considerable proportion of cases. Dr. Lapage, as a result of his examination of 200 children, found stigmata in 90 per cent.; the defects were usually in combination, and in 23 per cent. of cases were triple. In my experience the cranium is very commonly affected, and this is abnormal in shape, size, or symmetry, or it presents some unusual configuration in the way of bosses, ridges, etc., in half of these children. Between the ages of seven and ten years the cranial circumference is generally about half an inch less than that of a normal child of similar age and sex. As time passes the discrepancy becomes more marked, and by the fourteenth or sixteenth years the difference may be as much as an inch. Next to the cranium, anomalies of the palate, teeth, eyes, external ears, and hands are most frequent. While there are numerous exceptions, it may be said that, as a rule, feeble-minded children are less both in stature and weight than the normal; this difference is more marked in town children than in those in the country. Further, although the vitality and general metabolism of the feeble-minded child are superior to those of the imbecile, they are inferior to the normal, so that in these children there is a greater predisposition to ill-health and disease.

Nervous and Mental Condition.—One of the commonest abnormalities is a defect of muscular co-ordination. In many cases this involves even the larger movements; the body balance is ungainly, and there is a clumsiness in walking and running. It is most pronounced, however, in the finer hand and finger movements, and co-ordination of these is usually acquired with great difficulty. At a time when the normal child is writing and drawing with considerable dexterity, the feeble-minded one is still laboriously struggling with his pothooks and hangers, whilst paper-folding, card-pricking, buttoning, lacing, and the simple kindergarten occupations present difficulties unknown to the ordinary child. As a result of patient training many eventually learn to use their hands tolerably well—indeed some become quite dexterous in the performance of a particular task—but relatively few of them acquire the manual aptitude of the normal child. The advent of talking is not only delayed in most of these children, but speech is often accompanied by defects of articulation. In some cases this may be partly due to developmental anomalies of the palate, teeth, lips, or jaws, or to adenoids and enlarged tonsils; but in most cases it is a further manifestation of their defective co-ordination and incapacity for mental effort. It is often considerably improved by special speech training. Defects of hearing occur in about 8 per cent., and defects of vision in about 15 per cent. of cases; they are usually due to disease or abnormality of the peripheral organs. Colour-blindness is often thought to be present; but it is doubtful whether it is really commoner than in the normal, and the inability to recognize colour differences is more frequently due to a general perceptive defect. This defect of perception and inability to compare and discriminate is a marked feature in the majority of feeble-minded children. It is shown by their incapacity to match different shades of colour, to recognize different musical notes, to distinguish between geometrical forms, to appreciate differences in smoothness and roughness and in size and weight, and to put together a simple cut-up picture. While there is not usually any defect of passive attention, most of these children are decidedly defective in active attention. This incapacity for sustained mental effort, or want of concentration, is seen not only in their school work, but also in games and entertainments. It is probably largely dependent upon a general lack of interest. In some cases memory is faulty; but alleged defect of memory is more often due to want of attention and comprehension

than to any real defect of memory proper, and their actual power of retentiveness does not appear to be less than that of the normal child.

The chief characteristic of the feeble-minded child, however, is his lack of common sense. This is accompanied by a subnormal scholastic educability, by a poor range of general knowledge, and by a lessened ability to understand things which present little or no difficulty to the ordinary child. But even in the exceptional cases where there is no very marked failing in these respects, there is always a lessened ability to learn from experience, to apply knowledge to new situations, and to react to the environment of the home and school with the degree of efficiency possessed by a normal child of similar age. In short, even as school children, it is usually patent that the feeble-minded are incapable of adapting themselves to their surroundings like ordinary children.

Scholastic Attainments.—While the intelligence quotient cannot, in my opinion, be depended upon by itself for the diagnosis of feeble-mindedness, either in children or adults, it is nevertheless of considerable value as a criterion of scholastic educability. In the feeble-minded grade of defect the I.Q. is usually regarded as falling between 45 to 50, which represents the upper limit of imbecility, and 65 to 70, which roughly corresponds to the lower level of normality. Actually, feeble-minded individuals exist with a considerably higher I.Q. than this; but these figures serve to show that in regard to their educability they vary within a wide range. It is therefore convenient to describe them in three grades:

Grade I. is composed of children who, although they subsequently prove to be socially defective, are not sufficiently educationally defective to be incapable of profiting from the instruction in the ordinary public elementary schools. A few of them reach the fifth standard; this, however, is exceptional, and in the majority of cases the fourth standard is the highest attained at the age of leaving school.

Grade II. consists of children whose educational capacity is so limited as to necessitate a special class or school. Practically all of these have an I.Q. of not more than 70 and usually not less than 60. Such children are usually capable at the end of their school career of elementary reading and writing, of very simple multiplication and division, and of performing simple calculations in change. Their scholastic attainments roughly correspond to those of the normal

child in Standards I. and II., although their practical attainments may be considerably higher.

Grade III. consists of those children who are on the borderline of imbecility, and their I.Q. usually ranges from 45 to 60. Their school attainments amount to no more than ability to read and write a few single-syllable words, to count up to 100, and to add and subtract simple units. In manual work, however, they are usually equal to those in Grade II.

Clinical Types.—Whilst the above description is, I think, fairly applicable to feeble-minded children as a whole, it is necessary to point out that these children differ not only in the degree of their defect, but also in their temperament, disposition, and general character. A proportion of them belong to the secondary group of amentia, and many of these present special features which will be described in later chapters; but even those suffering from the primary and simple form of defect have their own individual characteristics. In fact, they possess a personality, just as does the normal child, and the study and understanding of this personality by the teacher is an essential part of their successful training. Over and beyond these minor characteristics, however, there are certain fundamental differences of such importance as to necessitate a special description, and this is most conveniently done by dividing them into two groups. These may be designated the *stable* and the *unstable*.

The *stable group* is the most common, and consists of those children who are placid, attentive, and industrious, and, apart from their defect, mentally well-balanced; they make steady progress with their lessons, they are well-behaved and give no trouble, and by the time they have finished their training are capable of following some occupation which is within their capacity in a satisfactory and dependable manner.

The *unstable group* stand in marked contrast to the foregoing in that their defect is accompanied by pronounced mental instability. Even as young children they have been marked by extreme excitability and defective control. On the purely motor side this shows itself in restlessness, incessant chattering, numerous tricks and habit spasms, and general muscular over-action and inco-ordination. On the emotional side it is seen in excessive fears, night terrors, gusts of anger, tearfulness, jealousy, obstinacy, and sullenness. On the ideational side it shows itself in bizarre fantasies, odd questions and sayings, and very often imaginary grievances and unfounded com-

plaints. In all these children there is a marked defect of active attention, and they constitute what is known as the " scatter-brain " type. Superficially they may appear much brighter than the placid group, and many of them have decidedly more intellectual capacity, but their lack of concentration and control causes them to make much less progress, and, although seemingly more capable, their general unreliability results in their being of far less practical use.

Retrogression.—It is necessary to point out that a small proportion of feeble-minded children, both of the stable and unstable type, at a certain stage of their development cease to make any further progress, lose many of the acquirements they have gained, and gradually regress to a lower level. There is, of course, an age in defectives, as in normal persons, at which development comes to an end, and this is usually earlier in defectives than in the normal. Up to this age, however, the majority continue to progress, so that this cessation and retrogression constitute a distinct abnormality. In many instances this change is not confined to the loss of scholastic or manual acquirements, but is accompanied by an alteration in disposition and behaviour. They become less tractable, there is a gradual failure of interest, and ultimately they become so unresponsive to training and discipline, or so unstable and undependable, as to be no longer fit for the special school. In many cases the retrogression proceeds until a state of dementia is established which is undistinguishable from dementia præcox.

CHAPTER XI

EDUCATIONAL DEFECT AND DISABILITY

In the preceding chapter I have described feeble-minded children as defined by the Mental Deficiency Act—that is, children whose essential condition is one of *social* incapacity, which, however, is also accompanied by educational incapacity. Above this level there are certain groups of children in whom the defect or disability is educational only. A proportion of these may need to be sent to special schools under the Education Act; others constitute the dull and backward. Since these groups may readily be thought to be feeble-minded and have to be differentiated from that condition, it is necessary to give a description of them. The present chapter will therefore deal with children suffering from educational defect or disability, but who are not defective in the social sense.

Whilst the mass of children progress in school at a fairly uniform rate, there are some whose progress is quicker and others slower than that of the average. So long as the deviation in either an upward or downward direction does not exceed approximately one-tenth of their age, it is regarded as falling within the normal range of variation, and this constitutes what is called the "standard deviation."* Any deviation beyond this is regarded as exceptional. At the top of the scale we may distinguish three groups of such exceptional children: (1) a group (probably amounting to about 10 per cent. of the school population) whom we may term *bright*; (2) a smaller but brighter group (probably amounting to about 0·5 per cent.) whom we may term *brilliant*; and (3) a still smaller but still brighter group (probably amounting to not more than 0·1 per cent.) whom we may term *exceptionally brilliant*.

At the bottom of the scale the children who evince an exceptional degree of educational retardation (but who are not socially defective) may similarly be divided into three groups: (1) Those whose educa-

* *Cf.* Cyril Burt, "The Distribution and Relation of Educational Abilities," London County Council Report, No. 1868, 1916.

tional disability is so pronounced as to amount to educational defect, and who are incapable of responding to the instruction in ordinary schools. These amount to about 0·6 per cent. of the school population, and they include children who were formerly certifiable as "mentally defective" under the Education Act; but, since I am of the opinion that they should be distinguished from the social defectives, they will be described under the heading "*Educationally defective children.*" (2) Those in whom the educational disability, although permanent and due to intrinsic causes, is not sufficient to prevent their education in the ordinary schools. These will be described under the heading "*Dull children*"; they amount to about 7 or 8 per cent. of the school population. (3) Those in whom the educational disability is mainly due to external and removable causes, and who can also be taught in the ordinary schools. These will be described under the heading "*Backward children*"; they amount to about 3 per cent. of the school population.

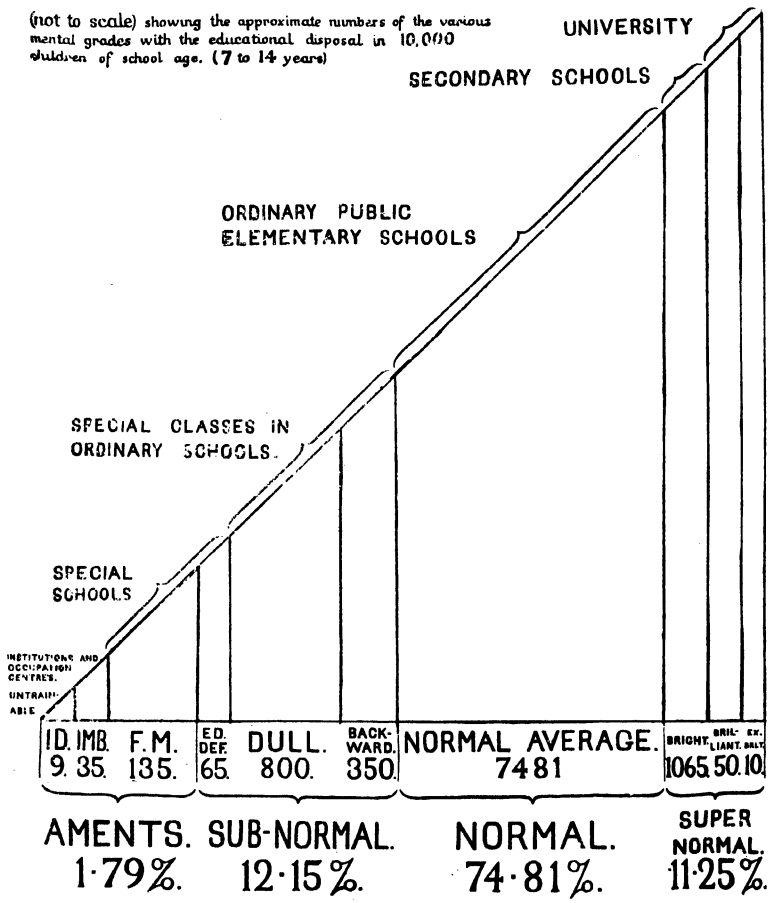
The accompanying table shows these various educational grades, the approximate number of individuals in each per 10,000 public elementary school population, and the type of education for which they are suited. For convenience of reference I have also included those children who are *socially* defective and certifiable under the Mental Deficiency Acts. I think the figures relating to the subnormal and defective groups are fairly accurate; but those concerning the supernormal groups are only approximate estimates, since no precise figures are available regarding these. We shall now consider the subnormal groups—*i.e.*, educationally defective, dull, and backward children—*seriatim*.

EDUCATIONALLY DEFECTIVE CHILDREN

The children in this class are no longer officially called "defective"; they come within the category of handicapped children defined in the Regulations made under the Education Act 1944 as "Educationally Sub-Normal Pupils, that is to say pupils who, by reason of limited ability or other conditions resulting in educational retardation, require some specialized form of education wholly or partly in substitution for the education normally given in ordinary schools." The class presumably excludes imbeciles, although not the feeble-minded, but it includes those formerly known as dull and backward.

TABLE VIII.

DIAGRAM OF VARIATIONS IN EDUCABILITY.



But although the terms "defect," "dull" and "backward" in regard to educability have been officially abolished, they nevertheless represent grades of educability which may require different pedagogic facilities. They are consequently useful for description, and, for the present at any rate, it appears desirable to retain them for this purpose.

The children whom I shall call educational defectives are the least numerous of the class; but they suffer from a degree of scholastic inability considerably greater than the dull and backward, so much so, indeed, that it may rightly be regarded as a form of defect; moreover, their educational needs can often only be met by a special school. They differ from the feeble-minded, however, in that they are not lacking in social adaptiveness. They have a low intelligence quotient as judged by the Terman scale, but they succeed in many performance tests; they are often good at games, they can hold their own outside school, they can look after and manage themselves, and they can adapt themselves to the requirements of an ordinary environment in an intelligent manner. In later life, many of these educational defectives who have been educated in special schools engage in various types of occupation where they earn the standard rate of wages, and a few of them are actually employers. No doubt these latter are exceptional; but they show that while educational and social defect often co-exist, they are not identical and may occur independently. The explanation of this is that the ability for acquiring school learning and that for efficient adaptation to the practical requirements of life are dependent upon different combinations of intellectual factors, as has been pointed out in the chapter on Psychology.

Before the passing of the Education Act 1944, many of these educationally defective children were sent to special schools along with those certifiable as feeble-minded under the Mental Deficiency Act; doubtless they will continue to be so sent, although they will no longer be certified as mental defectives. It will therefore be of interest to give some figures regarding the subsequent careers of children who have passed through these schools. The following relate to a total of 9,218 children who have passed through the City of Birmingham Special Schools since 1901.* I have selected these because the schools in Birmingham are particularly well

* Report of After-Care Sub-Committee, July, 1944.

organized, and the After-Care Committee takes great pains to follow up all the pupils and ascertain their subsequent history.

(*a*) 2,142 are doing remunerative work. 1,302 are males earning from 7s. 6d. to £7 per week, averaging 52s., and 840 are females who are paid wages ranging from 10s. to £5 per week, with an average of 35s. 4d.

(*b*) 249 (of whom 17 are women) are serving with H.M. Forces.

(*c*) 390 (67 males and 323 females) are living at home and doing no paid work.

(*d*) 1,591 (916 males, 675 females) have been admitted to institutions for mental defectives.

(*e*) 53 (28 males, 25 females) are in other institutions.

(*f*) 1,215 (649 males, 566 females) were excluded from Special Schools as ineducable through mental or physical disability.

(*g*) 213 (133 males, 80 females) have been transferred to ordinary schools.

(*h*) 90 (54 males, 36 females) have been transferred to other schools, viz.:

17 to Schools for the Deaf. 20 to Approved (Home Office) Schools. 28 to Schools for Physically Defective. 6 to Schools for the Partially Sighted. 1 to a School for the Blind. 1 to the Blue Coat School. 17 to Open Air Schools.

(*i*) 1,807 (999 males 808 females) have been lost sight of—456 before attaining the age at which they can legally leave school (16 years) and 1,351 after that age.

(*j*) 542 (321 males and 221 females) are dead.

(*k*) 822 (462 males, 360 females) have been allowed to lapse.

(*l*) 104 (36 males, 68 females) have been recorded under the heading of " Further Contact Impossible."

9,218 Total.

With regard to the total number of these educationally, but not socially, defective children in England and Wales, it is only possible to give an approximate estimate. Since, however, Dr. Lewis

estimated that the total number of children in the country between seven and sixteen years of age who (not being imbeciles) were ineducable in the ordinary schools was approximately 105,000, and since the records of After-Care Committees show that roughly one-third of the children who have been in special schools are not subsequently certifiable under the Mental Deficiency Act, we may say that they amounted in 1926 to about 35,000. It is of interest to note that they are much more numerous in rural than in urban areas; also that there are more boys than girls.

Educationally defective children may be divided into two groups. In one, which is by far the larger, the disability is a general one involving the processes of mind which are concerned in the acquirement of school knowledge. It is, in fact, merely a form of intellectual dulness of such degree that the individuals are incapable of profiting by the ordinary public elementary school instruction. In the other group the defect has a more specialized character, and the chief forms are the conditions known as " word-blindness " and " word-deafness."

Word-blindness was first described by Kussmaul in 1877, and cases have since been described by Dr. J. Hinshelwood,* Dr. C. J. Thomas,† Dr. Kerr,‡ Dr. J. E. W. Wallin,§ Miss Lucy Fildes,‖ and others It may be regarded as a particular form of imperception, or *agnosia*, or, as it is sometimes termed, " mind-blindness." In complete mind-blindness there is an inability to interpret the meaning of any visual or auditory images, although the person can see and hear quite well. In word-blindness this inability only concerns printed or written words, which he can see, but of which he cannot understand the meaning. A child so affected may be able to say the alphabet, to repeat strings of sentences by heart which he has had read to him, and even to spell words of one syllable, but he cannot read by sight, and, in the most severe cases, he cannot recognize and name the letters of the alphabet. As a result, such children are either totally unable to learn to read or they learn with the great-

* J. Hinshelwood, " Letter, Word, and Mind Blindness," London, 1900; " Congenital Word-Blindness," *Lancet*, 1900, i., p. 1506; " Congenital Word-Blindness," London, 1917.

† C. J. Thomas, " The Aphasias of Childhood and Educational Hygiene," 1903.

‡ J. Kerr, " Report of Medical Officer of School Board for London," 1904.

§ J. E. W. Wallin, *Lancet*, April 23, 1921, p. 890.

‖ L. G. Fildes, *Brain*, vol. xliv., part iii.

est difficulty. It is probable that the number who are absolutely incapable of being taught is small, for Miss Fildes, as a result of nine months' work upon a series of these children, states that she did not find one of them entirely incapable of learning any words or figures. Wallin states that the condition is always accompanied by some degree of difficulty in writing (agraphia); in severe cases the child is not even capable of forming letters, but only able to make meaningless strokes. In some children the disability concerns figures and not words, and the difficulty then experienced is in the teaching of arithmetic rather than reading.

A pronounced degree of this condition is relatively uncommon. Dr. C. J. Thomas estimated that in the London schools there was one word-blind child in every 2,000 normal children; in mentally defective children, however, there was one to every twenty. The proportion of children who experience some difficulty in learning to read is, of course, considerably higher than this; but it is doubtful if all these should be considered as true cases of word-blindness, and some of them, at any rate, are probably due to late entrance to, or absence from school from various causes at a time when elementary reading is being taught. Dr. A. Ley* has described a family in which the father and three out of four of his children suffered from inability to learn to read (Familial Alexia). All of them were otherwise of normal intelligence.

With regard to the intelligence of word-blind children, a small proportion are quite up to the average, and although it may be impossible or exceedingly difficult to teach them to read, they show considerable ability in arithmetic, drawing, and manual work. Another small proportion are definitely feeble-minded. The majority, although not legally mentally defective, are of subnormal intelligence, according to Wallin, possessing an intelligence quotient of about 80, as tested by serial tests. It is much more frequent in boys than in girls; according to Wallin, in the proportion of 4 to 1.

Word-deafness, or *congenital auditory imperception*, is an analogous condition to the above, but is less common. It occurs with much greater frequency in boys than in girls, and Worster-Drought and Allen,† after a review of the recorded instances and literature of the subject, found a familial factor in about one-third of the cases

* A. Ley, *Ann. Med.-Psychol.*, July, 1938.

† C. Worster-Drought and I. M. Allen, *Journal of Neurology and Psychopathology*, January, 1930.

The condition consists essentially in an inability to appreciate the meaning of spoken words with a consequent absence of, or marked defect in, speech, which often takes the form of " idioglossia." The child who is word-deaf is not deaf in the ordinary sense—he can hear a bell, a whistle, and many common sounds—but, since words convey no meaning to him, he pays no attention to them, and is consequently usually thought to be deaf. Several cases which I have seen and referred for examination to an aurist have been reported as " defective in the tonal range of the human voice." The subject of " tonal " or " high-frequency " deafness has been investigated very thoroughly by Dr. Ewing* by means of the audiometer, and is in all probability due to a defect of the internal ear causing inability to hear sounds of high-frequency vibration. Doubtless some cases which are called word-deafness come into this category; but it seems likely that true word-deafness is not due to a peripheral but to a cortical defect, and that both this and word-blindness result from the imperfect development of certain groups of neurones which are concerned with symbolic imagery.

In some instances word-deafness accompanies primary amentia, but in others there is no inherent mental defect, although the inability to understand spoken language, and the absent, or markedly abnormal, speech usually cause the child to be thought defective. Nevertheless it imposes a very great obstacle to learning, and may consequently bring about a mild degree of secondary amentia. Provided the condition is diagnosed sufficiently early and appropriate education supplied, this can be prevented. Personal instruction by a skilled teacher in articulation and lip-reading as taught to deaf-mutes may succeed in enabling the child to understand language and to talk in an intelligible way to his fellows, while suitable vocational training will often enable him to follow a remunerative occupation.

I have included word-blindness and word-deafness under the heading of educational defect for the reason that the severer degrees of these conditions usually cause the child to be ineducable in an ordinary school. In some cases there may be a degree of general intellectual impairment which necessitates relegation to a special school; but where there is no such impairment, the proper course is to provide training by means of special instruction or in a school for the deaf.

* A. W. G. Ewing, " Aphasia in Children," 1930.

DULL AND BACKWARD CHILDREN

The group comprised by the term " dull or backward " consists of those children who, at about the middle of their school career, are behind the normal average of their age to the extent of two years or two classes. This corresponds to a retardation of between 15 and 20 per cent. of their age, or to about twice the " standard deviation," and roughly to an I.Q. of between 80 and 85.

The proportion of children so retarded varies considerably in different localities. Some inquiries which I made in 1905 showed that in some schools it was no more than 5 per cent. of the school population, whilst in others it amounted to 20 per cent. I came to the conclusion that, taking the country as a whole, the proportion of children who were dull or backward was probably between 10 and 12 per cent. of the public elementary school population. This estimate has since been confirmed by Dr. Cyril Burt, who concluded, as the result of a special inquiry into a representative London borough with a school population of 454,297, that at least 10 per cent. came within this category. This proportion corresponds to a total of approximately 600,000 retarded children of school age in England and Wales, a figure which will give some idea of the magnitude and importance of the class. It is interesting to note that the proportion of retarded boys is greater than is that of girls. It may also be remarked that in America Dr. Goddard found that of 2,000 school children whom he investigated, 78 per cent. were " normal," 4 per cent. were gifted beyond the normal, 15 per cent. were backward, and 3 per cent. were mentally defective.

Although " dull " and " backward " children are often spoken of as if they were identical, this is not really the case. They agree in the amount of their educational retardation, but they differ very considerably in regard to the cause of this as well as in their response to treatment. The essential difference between them is that " dullness " is an inherent and permanent condition, whilst " backwardness " is usually acquired and is remediable. It follows that whilst the dull child is necessarily a backward one, the backward child is not necessarily dull. For these reasons it is advisable to describe them separately.

Dull Children.

Dull children form about two-thirds of the total number of retarded children. They are divisible into three groups as follows:

(1) *General all-round mental inferiority.* In these children the condition is the same in kind, and merely differs in degree from that which constitutes feeble-mindedness. They may be said to be on the borderland, and their differentiation from certifiable defectives is often a matter of no little difficulty. Indeed, it not infrequently happens that, after leaving school and whilst passing through the adolescent period, their inferiority is such that the advent of a certain amount of mental instability causes them for a time to be incapable of adapting themselves to their environment, and necessitates some amount of care and supervision.

(2) *Developmental failure or defect of specific mental processes.* In children coming within this group the scholastic dulness is not due to an intellectual deficiency which is general, but to one which concerns certain intellectual factors, or groups of factors, only. The best examples of such localized defects or failures are the conditions of word-blindness and word-deafness which have already been described. Other special forms of defect are lack of interest in school subjects with consequent defective attention and poor memory. Emotional instability may also result in intellectual dulness.

(3) *Evolutionary failure or defect of certain groups of mental processes.* In addition to the above specific mental abnormalities there are a considerable number of children who suffer from the imperfect development of a group of mental factors whose presence is requisite for scholastic learning, and who thus come within the category of dullards. Children of this type show no lack of common sense or social adaptiveness. They are sturdy and well grown, good and keen at games, quite able to look after themselves outside school, and in after-life to manage themselves and their affairs in an efficient manner, although not in an intellectual walk of life. There is no psychopathic ancestry, although the condition is often a familial one. I have seen instances in which not only all the children, but every known member of the family, showed the same educational incapacity; nevertheless they were all able to manage themselves and their affairs perfectly well, and none of them was in any way socially defective. I am inclined to think that this condition occurs chiefly in certain stocks, the members of which have for generations

worked with their hands rather than their heads; in consequence of this there is a delayed evolution of the mental processes concerned in scholastic educability. If so, it is possible that in future generations it will tend gradually to disappear.

As I have mentioned in treating of causation, Dr. C. B. Davenport considers that a defective evolution of this kind may be the cause of legal (social) mental deficiency. I cannot accept this view, because I regard social deficiency as pathological; but it is to be remembered that in America the term feeble-mindedness is wider than in this country, and that many of the class who are there called " morons " would here be regarded as dullards and not mentally defective. I agree with Dr. Davenport that evolutionary failure is the probable explanation of this particular type of dulness.

There are, however, exceptions to this, as I have seen a few cases of markedly defective educability in boys whose parents belonged to the educated classes. One was the son of the headmaster of a public school, another of a clergyman, and although these two boys had unusual advantages in the way of special tutoring, they seemed quite incapable of making educational progress or of doing any kind of book work. In neither of them, however, was there any defect of common sense, and they both possessed considerable mechanical ability. Cases of this kind may be due merely to lack of interest; on the other hand, they may result from a particular psychological defect due to a germ variation of the nature of a " sport " or "freak."

In a number of children scholastic dulness is associated with a defect or excess of the emotional attributes of mind. In the former there is a marked want of interest, a general indifference, and a lack of initiative; in the latter there is pronounced emotional instability, impulsive behaviour, lack of attention, and incapacity for sustained mental application. Such children usually come of psychopathic stocks, and not infrequently require care during the adolescent period of life.

Backward Children.

Backward differ from dull children in the fact that their educational retardation is not usually due to intrinsic but to extrinsic causes. Where these causes can be removed the arrears are usually made up, although in some cases this may not entirely take place. They compose about one-third of all retarded children. The causes

of extrinsic backwardness are numerous, but they may be grouped under the headings of (1) environmental or social; (2) physical.

Amongst *environmental or social causes* the chief are bad home conditions, bullying at school, and harshness of a particular teacher inducing a state of timidity or anxiety; late entry, irregular attendance, and frequent changes of school, due to changes of residence; unsatisfactory teaching methods and too rapid promotion from the lower to the upper school or from class to class.

Amongst *physical causes* are defects of vision, hearing, and speech; enlarged tonsils and adenoids, states of malnutrition and minor ailments due to poverty, inadequate food, insufficient sleep, etc.; more definite diseases, such as anæmia, tuberculosis, heart disease, and certain nervous diseases, particularly neurasthenia, epilepsy, and chorea. Under the present system of medical inspection such causes of backwardness should be detected, but they are occasionally overlooked, and I have known children alleged to be defective who merely wanted medical or surgical treatment. It need hardly be said that the presence of these conditions does not, of course, negative real mental defect; indeed, they are more prevalent in aments than in the non-defective.

Backwardness due to Delayed Mental Development

Whilst most cases of backwardness are due to the above-mentioned extrinsic causes, there are a few which appear to be the result of a slow development. It is necessary to remember that there are very considerable individual differences in the time at which the aptitudes of mind are evolved. A number of children mature much later than the average, and, in consequence of this delay, may be behind their school compeers to such an extent as to constitute " backwardness." In after-life such " late bloomers " may more than atone for their tardy evolution, and not infrequently their mental powers become greater and last longer than those of the precocious child. Several men who have subsequently attained eminence have been of this type, and have been regarded as dunces whilst at school. Thus, to mention only a few outstanding figures, Charles Darwin's progress in school certainly gave no promise of any unusual intellect. He says: " I believe I was considered by all my masters, and by my father, as a very ordinary boy, rather below the common standard in intellect." Isaac Newton's early school days were characterized

by distinct dulness. Walter Scott, although amassing a store of the most varied information, made little progress in ordinary school knowledge; and Sheridan is reported to have left Harrow with the character of an "impenetrable dunce" who wrote "think" for "thing."

Sir Humphry Rolleston, Bt., K.C.B., who had been Regius Professor of Medicine at Cambridge and President of the Royal College of Physicians, and who died in 1944 as the result of an accident at the age of eighty-two, had an amount of medical writing to his credit which in quality and quantity has seldom been exceeded; and yet he could neither read nor write until he was ten years old. He managed to get into Marlborough, but on leaving was so backward that he was only in the lower 4th and half way up the school. His father, who was Professor of Physiology at Oxford, used to say that Humphry was mentally defective, and there can be no doubt that had I.Q. tests then been in existence he would have been so regarded by those who adopt these as the criterion of defect. The explanation which Rolleston himself gave in later life was that his retardation was due to the inadequate secretion of some gland, and that this suddenly began to function.

CHAPTER XII

FEEBLE-MINDED ADULTS

IT has been pointed out in a previous chapter than the administrative dividing line between " children " and " persons " suffering from the feeble-minded grade of defect is sixteen years; in this account of adults I shall therefore include all individuals above that age.

Definition.

The definition of a feeble-minded person suggested by the Royal College of Physicians was " one who is capable of earning a living under favourable circumstances, but is incapable, from mental defect, . . . (*a*) of competing on equal terms with his normal fellows, or (*b*) of managing himself and his affairs with ordinary prudence." In my opinion, this was a very appropriate description of the class, but it has now been superseded and the legal definition as given in Section 1 of the Mental Deficiency Act, 1927, is as follows:

" *Persons in whose case there exists mental defectiveness which, though not amounting to imbecility, is yet so pronounced that they require care, supervision, and control for their own protection or for the protection of others.*"

Incidence.

Number.—According to the investigations of Dr. Lewis, the total number of feeble-minded persons above the age of sixteen years in England and Wales in 1926 was 113,694. This is about one-third of the total number of mental defectives of all grades and ages in the country. The incidence per 1,000 population is very much greater in rural than in urban areas, in the former being 4·19 per 1,000 and in the latter 2·56 per 1,000 total population. This is but

part of the relative preponderance of amentia generally in rural as compared with urban areas to which I have previously referred. At the same time, although there is a higher relative incidence of feeble-mindedness in the country than in the towns, owing to the fact that the population of urban areas is about four times that of rural, the actual number of feeble-minded persons is greater in the former class of areas. Thus, of the estimated total of 113,694, approximately 79,923 are in towns and 33,771 in the country.

Sex.—Of the total number of 113,694 feeble-minded adults, it is estimated that 54,666 are males and 59,028 females. Roughly, therefore, females are about 10 per cent. more numerous than males. This can be accounted for by the greater number of female persons in the general community, and if the incidence of male and female feeble-minded be considered in relation to the total number of persons of each sex in the community there is practically no difference between the proportion of males and females.

Description.

The feeble-minded are not only by far the most numerous of the three grades of defectives, but in their intellectual endowments they extend over a wider range than do any other class. For this reason it is convenient to divide them into three groups—namely, low, medium, and high grade. There is, however, another feature in which they differ from one another which is of even greater importance than their degree of defect—namely, their mental stability. Whilst some are placid, unemotional, dependable, and mentally stable, others are so highly emotional, unreliable, and unstable as to render their satisfactory care and supervision an exceedingly difficult problem. From the administrative, as also from the diagnostic standpoint, therefore, the most important division is into the mentally stable and unstable, and I shall describe them under these two headings.

The Stable Feeble-Minded.

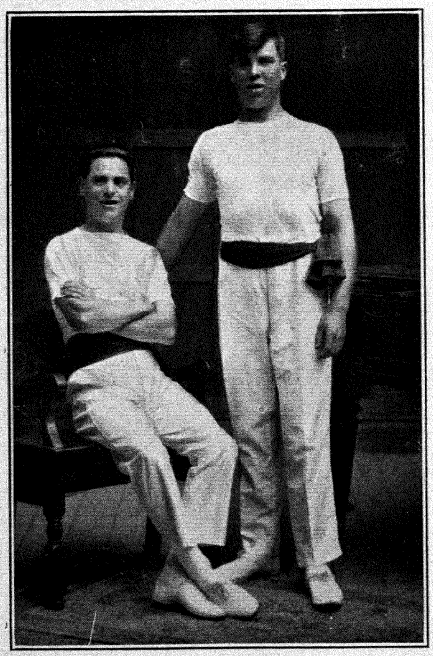
All the members of this group are quiet, inoffensive, well-behaved, and fairly industrious persons who pursue their way comparatively unmoved by the happenings of life. They are easily pleased and made happy by commendation and childish amusements; they

are depressed and rendered sorrowful when they are ignored or censured; but neither their joy nor sorrow is excessive or of very long duration. They appreciate and return affection; they have some conception of simple religious, moral, and social ideals; but their feelings regarding these are not very strong, and most of them are easily led into wrongdoing when exposed to bad companionship and immoral influences. They rarely think of, much less make plans for, their future, and the few of them who express ideas as to the career they would like to follow show no real initiative, enterprise, or intelligence in the pursuit of their purpose. Practically none of them is capable of conceiving and achieving a remote objective. In short, although they differ considerably in their attainments and general capacity, their general outlook upon and reaction to life remains immature, and they always require a helping hand in the management of themselves and their affairs.

The *low-grade* members of the class approximate so closely to the imbeciles, both in their physical appearance and mental capacity, that it is often a matter of difficulty to decide in which category a particular person should be placed. There is, indeed, no clear line of demarcation between the two. In general, one may say that if the individual can carry on a simple conversation, if he can give some account of himself and his doings, if he can read and write single syllable words, can count and do simple mental addition and subtraction, and if he is capable of running errands and performing such domestic work as scrubbing, window cleaning, washing floors, helping in the laundry, and the like, he should be classed as feeble-minded. If he is incapable of doing such things, or of being employed in anything more than the most simple routine tasks, he is an imbecile.

The *medium grade* need a more detailed description for the reason that they form the bulk of the feeble-minded, and may therefore be regarded as constituting the type of this condition. Whilst most of these persons present either some peculiarity of development, physiognomical expression, body balance, speech, or general demeanour which enables the careful observer to distinguish them from the normal, yet, on the whole, such conditions are much less marked than in the imbeciles, and many of them would pass muster as normal on casual inspection. Their scholastic attainments and range of knowledge are usually distinctly below those of their social compeers, but the majority of them have some elementary educa-

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(Photographs from Dr. F. Douglas Turner.)

PLATE XII.

tional acquirements. They can read and write a simple letter, although many words will probably be wrongly spelled. They can do simple addition, subtraction, and sometimes multiplication and division sums on paper, and they can do very simple mental arithmetic. They are capable of easy calculations in change, of telling the time and performing elementary time calculations. They can enumerate the days of the week and the months of the year, and many of them are able to tell the dates of the chief holidays and describe the difference between winter and summer. They have an elementary idea of size and distance, and they possess a few items of geographical and sometimes of historical knowledge. They can tell the uses and give a description, although a rather meagre one, of familiar objects, and they can describe the actions in, and interpret the meanings of, simple pictures. They are able to give a rational account of their life-history and to carry on a conversation. Their scholastic attainments are, of course, dependent upon the teaching they have received; but, generally speaking, it may be said that feeble-minded adults who have been to a special school have attainments roughly corresponding to those of the normal child of about Standard II., although their range of general knowledge is usually somewhat greater than this.

The work they are capable of performing is similarly dependent upon the kind of training they have had. With suitable training the mental capacity of all of them is such that they can follow some form of useful and remunerative employment. Thus, women can engage, under a certain amount of supervision, in such domestic occupations as washing up, cleaning out rooms, ironing clothes, and simple cooking. They are able to do plain needlework and cut out garments from patterns, but they cannot make a garment entirely by themselves. Youths and men can do such work as newspaper selling, bill distributing, window cleaning, road sweeping, wood chopping, stone breaking, and various kinds of labouring jobs. They may be employed as bricklayers' and carpenters' mates, can perform semi-skilled work in factories and institutions, and do such work on the land as digging, weeding, looking after sheep and cattle, and helping with the hay and crops. Those who are in institutions enter with considerable zest into the recreations and general life. They enjoy the weekly dances, they play in the band, take part in amateur theatrical performances, and often do very creditably in their companies of scouts and girl guides.

It is necessary to emphasize the fact, however, that not only is the capacity of these persons limited to the particular job they have been taught, but that even in regard to these tasks most of them require more supervision than would a normal person. Moreover, they are incapable of generalizing or of applying their knowledge to new circumstances, and should anything unforeseen arise necessitating a new adaptation they are usually quite unable to cope with it. As a somewhat gruesome example of this, I may mention the case of a certain feeble-minded woman resident in a workhouse. Her daily occupation was washing in the laundry, which she did very well. But one day the charge nurse of the maternity ward was so unwise as to give her a baby to wash. She did so in boiling water, with, it need hardly be said, a fatal result. In brief, whilst the average feeble-minded person has sufficient intellect to be employed in some routine remunerative occupation, and whilst some of them can actually work their passage under supervision, none of them can plan or steer a course unaided. Left to their own devices they are speedily upon the rocks, and inevitably become hopeless social wreckage.

The *high-grade* feeble-minded approach in many ways so closely to the normal that their differentiation may be a matter of very great difficulty; indeed, it is often only after a most careful study of their life-history and several examinations that it is possible to arrive at a diagnosis. To begin with, they are usually fairly well-grown and developed, stigmata are either absent or unobtrusive, and although they often present some little peculiarity of demeanour or conversation which is significant to the expert, there is nothing sufficiently abnormal about them to attract general attention. While their range of general knowledge and their scholastic attainments are usually somewhat below the level of their compeers in social status, many of them do not present any marked educational shortcomings. A considerable number of those of the public elementary school class have attended ordinary schools, in which they have reached the fourth, and very rarely the fifth, standard. Those of higher social status have usually spent several years at an ordinary preparatory school, but they have been transferred to private tuition or to one of the private schools catering for the " exceptional, nervous, and backward," when it became obvious that they would not reach the standard for admission to a public school. in quite a number of these cases, although the individual may have

been regarded as backward, there has been no very noticeable lack of common sense, and it has not been until adolescence has been reached, with its normally lessened parental control and its increased demands upon the individual, that mental deficiency has been suspected.

All these high-grade stable feeble-minded have sufficient ability to follow a remunerative occupation, and most of them to earn enough money to keep themselves, provided a suitable situation can be found for them. Many of those whose circumstances are such that some kind of work is necessary are employed in domestic service, in warehouses, paper-bag and box-making, painting, woodwork, engineering, printing, running simple machinery, and in various kinds of factories and workshops. A certain number are in institutions where they do useful work with very little supervision in the repair and trade shops. Those whose circumstances are such that there is no need to engage in remunerative employment either live at home or are boarded out with a country clergyman or gentleman farmer. Not a few youths of this kind, either with or without a course of instruction in agriculture or horticulture, are sent out to farms in the colonies. Those remaining at home take up little hobbies; they play such games as tennis, croquet, and billiards; they learn to swim and to ride a horse or bicycle; they take an interest and do some work in the garden, the farm, or with the horses and dogs. They join in the ordinary life and amusements of the family, and do not usually find the daily round of society beyond their mental capacity. On casual acquaintance they pass muster as normal, but it is not very long before acquaintances, servants, and neighbours come to regard them as not quite "all there."

The question naturally arises, if these young men and women can lead such apparently normal lives, if they show no very obvious educational deficiency, and if they can perform work which will pay for their maintenance, in what way are they mentally defective? The answer is simple. Although they can do these things, they are incapable of managing their affairs, and often themselves, with the prudence, discrimination, intelligence and general adaptiveness needed for an independent life. With a little guidance and oversight they do very well, but without these they are speedily overtaken by disaster. I have known many of these persons who, under supervision, have led quite inoffensive, useful, and industrious lives; but they have no sooner taken the reins into their own hands than

they have come to grief. Should they lose their situation, they are usually incapable by themselves of getting another. Although they can earn money, they are quite unable to lay it out in such a way as to make satisfactory provision for their wants. They readily become the victims of tricksters and the catspaws of sharps. They are easily induced to take part in swindles and robberies, to obtain goods by pledging their parents' names, and are left to face the consequences whilst their nimble-witted beguilers make good their escape with the plunder. They are readily diddled out of their money and possessions by chance acquaintances. Young women of good family are seduced and left with illegitimate children. Young men with expectations, and heirs to titles, are made up to, and married, by adventuresses old enough to be their mothers. In short, whilst their innate developmental potentiality has sufficed to lay down the foundations and lower levels of mind, it has been inadequate for the development of the higher processes which are necessary for adequate social adaptation and full independence. As children they have appeared at the most merely backward, but when called upon to take the responsibilities of life upon their own shoulders their mental imperfection has become patent, and has amply shown their need for care, supervision, and control.

The Unstable Feeble-Minded.

It has been stated that many aments, in addition to being sub-normal intellectually, are also mentally unstable. By this I mean that the mind as a whole is ill-balanced; that there is a want of harmonious adjustment between its various component parts, and an instability of equilibrium of such degree that mental oscillations are excessive and manifest themselves in a riot of thoughts, in violent gusts of emotion, and in marked irregularities of conduct. This condition of instability occurs in all grades of defect. The defective mind, in fact, by very reason of its defect, is more prone to be unstable than the one which is normally developed; consequently the majority of aments show a tendency to abnormal manifestations of this kind. But whilst in many cases these are comparatively slight and infrequent, in others they reach such an extreme degree as to constitute a feature which, from the clinical and administrative standpoints, is as important as the intellectual deficiency. I have already

described this as it affects idiots and imbeciles, and it is now necessary to consider it in regard to the feeble-minded.

The unstable feeble-minded vary, just as do the stable, with regard to their degree of defect. The low and medium grade members evince the same defects of educational and general capacity as have been described in the preceding pages, and they should rarely present any difficulty in diagnosis or certification. But the fact that these persons are also markedly unstable causes them to be a much more difficult administrative problem. Their liability to fits of temper and sudden impulses, their general waywardness and unreliability, stand in the way of their being either tolerated at home or of retaining an outside situation for any length of time, and there is no doubt that most of them are best cared for in institutions. I have known a silly giggling girl of this type plunge her head into a pail of water without the slightest hesitation when the suggestion was made to her. I have known another to set fire to a hayrick, and another to dash her hand violently through a window-pane in a sudden access of temper. And yet all of them, on occasion, were good willing workers, and but for their unreliability could have been usefully employed in the community.

The high-grade unstable feeble-minded present much greater diagnostic difficulty for the reason that their intellectual defect is much less obvious, and tends to be overshadowed by their extreme instability. This may be manifest in various ways. In the majority of cases the disturbance is emotional. With, or without, the slightest provocation, the individual is suddenly overwhelmed by a storm of rage in which he raves up and down, uses the foulest language, wrecks everything within his reach, and assaults everyone who comes across his path. After a time the phase passes, to be followed by protestations of remorse and exaggerated demonstrations of affection; but these are short-lived, and are soon followed by another violent outbreak. Many persons of this type have considerable intellectual ability, but they are so prone to attacks of excitement, violence, sulkiness or moroseness, so fickle and undependable, that it is quite impossible for them to retain any situation. I have known many such young women who have had scores of places in the course of a few years, and it is only when they have thrown away every chance and been reduced to a state of destitution that advice as to their mental condition has been sought.

In another group the instability involves the ideational as well as the emotional department of mind. In these cases there is a riot of thought; the individual lives in a world of fantasy, and gives expression to the most absurd and illogical notions: she develops imaginary grievances, makes unfounded charges, and sometimes invents a series of the most fantastic happenings which she relates with a wealth of circumstantial detail as actual experiences. I have known young women of this kind to fake a burglary, even going to the length of gagging and binding themselves and of giving a most detailed description of an imaginary desperado. In yet other cases the instability is chiefly manifest in overaction of the primitive instincts. In some persons of this type it is the sexual, in others the acquisitive or self-displaying instincts which get the upper hand; but the general result is anti-social conduct of a nature and degree to bring them into conflict with the law, and to render it impossible for them to remain at large in the community, They belong to the type which needs care, supervision, and control " for the protection of others."

Now, whilst in most of these unstable high-grade feeble-minded examination readily reveals some intellectual defect—namely, some lessened range of general knowledge, some educational disability, and some serious want of attention, comprehension, discrimination, or reasoning—this is not so in all. In a number of these persons the ordinary intellectual processes of mind do not at first sight appear to be in default. The intelligence quotient is normal or even supernormal; they are ready and plausible in conversation, and they possess an alertness of observation and a quickness and aptitude for the performance of certain kinds of work which are above the average. Their life-history, it is true, shows that they are unable to turn these endowments to any practical account, and that they are really incapable of leading independent lives; but on superficial investigation this seems to be due to an inability to control their emotions, thoughts and instincts rather than to any defect of intelligence. As I have mentioned in a previous chapter, it has been suggested that this condition is, in fact, due to an emotional and not to an intellectual defect, and it has been proposed to call such persons " temperamental defectives." But, whilst admitting the great importance of the higher sentiments in the control of conduct, so far as my experience goes careful investigation has always shown that these persons are also defective in some factor

or other of that group of the intellectual processes which constitutes common sense. In some there is defect of reasoning capacity, in others of prevision, self-criticism, or ability to plan; and in every case that I have seen careful examination has shown that, in addition to their mental instability, these persons have been lacking in the capacity to make sensible plans for their future, they have been unable to envisage the consequences of their acts, and to learn from their failures. They have not even had the sense to realize that these failures were due to their own actions, and that a continuation of their misconduct would inevitably react to their disadvantage. In short, although the dominating feature has been their instability, there has also been a defect in the higher intellectual processes of mind which are concerned in efficient social adaptation. It follows that such persons conform to the statutory definition of the feeble-minded, they are certifiable as feeble-minded, and clinically they are best described as unstable feeble-minded.

It may be remarked that persons of this type form an interesting connecting-link, on the one hand with the moral defectives, and on the other hand with those unstable but non-defective members of the community from whom the bulk of the psycho-neurotics and psychotics are recruited. The existence of this link is of no little interest as showing the relationship of mental deficiency to other forms of mental abnormality, and in emphasizing the essential unity of mental disease.

Illustrative Cases.

The following cases, which have been extracted from my records of the past forty years, illustrate some of the various types of feeble-mindedness described in the preceding pages.

A. C. is a man of twenty-two years, although he looks only about seventeen. He went to an ordinary elementary school, and was in the sixth standard when he left; but his schoolmaster tells me that he was only moved up each year on account of his size and age, and that his scholastic attainments were really only equal to Standard III. During the two years following school he had several situations, mostly as errand-boy, but he was discharged from each place in turn on account of general incompetence. Then he was taken, largely from philanthropic motives, into a printing-office, and there he has remained until the present time. His work is purely mechanical, and consists in helping a man with the

machine, carrying bales of paper, and so on. He began with a wage of nine shillings weekly; this has been increased, and he now has a standing wage of eleven shillings, but he often puts in overtime, and he usually earns about thirteen shillings. He lives at home with his parents, and he gives his money to his mother, who allows him a shilling weekly as pocket-money. When clothing or boots are required, his mother buys them, and, in fact, he is treated exactly as a child. He is perfectly happy and contented with his lot, and has no ambition to be other than what he is; but it is difficult to say what is going to happen when he has no home to go to and no parents to look after him. I asked him if he had ever thought of getting married. He said: "No." I asked him if he ever kept company with anyone. He said he did for a time, and used to "walk out" with a girl every night. To my questions as to what he used to say to her, he said: "She used to ask me how I was getting on at my work. I said: 'Pretty fair.' I used to ask her how the was getting on at her work. She said: 'All right.'" There do not appear to have been many love-passages, for he admits that he never kissed her. After six months the maiden tired, and she now walks out with one of his more enterprising mates. This youth once conceived the desire to join the Volunteers, and applied to the local non-commissioned officer. The Sergeant-Major, a shrewd man and a good judge of men, rejected him, and, when I asked if he didn't come up to the physical standard, said: "His body was all right, sir; but he had too little brain-pan." He has a few stigmata, can read and write tolerably well, and can do simple sums; he can also copy drawing very creditably, but he has little other knowledge. After a good deal of consideration, he told me that history was "what happened before," and that geography was "about towns and rivers," but he has no historical or geographical knowledge. I asked him which was the first war that he learned about. After much cogitation he said: "It was near Trafalgar Day. It was when Nelson fought. He defeated the Spaniards." On being asked how long ago that happened, after a very long pause he said: "From then to now, do you mean?" and, on my replying in the affirmative, said: "About seven hundred." His knowledge of geography was of the same order, and although he told me he had got a Sunday-school prize, to my query as to who God was he replied, after much thought: "The Son of man."

Frank C. This patient is the son of a country gentleman, and

was mentally and physically backward from birth. He did not walk until in his fourth year, and did not talk until turned five. During the whole of childhood he was exceedingly delicate, nervous, and excitable, suffering constantly from asthma, bronchitis, and laryngismus. He went to a private school at the age of eight years, but never got on; he was tried at several other schools, but was found incapable of making scholastic progress. During his ninth year he began to masturbate, and he has practised this constantly ever since. At twelve years of age he was placed for a time in the house of a mental specialist. From this he was removed to be boarded out with a clergyman for two years; but was taken away because his parents thought his host was inculcating too much ritualism. He was then boarded out with a farmer for a period of five years, and spent his time helping with the cattle, horses, and farm-work generally. In this situation he seemed to improve so much that he was brought home with the idea that he might now remain and potter about on his father's estate. After being home for a few months, however, he caused general consternation by suddenly announcing his intention of marrying one of the maids in the house. He had said nothing at all to the girl, who seemed exceedingly quiet and respectable, and had not encouraged him in any way, and the first intimation of his feelings was the receipt by the girl's mother of the following letter:

October 1st, 1901o,
Saturday.

DEAR MRS. S——,

I am writing to inform you that I intend to have your daughter Fanney to become my wife and I sencerely hope that you wont refuse me you may be quite sure that I shall take great care of her and I promise that she shall have all that she wants as far as our means will let us But I give you fair warning that if you refuse me I shall take her without your consent as I am determent to have Fanney my people will make a big row over this but you must take no notice of that but be qeuality determent for me to have her if anything is said about it Believe me to be yours sencerely *FRANK——.*

Fanney knows me quite well as we have seen each other at home.
By this mark I promise to do all that I have said in this letter.
(Two blobs of sealing wax here.)
Whatever may happen nothing shall part us but death and that only.

At the same time the Vicar received the following:

October 1st, 1901o,
Saturday.

Mr. W——.

Dear, Sir

Will you kindly call my bands between Miss Fanney S—— of B—— and Frank C—— of ——. If you refuse to call it I shall find some other means of having it done or I shall get some one else to call it in the Church as I am determent to have it done. If you want to know anything more go to Mrs. S——

Yours sencerely

Frank C——.

These letters caused no little consternation, and on the advice of the family doctor the parents brought the youth to see me. I found him a small, but well-nourished, ruddy-faced young man of twenty-four years, somewhat ungainly in body balance and walk, but presenting no other physical anomalies. He talked freely and pleasantly; his memory, attention, and capacity for observation were average; but his reasoning was very poor, and his ideas and mode of expression were decidedly childish. It was obvious that although he knew how to dc certain routine farm jobs, such as looking after the cows and horses, attending to the fowls, digging up potatoes, etc., he had no idea of managing a farm or of looking after his affairs. During our conversation he said that he was not very particular about getting married just yet, but he was rather fond of Fanny. When I asked him how he could support her, he said he thought he would get a job like her father, who was his father's coachman. On my pointing out that even if he succeeded in doing this it would still be some time before he could keep a wife, he readily agreed, and at my suggestion said he would write to the girl's parents and the clergyman saying he had decided not to marry yet. I found that every attempt had been made to educate him up to his social position as a country gentleman; but he was quite incapable of this, and infinitely preferred living and working with the farm labourers on his father's estate. At my suggestion he was sent to a farm run by a medical man, where he now remains quite happy and contented.

Lizzie S—— is the only child of a respectable couple who are lodge-keepers on a large country estate. I can find nothing what-

ever in the family or previous personal history of a causal nature; but it must be admitted that the parents are able to give very few details of their relatives. The mother says that Lizzie seemed different from other people's children when she was seven months old. Whilst other children "would be wriggling about, trying to get down and want a lot of looking after, Lizzie was always so quiet and so good, never anything seemed to put her out, and she had no temper at all." She cut her teeth about the usual time, but was very late in standing and walking, and did not talk until she was three years old. Up to the age of six years the mother thought she would grow out of it, but when she went to school she never seemed able to learn at all, and serious doubts began to enter the mother's mind as to her intellect. The schoolmistress would not keep her at school, and she remained at home with her parents. She was always quiet, obedient, and well-behaved. but at the age of eighteen she evinced a fondness for young men, and as her mother felt that they could do anything they liked with her, she sought advice as to her condition.

On examination at the age of eighteen years, I found her a pleasant-faced, smiling girl, somewhat shy and hesitating in manner and feeble in expression. Her physical development corresponded to that of a girl of about fifteen, and signs of puberty had just appeared. She sat quietly in the chair, attended to all I said to her, and was not distracted by passing events. Her cranial circumference was 20 inches. She knew her name and age, and when her birthday was. She said London was a "big town," but did not know how much bigger it was than the village she came from, but "perhaps it is twice as big." She said the sun was up in the sky not very far away, not so far as her home, it would not take her long to get there if she could fly. If anyone came and said they would take her a trip to the sun in a flying machine she would go with them. She would go with one now, and said she would be back in time for dinner. I showed her a model of a cow. She looked at it and said it was a lamb; but on being told to look again, said "Cow." Upon asking her what cows were for, she said, "To milk." Upon being asked what milk was for, she said, "Drinking," and on my asking her what else, after a very long pause she said "Cooking." I asked her: "What do you clean your boots with?" and she at once replied: "Blacking." She said she went to church, where they teach her "hymns, psalms, and about Jesus." But she could not

tell me a single fact about Jesus, and was not sure whether He is dead or alive. She said she could wash clothes. She washed them in water. I asked her what else. She said: "The bath." She could not tell me what else she would put in the water. "Nothing else—plain water." When I suggested soap to her she smiled and said: "Yes." "What kind of soap?" "Sunlight," promptly. I asked her to describe a fork to me. After much hesitation she at length said: "It's steel," and this was all I could get out of her. She knew the names and uses of most common objects, but could tell me no points of difference between paper and cloth. She answered the first nine of the Binet-Simon problem questions, but was unable to answer those following. She said that 4+3=6; 2+3=4; 5+1, no answer. She did not know how many pennies there were in a shilling, but after much pressing and hesitation said that there are two shillings in a two-shilling piece, and she took forty-five seconds before she could tell me that there were five shillings in a five-shilling piece. Her mother said that Lizzie could peel the potatoes, and could do a little plain knitting and sewing, but could not put a garment together; she could clean the grate and lay the fire, but this was about all, and even in doing these the mother felt that she must always keep her eye on her. If sent shopping she had no idea of change, and generally forgot to bring some of the things.

I regard this case as on the borderland of imbecility and feeble-mindedness. The girl has observation and attention, and can do many little things she has been taught to do. She has no school knowledge, and cannot read, write, or sum, and it is obvious that her association and ideation are poor and her judgment very faulty. But it is to be remembered that she has had practically no training, and I think it highly probable that had this been supplied she would have made a useful worker in a laundry or in some similar occupation. She is obviously a case needing permanent supervision, and without this her facile disposition will inevitably lead her into trouble.

I am acquainted with a feeble-minded man, *John C*——, who has steadily and industriously cracked stones by the roadside for the past forty years. He lodges in the village with a labourer and his wife, and the latter wakes him in the morning, gives him his breakfast, makes his dinner into a parcel, and sends him off to work. When dinner-time comes, which he knows by seeing the labourers

in the field leave off work, he eats the contents of his parcel. Sometimes John feels hungry, and eats it before. About five o'clock, which he also knows by the passing of the postman, he leaves off work and returns to his lodging. He has his tea, sits by the fireside until about eight, and then goes to bed. Occasionally John has been known to get tired of work and come home in the middle of the afternoon; but such lapses are very rare, and on the whole he is exceedingly methodical and industrious. He knows that Sunday is a day of rest, but he must be told that it is Sunday, or he would go to work as usual. John's landlord once played him the prank of not telling him it was the Sabbath, and he went off as usual without any suspicion. But he had intelligence enough to notice the trick on passing through the village by seeing that the shop was closed, and he came back vastly amused at what he thought was a fine mistake. He receives a few shillings each week from the Rural District Council, and this he faithfully carries to his landlady, who allows him a penny now and then when he asks for it. This, however, appears to be seldom, for John seems to be in the happy condition of having all his wants supplied.

Alice S—— is a feeble-minded girl of nineteen years. She is the daughter of working people, and went to the Board-school until she was fourteen years of age; but her schoolmistress says she could make nothing out of her, that when she left she could only just read and write, and that she was "always spiteful, untrustworthy, and a regular nuisance." Upon leaving school a situation as day-girl was found for her. She ran away on the third day, and refused to go back. Then she got another place, but only stayed a week, as her mistress "could not put up with her ways." This went on for over two years, during which time she had no fewer than twenty-two places. She was then sent to a laundry training-home, and here for the first few weeks she was much quieter, and it was hoped that she would settle down into good habits. But the hope was futile. The matron found that not the slightest dependence could be placed upon her word, that she was dirty in her person, lazy, an incurable pilferer, and up to the most cunning tricks to annoy and irritate her companions. She was therefore sent home again. Here she remained for some months, doing no work, and causing her relations endless trouble and worry. On several occasions she was brought home by the police, and finally, within a year of her return from the training-home, she was admitted into the maternity ward of the

workhouse. It was there that I first saw her, and although she was a strong, active girl, and quite capable of doing domestic work, she was nevertheless so erratic, impulsive, and generally irresponsible, that nothing could be made of her.

F. H. is a feeble-minded man, twenty-three years of age, having the appearance of a youth of seventeen or eighteen. He is 5 feet in height, and weighs 7½ stones, is thin and ill-nourished, and has numerous stigmata. He is extremely unstable, at times being quiet and well-behaved, at others noisy, restless, talking and laughing to himself, and interfering with those around him. In one of these fits he attacked his brother with a hammer. He has had several situations, but has been unable to keep any of them. He can read, write, and do simple sums, and although, when questioned, he seems to have a fair knowledge of many common things, he is too defective and unstable to turn his knowledge to any account. He is a ready talker when in the mood, and gives a very plausible account of himself. He says he is "what you call an orphan, and only has his brothers to be acquainted with now. Was in the sixth standard when he left school, and used to do reading, writing, arithmetic, composition, and geometry; was never at the top of the class —master used to think him a backward boy. It was writing from memory that was his worst subject; memory was always bad. Once got a prize for religious catechism. Was in the boys' home learning printing for nine months, but they gave him the sack because he accidentally spoilt a special job. Has had other chances, but never seemed to get on very well. If they would only give him another chance he would do his very best. Several of the other people have interfered with him, and then, of course, he has to take care of himself. One of his masters told him he would get on better if he didn't allow himself to be put on, and looked after himself more."

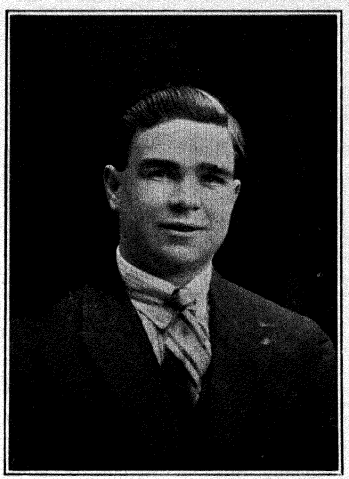
A. B. C., a well-developed, pleasant-looking young woman, twenty-five years old, was sent to my clinic for an opinion as to her mental condition. Her father and mother, also her mother's brother, had died of consumption; her paternal grandmother was alive, but a chronic drunkard; her maternal grandmother was in a mental hospital with dementia. The patient was the only child and was late in developing. She went to an ordinary school, and says that she left in the sixth standard; but the headmistress states that she was very backward and unable to concentrate or to learn like the other pupils; she was also untruthful and flighty. On leaving school she was

apprenticed to a dressmaker, and she says that she stayed here for two years and was earning £1 per week when she left. But her aunt says that this is not true, that her work was unsatisfactory, and that she only stayed a few months. After leaving this situation a place was obtained for her in domestic service, but she was dismissed after a few weeks because she was inefficient. During the next four or five years she had a large number of situations as a domestic servant, and although most of her mistresses said she was pleasant and good-natured, none of them would keep her owing to the generally unsatisfactory character of her work. About this time her parents died, leaving her a sum of £800, and she went to live with relations who were made trustees for her money. Unfortunately she made several very undesirable acquaintances, and when she came of age these instigated her to demand her money, and she caused so much unpleasantness that it was given to her. With this in her possession she was readily induced to take her acquaintances for a tour on the Continent, but after a few months they had managed to spend the whole of her money and left her stranded. In the meantime she had given birth to an illegitimate child by the son of the woman with whom she had gone abroad. She was sent to a rescue home in England, and from here again put into service; but she was unable to retain any situations and was taken back into the home. It was then found that she had gonorrhœa, and she was treated for this in hospital for some weeks. On her discharge she was admitted to a House of Mercy, where she remained for two years; but although every effort was made to train her for various kinds of work she proved so unsatisfactory and incompetent that it was decided to seek advice as to the possibility of certifying her under the Mental Deficiency Act.

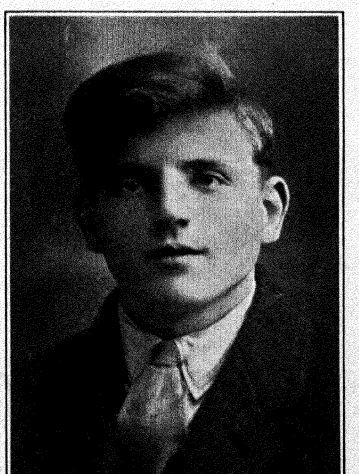
When I examined her she gave a fairly detailed account of her past life, although many of the incidents were not in their proper sequence, and some of her statements were not in accordance with fact. She admitted she had had a large number of domestic situations, and been unable to keep them, but she said that it was because she did not like this work; she preferred needlework, at which she claimed to be quite good. She admitted that she had been diddled out of her money, but said she had learned her lesson and would take care it did not happen again. She thought, however, that it would be better to let a friend take care of her money rather than put it in a bank. She confessed that she was

very fond of going out with young men, and did not like to refuse their sexual advances. She was quite a normal-looking young woman, she conversed intelligently, she could read and write as well as the average of her class, she had a tolerably good range of general knowledge, and gave a very plausible account of her failures. I have little doubt that most lay persons would have regarded her as a rather easy-going, good-natured girl who had been unfortunate in her experiences, but who was certainly not mentally deficient. But detailed examination showed decided defects in foresight, planning, and general intelligence; she completely failed in Healy's "A" and "B," and in the "lost cricket ball" tests. She failed in several simple sums in mental arithmetic involving change; she said that 5s. per week would be £48 per year. She was decidedly facile; her needlework, at which she said she was so good, proved on inspection to be certainly not such as would have obtained remunerative employment for her. Her intelligence quotient was 73. After considering all the features of the case, including the history of early backwardness, of unsatisfactory response to scholastic education and training, of continuous social failure, together with her defect of general intelligence as revealed by performance and other tests, I came to the conclusion that she was undoubtedly incapable of managing herself or her affairs, or of maintaining herself without some degree of care and supervision, and that she was consequently certifiable as a mental defective.

TYPES OF HIGH-GRADE PRIMARY AMENTS.









(*Photographs from Dr. F. Douglas Turner.*)

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CHAPTER XIII

THE CLINICAL VARIETIES OF PRIMARY AMENTIA

It has been stated that about 80 per cent. of all aments belong to the primary group. Whilst these differ among themselves just as do non-defectives, and whilst many of them, especially those of low grade, are complicated by various anatomical anomalies and pathological lesions, in the great majority these are not sufficiently distinctive to justify their being regarded as special clinical types, and they may be termed the *simple* variety of primary amentia.

A small proportion of primary aments, however, possess certain anatomical, physiognomical, or pathological features which are sufficiently pronounced to enable them to be placed in special categories. It may be that further investigation will enable others to be so placed; but at present the chief clinical varieties are three—namely, *mongolism*, *microcephaly*, and *sclerotic* amentia. These will be described in the present chapter, together with certain other less common varieties and certain conditions which frequently complicate primary amentia.

MONGOLISM.

In 1866 Dr. J. Langdon Down* suggested that the physiognomical features of certain defectives enabled them to be arranged in ethnic groups, and of these he differentiated four—namely, Mongolian, Ethiopian, Caucasian, and American Indian. An ethnic classification has long since been abandoned, but the term "Mongolism" is still applied to an important clinical variety of aments owing to a certain resemblance they bear to members of the Mongolian race. Whilst it would now be difficult to make a change, one cannot but regard the name as somewhat unfortunate, because, although it is true that sufferers from mongolism do present a certain superficial

* J. Langdon Down, "Ethnic Classification of Idiots," *London Hosp. Rep.*, 1866, iii., p. 259.

resemblance to racial Mongols, they present many other anomalies which are not found in normal members of this race, and which are definitely pathological. It is necessary to point out that these anomalies are not distinctive in themselves. As a matter of fact, many ordinary aments, and even normal individuals, possess one or more of the peculiarities which go to the make-up of mongolism. It is the combination which is characteristic of this condition. But where this combination occurs, it produces a picture which is so distinctive as to constitute a definite and readily recognizable clinical variety.

The condition is one which has attracted a very large amount of attention, and contributions to our knowledge of it have been made by many observers in all parts of the world. At the present time the literature is so extensive that a bibliography alone would occupy a very considerable space. The following account is largely based upon my own examination of several thousand cases, although I have also referred to a number of observations by other writers.

Incidence.

The proportion of mongols among infantile and juvenile defectives is much higher than among defectives of all ages. Thus, of all children diagnosed as mentally defective during the first year of life, between 40 and 50 per cent. are mongols. Of all children under five years of age who are diagnosed as mentally defective, about 25 per cent. are mongols. With each quinquennium the ratio steadily falls, partly owing to the early death of many of these persons and partly to the fact that more and more ordinary aments come to be recognized. Dr. Brushfield* found that of 2,090 admissions of mentally defective children, between the ages of two and ten years, to the Fountain Hospital, 8·4 per cent. were mongols. My observations lead me to estimate the proportion of mongols in England at about 5 per cent. of the total number of aments of all ages. Although I am not able to give actual statistics, my impression is that the proportion of this type of amentia has increased in the past forty years. It is doubtful whether the figures relating to other countries are very reliable; but it may be stated that, according to Lind,† the proportion of mongols in Victoria (Australia)

* T. Brushfield, *Brit. Journ. Child. Dis.*, vol. xxi., 1924.

† W. A. T. Lind, *Med. Journ. of Australia*, vol. ii., 1923.

is about 3 per cent. of all defectives; and that, according to Vogt,* the proportion in Germany is about 1 per cent. Van der Scheer found that in Holland in 1927 there were 500 cases of Mongolism in a total general population of 8 millions. In the United States, although complete data are lacking, it seems probable that the proportion is about the same as in England. It used to be thought that mongolism was confined to the white races, but this is not so. Chinese, Japanese, American-Indian, and even Negro mongols† have been recorded, and it now seems clear that the condition occurs among all races and in practically every part of the world. With regard to sex, I think that in England there is undoubtedly a preponderance of males, probably to the extent of between 20 and 30 per cent. With regard to social status, my experience is that the condition occurs to about the same extent in all grades of society. It certainly shows no special relation to poverty or insanitary conditions; if anything, rather the reverse.

It used to be thought that there was never more than one mongol born in the family. It is true that this is usually so, but a considerable number of instances have now been recorded where there have been two; and, according to Comby,‡ Babonneix has had the hitherto unique experience of observing four mongol children in one generation of the same family. But the most remarkable instance of family mongolism is the pedigree recorded by Professor H. B. Fantham.§ Two normal persons had a family of fourteen children of whom three were mongols. One of the normal males of this first generation married a normal woman, and the pair had nine children, of whom three were mongols. A normal female of this second generation married a normal male, and produced one mongol and two normal children. Another normal male of this same generation married a normal female, and this pair had a family of nine children, of whom three were mongols. Altogether three generations of this family have produced ten mongols. Professor

* H. Vogt, "Der Mongolismus," *Neurol. Centralbl.*, xxvi., 1907. More recent figures relating to Germany are not available.

† For observations on the incidence of mongols among negro children in U.S.A., see A. Gesell, *Journ. Amer. Mental Assoc.*, 1936, and W. H. Thompson, *Journ. Psycho-Asthenics*, June, 1939. The latter considers that approximately 1 per cent. of all mongols in U.S.A. are coloured. The ratio of coloured to white population is 9 per cent.

‡ J. Comby, *Archiv. de Méd. des Enfants*, February, 1927.

§ H. B. Fantham, "Some Factors in Eugenics," *S. African Journ. of Science*, November, 1925.

Fantham tells me that all the affected children were cases of mongolian idiocy, and not merely of racial mongoloid features.

A considerable number of cases have now been recorded in which the mongol was one of twins, the other child being normal; I have myself seen several instances of this kind. Rosanoff and Handy* collected fifty-nine instances from the literature up to 1934 and to these they added five more pairs of their own. A few cases are on record of both of the twins being mongols. In all these the twins were of the same sex, and it is probable that they resulted from the fertilization of a single ovum; indeed, some of them presented the usual signs of identical twins. Dr. W. T. Collier† has described the case of a normal woman who, at the age of twenty-seven years, produced a mongol. Eight months later she was delivered of a dead fœtus. The next child by a second husband was normal; but this was followed, when she was thirty-four years old, by a typical cretin. Dr. C. P. Lapage‡ reports the case of twins, one of whom was a mongol and the other an achondroplasic. Dr. K. Brousseau§ quotes three separate authors who state they have seen a case in which a female mongol has given birth to a child; but she was unable to verify their reports and I have never known a case of this kind myself, although I have known a mongol youth attempt to have sexual intercourse with a young normal girl.

Causation.

There is probably no aspect of mongolism which has received more attention that that of its causation, and many different theories regarding this have been advanced. I shall discuss these presently, but before doing so it is advisable to refer to certain associated conditions which may possibly have some ætiological significance.

A history of *psychopathic conditions* in the family occurs in about 20 or 25 per cent. of cases. This is certainly greater than in the families of non-defectives, but considerably less than in aments in

* A. J. Rosanoff and L. M. Handy, *Amer. Journ. Dis. Children*, 1934.

† W. T. Collier, *British Medical Journal*, December 20, 1930.

‡ C. P. Lapage, *Proc. Roy. Soc. Med.*, December, 1933.

§ Kate Brousseau and H. G. Brainerd, "Mongolism," 1928. This contains a complete list of references up to the date of its publication. Dr. G. A. Jervis, *American Journ. of Mental Deficiency*, April, 1942, gives a useful summary with references to the chief articles which have appeared from 1928 up to, 1942.

general, so that whilst this factor may possibly have a contributory influence it cannot be regarded as the sole cause. A family tendency to *tuberculosis*, or tuberculosis in the parents, is also more often found than in normal children, but this again is only present in about 20 per cent. of cases. Parental *alcoholism* occurs in a small proportion, but there are many mongols who come of non-alcoholic parents and stocks. As a matter of fact, in my experience alcoholism is no more prevalent in the families of these than in those of normal children. A history of parental *syphilis* may be found in a few mongols, but the great majority show no clinical or pathological evidence of this condition. *Age of parents:* There is no evidence of any relationship between mongolism and the age of the father. The age of the mother, however, has been held to be a significant ætiological factor, since most mongols are born of mothers over thirty-six years old. Particulars which Dr. G. Brown was good enough to get out for me, relating to 187 mongols in the Fountain Mental Hospital, showed that 60 per cent. of the mothers were over the age of thirty-six at the birth of the child. On the other hand, more than half of the remaining 40 per cent. were women under thirty years of age. I have also seen a number of cases where the mother was in the early twenties, and one in which the mother was only sixteen years old. It seems very doubtful, therefore, whether the age of the mother, of itself, can have the great causal significance which is often attached to it. *Position in family :* It was formerly said that the mongol was usually, if not invariably, the last born of a large family, and this was doubtless true. It is strange, therefore, in view of the fact that the average woman gives birth to far fewer children than she did a few generations ago, that mongols should still be produced, and if anything in greater number. Although the average size of the family is much smaller, the mongol is often still the last born; but he is often also the only child, and it is probable that whatever his place in the family may be his advent may not infrequently lead to the adoption of contraceptive measures and so to a cessation of child-bearing. But mongols are by no means invariably the last born, and I know many instances in which they have been the first born or have occupied an intermediate position and been preceded and followed by normal children. A history of *ill-health or anxiety of the mother during the pregnancy* is present in a considerable proportion of cases. On the other hand, many mothers of mongols have appeared to be in perfectly normal health during this time, and this, together

with the lack of any evidence that the years of the 1914-18 War were productive of any significant increase of mongolism, and the further fact that many normal children are produced by worried, ill, and enfeebled mothers, makes it very doubtful whether this factor alone can be of great significance.

Let us now briefly consider the chief explanations which have been advanced to account for this condition. One of the earliest suggestions was that mongolism was due to *syphilis*. Against this are the facts that in the great majority of mongols there is no history of parental syphilis (although I admit that one must not place too much reliance on such absence); that there is no history of miscarriages or still-births; that there are none of the usual signs of syphilis either in mongols or in their brothers and sisters; that mongols do not develop arteritis, meningitis, gummata, or other syphilitic lesions; and that whilst a few cases have given a positive Wassermann reaction, in the great majority this reaction has been negative. Careful consideration of all the evidence in favour of syphilis and my own observations of a large number of cases have convinced me that mongolism cannot be attributed to this cause.

Another suggestion, advanced by Dr. Crookshank,* is that mongolism is a throw-back to a previous ancestral type, and that it occurs in stocks in which there is an infusion of Mongolian blood. But even if it could be shown that the blood of the Central Asian Mongol was present in the genealogical tree of every case of mongolism (which seems unlikely, even if we agree with Crookshank that there is more of this blood among the European nations than is generally thought), this would not suffice to explain mongolism. As has already been remarked, the resemblance of these persons to racial mongols is really a very superficial one, and, as we shall see presently, there are many more points of difference than of likeness. The great majority (90 to 95 per cent.) of children born of racial Mongolians are characterized by a slaty-blue patch or patches over the scrotum or buttocks, which are present at birth and gradually disappear. These so-called "Mongolian blue patches" have very occasionally been seen in children of European parents, but only very rarely in cases of mongolism. Moreover, mongolism, whether it occurs in white, yellow or black races, is always associated with mental deficiency, and is clearly a pathological and not a racial condition. Finally, if this theory was ever seriously entertianed by any

* F. G. Crookshank, "The Mongol in our Midst," 1931.

one but its author, it seems to me to be completely disproved by a research made by Dr. L. S. Penrose* upon the blood-types of 200 cases of mongolism. Penrose found that the types conformed to those usual in English children and were practically identical with the blood types of 200 non-mongol defectives examined as a control. Dr. Bixby,† from an examination of the blood group of 125 mongols in U.S.A., also found that they were practically the same as in the general American population.

Dr. Van der Scheer suggests that mongolism is the result of increased pressure exerted upon the fœtus during the sixth and seventh weeks by an abnormally small and rigid amniotic membrane. He is of the opinion that this rigidity prevents extension of the head, thereby interfering with the growth of the pituitary gland and other basal structures, and so causing the defective mental and physical growth. Dr. M. Jansen supports this view, and even goes further. He considers that there is a close causal relationship between mongolism and achondroplasia; that if this pressure operates between the third and sixth weeks it will produce the latter, and if between the sixth and seventh weeks it will produce mongolism. Not only is there no evidence of any such localized lesions in mongolism, but it is exceedingly difficult to understand on this hypothesis why, when the mongol is always mentally defective, the achondroplasic should usually be mentally normal. Since in the achondroplasic the alleged pressure occurs at an earlier developmental period, one would expect him to present an even severer grade of mental defect.

Prof. E. Mayerhofer‡ advanced the theory that mongolism was caused by the implantation of the fertilized ovum upon a uterine mucosa which had been damaged by abortifacients or curettage, and Dr. Schachter§ and Dr. M. Engler‖ support this view of "*nidation.*" I have made inquiries of a number of gynæcologists regarding this and they all tell me that curettage is one of the commonest operations performed on women and that they have never known it to be followed by any special incidence of mongolism. I have also made inquiries of a large number of the mothers of

* L. S. Penrose, *Lancet*, February 20, 1932, p. 394.

† E. M. Bixby, *Amer. Journ. of Psycho-Asthenics*, vol. xliv., 1939.

‡ E. Mayerhofer, *Ann. Paediat.*, 1939.

§ M. Schachter, *Rev. Franc. de Pédiat.*, 1936.

‖ M. Engler, *Journ. Neurol. and Psychiat.*, January and April, 1944; also *Proc. Roy. Soc. Med.*, March, 1945.

mongol children and have failed to ascertain any significant amount of curettage, miscarriages, or uterine disease.

It is apparent that none of these theories affords a satisfactory explanation of the cause of this curious condition; what, then, is its cause? In seeking a possible explanation it must be remembered that, although some of the signs and symptoms associated with mongolism may perhaps be secondary to, and a consequence of, a disordered metabolism of the patient, yet there is no doubt that most of them are developmental in origin. They are, in fact, due either to an inherent inability of the embryo to develop which has been present before fertilization, or to some extrinsic factor which has interfered with its development after fertilization and before the seventh or eighth week of fœtal life. Many of the characteristics of mongols are indeed suggestive of the persistence of a phase of fœtal life, and they have been termed " unfinished " children. But they are much more than this. Not only do they never grow up either mentally or physically; but they begin to age sooner, and they die earlier than do even ordinary aments—in other words, their tissues are lacking in vitality and durability.

As to whether the cause lies in the germ cell or in the environment, I was at one time inclined to think that, whilst an inherited psychopathic tendency was a contributory factor, the peculiar physical features might be due to the lack of some special nutritive material in the mother's blood which operated upon the embryo during the early weeks after fertilization. But further investigation of cases, particularly of cases of twins, one of whom was a mongol and the other normal, has caused me to think that the abnormality is inherent in the germ and that mongolism is probably the result of some change having been produced in the ovum before its fertilization. It is for this reason that I have included it in the group of primary amentia.

As we have seen in discussing the ætiology of primary amentia, there is reason to think that many adverse factors of the environment may induce pathological germ mutations. But the marked likeness which exists between most mongols, so marked that they might almost be thought to be members of the same family, strongly suggests that the germ change is due to some one particular cause, and the difficulty is to say what this cause may be. Unfortunately, our knowledge of this subject is so scanty that it is impossible to do more than hazard a suggestion. It seems probable, however, that

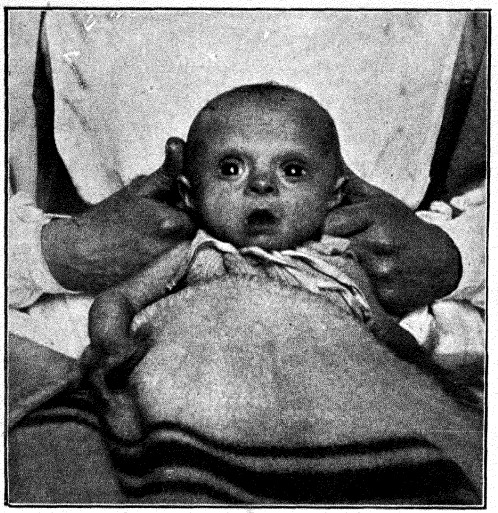
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A group of Mongols.

(*Photograph by Dr. Brushfield.*)

MONGOLISM.

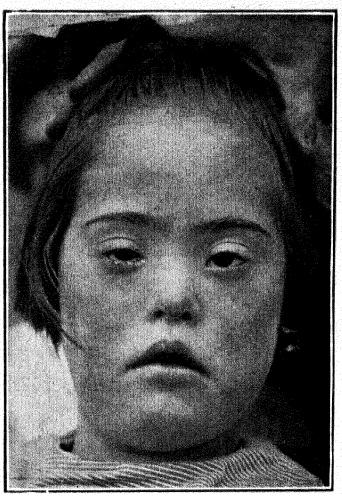


Female Mongol. Age 3 months.
(*From a photograph lent by Dr. J. Thomson.*)

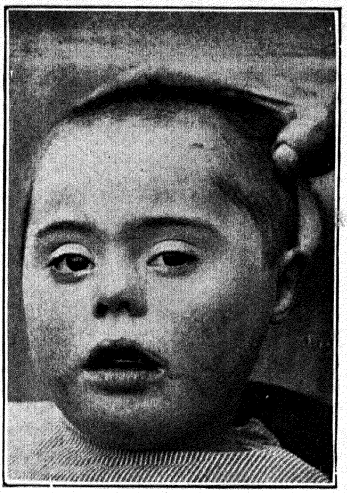


Female Mongol. Age 14 months.
(*Photograph by Dr. Muntarbhorn.*)

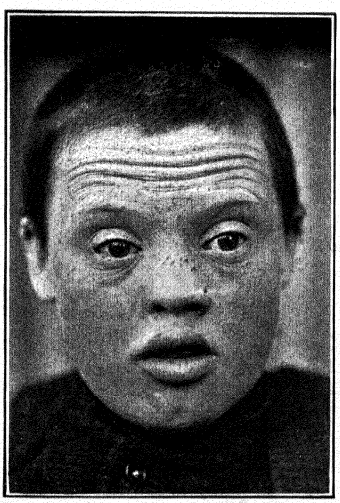
MONGOLISM.



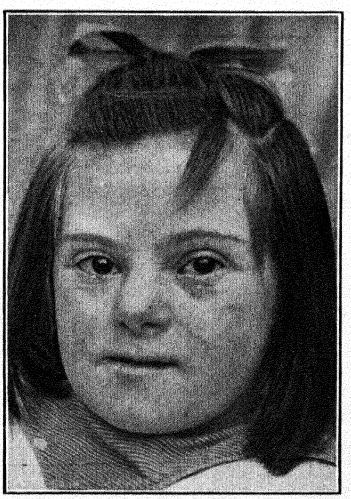
Female. Age 8 years.
Imbecile grade.



Male. Age 3½ years.
Imbecile grade.



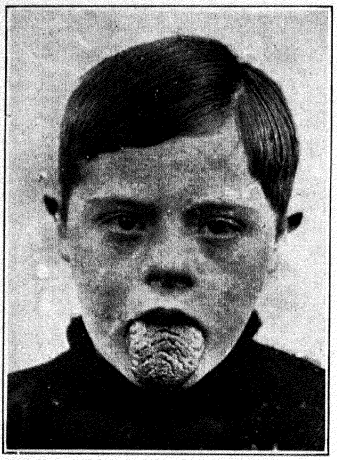
Male. Age 14 years. Imbecile grade.
Complicated by hypothyroidism.



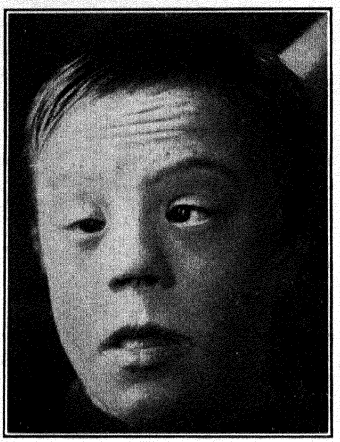
Female. Age 10 years.
High-grade imbecile.

(*Photographs by Dr. Brushfield.*)

MONGOLISM.



Enlarged and fissured tongue.

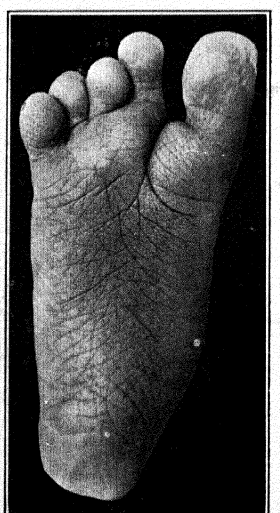


Double epicanthus.



Hand: Showing short little finger and palmar lines.

(*Photograph by Mr. J. E. Stevens.*)



Foot: Showing wide cleft and furrow between first and second toes.

(*Photograph by Dr. Brushfield.*)

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the vitality and developmental potentiality of the ovum, like other cells, may be influenced by special forms of maternal nutriment, such as circulating vitamins and endocrine secretions, and there is clinical evidence that individuals may suffer from a temporary defect of these. Although it must be admitted that the cause of mongolism still remains a mystery, it seems to me not improbable that it may eventually be shown to lie in a special impairment of the vitality of the ovum consequent on a temporary defect or dysfunction of the endocrine glands of the mother. It is of interest in this connection to note, as I have already mentioned, that primary aments, whose defect is due to psychopathic inheritance, not infrequently show one or more of the characteristics of mongols; also that cases of partial mongolism occur, and that some of the features of mongolism are occasionally seen in the mentally normal. It is conceivable that these peculiarities, which reach their maximum in mongolism, may be due to some slight but similar nutritive deficiency affecting the ovum.

Pathology.

I have examined the brains of several mongols dying at ages ranging from fourteen days to twelve years, and they have invariably been abnormally small, rounded and characterized by a simple convolution pattern and shallow sulci. Dr. R. M. Stewart has drawn my attention to a particular and disproportionate narrowness of the first temporal convolution which is frequently present. I have found no evidence of any vascular, meningeal or inflammatory changes, and the general microscopical appearances have been those of defective neuronic development similar to that present in ordinary primary aments. The cortical grey matter has been thinner; there have been fewer pyramidal cells and a greater proportion of neuroblasts; and many of the cells have been in various stages of developmental imperfection with a paucity of processes. The tangential fibres have been fewer in number; but there has been no sclerosis. The cerebellum has shown a paucity and irregular arrangement of Purkinje's cells, and the cerebellum and brain stem were often disproportionately small.

A. Meyer and T. B. Jones* examined the brains of fifteen mongols and found that in ten of them there was a considerable increase of

* A. Meyer and T. B. Jones, *Journ. Mental Science*, March, 1939.

fibrous glia, particularly marked in the white matter of the cerebrum, cerebellum, pons and medulla. In some of the cases it occurred as a diffuse overgrowth, in others as circumscribed patches. Since it did not occur in one-third of the cases it is clear that it cannot be regarded as the substrate of the defect, but as an accidental, though it would appear frequent, complication.

A large amount of investigation has been made into the condition of the endocrine glands. In a few cases the thyroid has been found small, imperfectly developed and fibrous. Hypoplasia of the chromaffin portion of the suprarenals has also been noticed. C. E. Benda,* from his examination of the pituitary gland in fourteen cases, is of the opinion that mongolism is characterized by a definite developmental failure of this gland, as shown by a marked lack of basophiles and an increased number of acidophiles. These findings await confirmation.

Description.

Physical Condition.—It has been stated that mongolism consists of an assemblage of physical peculiarities rather than of features which are distinctive in themselves, and, as a matter of fact, I do not think that there is a single anomaly found in this condition which I have not seen in an ordinary ament. Whilst in every case of mongolism many of the peculiarities to be described are present, the following description is to be regarded as a catalogue of conditions which occur in the class as a whole rather than a clinical picture of any particular individual. There are, however, certain parts of the body which always show abnormalities, and I think it may be said that in every case of mongolism there will be found some peculiarity of the skull, eyes, tongue, and hands; the other peculiarities are frequent but not invariable. A few aments occur who, owing to the possession of some of these features, seem to occupy an intermediate position between the true mongol and the ordinary primary ament. These are termed " semi-mongols " or " mongoloids."

The *skull* is small, rounded, and brachycephalic; the frontal and occipital regions are flattened and tend to be parallel, and the occipital protuberance is absent or very poorly developed. The anterior fontanelle is late in closing, and has been noticed to be open at the eighth year.

* C. E. Benda, *Amer. Journ. of Psycho-Asthenics*, 1938, vol. xliii.

The *eyes* present several abnormalities; in about three-quarters of all cases the palpebral fissures are narrow and have a downward and inward slope similar to that in the Mongolian race. Epicanthus occurs in between 25 and 30 per cent. of cases. Convergent strabismus occurs in the majority. Hypermetropia, myopia, and astigmatism are frequent. Nystagmus is not uncommon in the first few months of life, but tends to disappear as the child grows up. Cataract is fairly common; it first appears in the form of small dots, which gradually coalesce to form a lamellar cataract. The irises are often marked by a peculiarly brilliant form of speckling. There is a marked tendency to conjunctivitis, blepharitis, and ectropion.

The *tongue* in most cases is constantly protruded and withdrawn from the time of birth. In fact, it is usually this peculiarity which, first attracts attention. In many cases it is large and flabby, in others narrow and pointed. It has a coarsely granular appearance, due to hypertrophy of the circumvallate papillæ. These usually begin to enlarge between the third and ninth month, but sometimes not until the end of the second year. In most cases marked fissures develop after the second year; these are either transverse or of " gravy-dish " pattern.

The *hands* are broad, flabby, clumsy-looking, and have a curious boggy feel. The fingers are spread out in trident fashion. The thumbs and little fingers are often abnormally short. In a majority of cases the little finger ends midway between the last and middle interphalangeal joints of the third finger, towards which it is curved. The palmar creases are abnormal, that round the thenar eminence being often represented by a number of irregular lines and the two upper ones being blended into a straight furrow (see plate). The ossification of the carpal bones is irregular and often delayed.

The *feet* are often marked by a large cleft between the first and second toes, and by a deep furrow running from this gap on to the sole. Syndactyly and supernumerary toes are sometimes seen. The *nose* is short and squat, with a depressed bridge. The *lips* are often thickened, everted, and cracked. The *cheeks* are often marked by a bright red flush. The *ears* in some cases are small and badly developed; in others they are large and outstanding; they are often simply convoluted and asymmetrical; the bolules are often absent or are small and adherent. The *skin* is soft and smooth in infancy, but later becomes dry and rough. The *hair* is at first soft, but later becomes dry and scanty. Patches of alopæcia areata are not

uncommon. The *palate* is often high and narrow, and adenoids and enlarged tonsils are frequent. The *teeth* are delayed and irregular in their eruption. The *abdomen* is large and tumid, and umbilical hernia is common. The *joints* have an extraordinary range of mobility, partly due to laxness of the ligaments and partly to muscular hypotonus. Knock-knee and flat-foot are common. The *stature* is always below the normal. The *genital organs* are small and rudimentary, and the descent of the testes and menstruation are usually delayed. The *heart* is the site of numerous fœtal conditions, the chief of these being patency of the foramen ovale, interventricular septum and ductus arteriosus, and aortic and pulmonary stenosis. These conditions give rise to marked cyanosis and the usual signs of congenital heart disease. The *circulation* is usually poor, the extremities being blue and cold, with a great liability to sores and chilblains. *Respiration* tends to be shallow, and is usually very irregular in rhythm. The *voice* is commonly very harsh and guttural, and speech is of a peculiarly explosive character. Most mongols are very sensitive to extremes of temperature, they are prone to catarrh of mucous membranes and to streptococcal infections, and they do badly in acute illnesses. Epilepsy is very rarely seen. In the majority of cases the physical signs persist throughout life, but in some instances they tend gradually to become less marked. I have seen a number of cases in which mongolism has been accompanied by definite signs of hypothyroidism.

Mental Condition.—The mental characteristics of mongols are not nearly so distinctive as the physical; nevertheless, as a class they present certain general features. In infancy many of them tend to be placid and inert, and the mother is apt to congratulate herself upon the goodness of her child; others, however, are restless and constantly grimacing. But in all there is retardation of mental development, and sitting up, walking and talking are all markedly delayed. Many mongols do not talk until six years old, or later. For a time, as the child grows up, he becomes less inert and shows more curiosity; he is attracted by everything round him, is full of initiative, is very observant, and looks bright and intelligent; he is very fond of drill and dancing, and shows an aptness for mimicry, a marked sense of rhythm, and a remarkable fondness for music. In spite of this promise the passage of time only serves to make his defect more prominent, and he is gradually left further and further behind by his normal brothers and sisters. But he remains of a

happy and cheerful disposition; he is affectionate, good-tempered, and easily amused; he likes to be taken notice of, and he is usually a great favourite with all who have to do with him. The mongol may be mischievous and given to childish pranks, but it is very rare to find him guilty of bad temper or of any of the vices or bad habits which characterize so many of the ordinary defectives.

The degree of mental defect varies very considerably, and on the whole I am inclined to think that there is a direct relation between this and the intensity of the physical signs. A few are pronounced idiots, the majority belong to the imbecile grade of defect, and a few are merely feeble-minded. The imbeciles rarely prove capable of anything beyond the simplest routine outdoor work, and in the performance of this they are often surpassed by ordinary imbeciles of less promising appearance. The milder grades, on the other hand, learn to read, write and perform simple duties with a considerable amount of intelligence. They are generally very poor at arithmetic, and the clumsiness of their hands and their general defect of muscular co-ordination prevent the performance of any kind of work requiring dexterity; but they take a part in the ordinary family life, they perform little household duties, and I know some who can manage a weaving machine or perform other kinds of semi-skilled work in quite a creditable manner.

Diagnosis.

The chief conditions likely to be confused with mongolism are rickets, achondroplasia, and cretinism. *Rickets* seldom appears before the fifth or sixth months, and although at this age there is a certain superficial resemblance to the mongol child, there are many more points of difference. Careful examination will show that there is no marked mental retardation, and that the peculiar signs of mongolism are not present. It will also reveal the enlargement of the epiphyses, the beading of the ribs, Harrison's sulcus, the square head with prominent parietal and frontal bosses, and other characteristic signs of rickets. In *achondroplasia* there is usually no mental retardation, and none of the signs of mongolism. The body is dwarfed, but this is entirely due to a disproportionate shortening of the limbs, the head and trunk being of normal size. The chief difficulty experienced is in regard to *cretinism*, and there is no doubt that in the early years of life many mongols are thought

to be cretins, and hopes of cure are held out to the parents in consequence of this mistake. It may be useful, therefore, to set out the chief differences in tabular form.

TABLE IX.

TABLE OF DIFFERENCES BETWEEN MONGOLISM AND CRETINISM.

	Mongolism.	*Cretinism.*
Skull	Small and rounded.	Not small, and of normal shape.
Eyes	Oblique and narrow palpebral fissures. Epicanthus, strabismus, and speckled irises common. Blepharitis frequent.	Palpebral fissures horizontal and small, owing to swollen eyelids.
Tongue ..	Alternately protruded and withdrawn from birth. Hypertrophied papillæ and fissures present.	Constant protrusion, not usually earlier than sixth month. Tongue normal in appearance.
Nose	Squat and depressed.	Widely expanded alæ, pug-shaped, with nostrils pointing outwards.
Forehead ..	Smooth.	Horizontal wrinkles.
Skin	Smooth at first, later dry and scaly. Flushed cheeks often present.	Dry and scaly, boggy and redundant. Complexion sallow or olive-tinted.
Hands	Short and stumpy, with spreading and tapering fingers; short and incurved little fingers; abnormal palmar creases.	Stumpy and boggy, but little fingers and palmar creases not abnormal.
Feet	Wide gap between first and second toes, with deep furrow.	No enlarged gap, but skin very loose around ankles and on dorsum.
Joints	Hyperextensile.	Normal.
Thyroid gland ..	Usually palpable.	Absent, but fatty tumours in neck.
Expression ..	Vivacious, mobile, observant.	Immobile, heavy, apathetic.
Temperature ..	Normal.	Subnormal.
Mucous membranes ..	Recurrent catarrhs.	Normal.
Result of thyroid treatment ..	No change in physical signs.	Rapid disappearance of physical signs.

Prognosis and Treatment.

The prognosis as to life is not good. There is no doubt that many mongols die in infancy, and that many of those who survive this period succumb during the early years of the second decade. A small proportion live into the third decade, and a still smaller one

until past middle age. On the whole, I think that the longest lived are those in whom the physical signs are the least pronounced, but much depends upon their mode of life and the care they receive. Dr. Langdon Down had in his training institution at Normansfield sixteen mongols over twenty-one years of age, three of whom were between forty and fifty, two between fifty and sixty, and one man was aged sixty-three. The chief causes of death are congenital heart disease and diseases of the respiratory system, especially pneumonia, bronchitis, and tuberculosis.

With regard to the outlook as to mental improvement, it may be said that if the child is definitely suffering from mongolism, then, no matter how bright and apparently intelligent he may be, he will certainly be permanently mentally defective. The final degree of defect will probably be largely beyond our control, since it will be dependent upon the intensity of the pathological process, some measure of which is afforded by the severity of the physical signs. In many cases, however, considerable improvement will result from training and this should always be begun as early as possible. During the first few years of life it can be carried out at home, provided the conditions are satisfactory; but usually by the age of five or six the child will derive more benefit by attending a suitable special school. The general health must receive careful attention. All mongols require abundance of sun and fresh air and adequate clothing to protect them against cold; enlarged tonsils and adenoids, and defects of vision, must receive treatment. With regard to drugs, many remedies, particularly endocrine glands, have been used. At one time I thought that these were beneficial, and in the not rare cases in which some degree of hypothyroidism is present thyroid gland may be given with advantage. But apart from this, as a result of careful observation over a number of years of mongols who have, and who have not, been so treated, I have come to the conclusion that gland extracts, whether administered orally or by injection, really have no effect upon the condition. W. Wieser* and some others claim striking improvement from repeated X-ray irradiation of the skull; but these claims have not been confirmed by other workers, nor has the efficacy of any of the other much-vaunted Continental special methods of treatment.

* W. Wieser, *München med. Wochenschrift*, 1931.

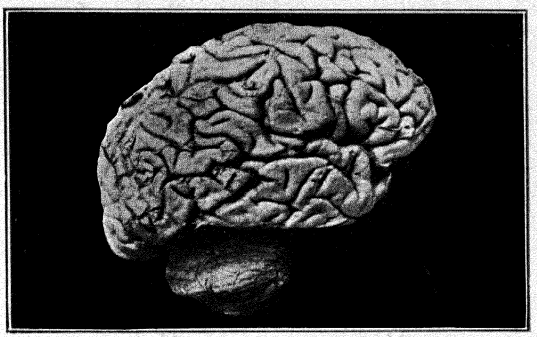
MICROCEPHALY.

The term " microcephaly " or " microcephalic amentia " is usually applied to a mentally defective person whose skull, on completion of development, is less than 17 inches in its greatest circumference. The criterion, however, is not entirely one of size, but also of a certain peculiarity of configuration, and there are persons to whom I think the term may rightly be applied with a cranial circumference greater than this. Most microcephalics are low-grade aments, being either idiots or imbeciles. Their number is not large, probably not more than about 5 per cent. of all defective children under ten years of age. If they are considered in relation to aments of all ages, the proportion is considerably less than this, probably not more than 0·5 per cent., owing to the fact that many microcephalics die in childhood.

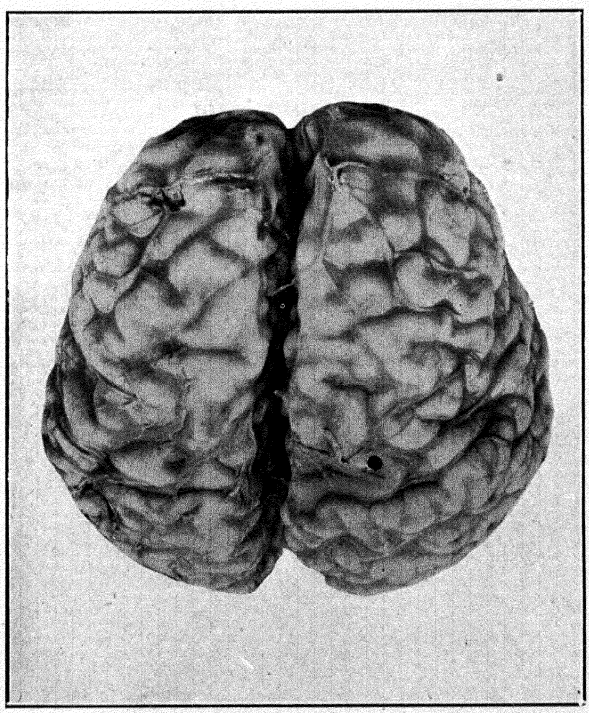
Causation.—The condition is one which has attracted much attention, and several views have been advanced as to its causation. One of the earliest, suggested by C. Vogt in 1867, was that it was due to atavism, or reversion to a primitive human or pre-human type. Many cases were examined, and most minute dissections made by accomplished anatomists on the Continent and in this country. Conclusive evidence was adduced in support of the view, and equally conclusive facts in denial of it. It was at a time when the evolutionary theory was attracting widespread attention, and it was not to be wondered at that the curious appearance of microcephalics should cause them to be looked upon as instances of a reversion to a simian type. It is unnecessary to enter into the pros and cons of the argument; it is sufficient to state that the fact has now been established, as a result of many examinations, that microcephaly is not an atavistic variation, but a pathological condition due to cerebral hypoplasia.

Another theory was that microcephaly was due to a premature union of the cranial sutures. Baillarger, writing in 1857, was the author of this view, and he enunciated it on the strength of some apparently very definite statements, made by the mothers of microcephalic children, that the anterior fontanelle had been closed at birth; also from his own examination of some cases in which cranial synostosis was present. Although it has since been found that in many microcephalics the anterior fontanelle is not closed at birth, the theory is one which gives rise to some interesting speculations

BRAINS IN MONGOLISM.



Showing the spherical, simply convoluted cerebrum with small cerebellum.



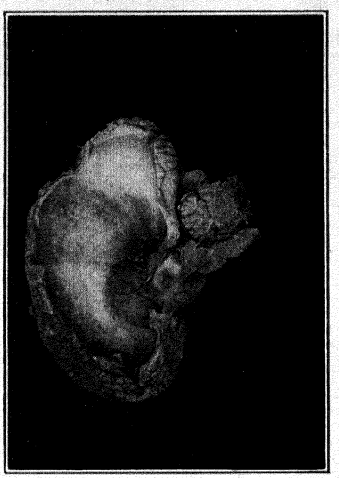
Showing simply convoluted spherical cerebrum.
(*Photographs by Mr. J. E. Stevens.*)

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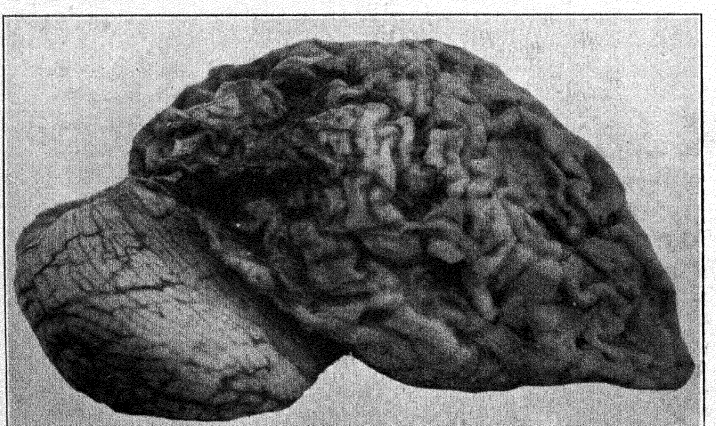
BRAINS IN MICROCEPHALY.



Showing small brain with absence of secondary gyri.



Showing largely dilated lateral ventricle (internal hydrocephalus) consequent on cerebral hypoplasia.



Showing cerebral hypoplasia with microgyria.

(*Photographs by Mr. J. E. Stevens.*)

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as to the relationship between early cranial synostosis and brain growth. There is no doubt that conditions of dystrophy of the cranial bones occur which result in premature union of the sutures, and oxycephaly, to be presently described, is a case in point. In most cases of oxycephaly, however, the intelligence is normal; the inherent developmental potentiality of the brain is therefore presumably unimpaired, and it is able to overcome the constricting effects of the bony union by thinning the skull vault and distending it in an upward direction, thereby producing the characteristic "tower skull." But should it happen that this developmental potentiality of the brain is diminished, no such compensation can take place, and if early synostosis occurs it will result in microcephaly. But it is very doubtful, in my opinion, whether cranial synostosis can arrest the growth of a normal vigorous brain, and it seems more probable that, in those cases of microcephaly in which premature cranial synostosis has been present, such is the result and not the cause of the defective brain growth. Dr. R. M. Stewart, of Leavesden, has in his care a microcephalic who also shows some of the signs of oxycephaly, presumably due to a partial attempt of the brain to compensate for the constriction.

D. P. Murphy,* of Philadelphia, from a study of the recorded instances in which mothers had been subjected during pregnancy to pelvic irradiation with X-rays and radium, found that a considerable proportion of the offspring presented various developmental abnormalities. These were most frequently in the form of arrested cerebral development, particularly of "microcephaly." Although Murphy does not state whether by this he means merely a small skull or true microcephaly as usually understood, and although there is no information as to the inheritance in the cases, it may be accepted that exposure of the embryo to X-rays and radium may interfere with its growth and produce developmental anomalies. It is clear, however, from a study of cases of microcephaly, that the great majority occur quite independently of any such factor.

I think there is no doubt that most cases of microcephaly are the result of a pathological variation of the germ cell similar to that present in ordinary primary amentia, although in some instances abnormalities of the fœtal environment may possibly be present in addition. In most of those I have examined there was a pronounced psychopathic family history, other siblings were often

* D. P Murphy, *Surg., Gynec. and Obstet.*, vol. xlvii., 1928.

mentally abnormal, and in some instances one or more of them suffered from the same condition. Houzé* has recorded a family in which two children, their father and grandfather, were all microcephalics. Larsen† says that in five of his cases of microcephaly there were several microcephalics in the family, and that in two cases there was another mentally defective child in the family in whom the skull measurements were less than normal, although they were not typical microcephalics.

Pathology.—The essential pathological condition is hypoplasia of the cerebral hemispheres, to a less extent of the spinal cord, and to a still less extent of the cerebellum. The under-development is very obvious to the naked eye, and whilst affecting the whole cerebrum, is most marked in the pre-frontal, parietal, and occipital lobes. Although the general configuration of the hemispheres is considerably distorted, it is usually possible to trace the primary sulci, but a deficiency of the secondary gyri leads to a marked simplicity of the convolutional pattern. In the majority of cases areas of localized cortical agenesis known as "microgyria" are present; indeed, Brushfield and Wyatt‡ found this condition in all of the ten microcephalic brains examined by them. True porencephaly is not infrequent, and gross developmental anomalies of the corpus callosum, basal ganglia, and other structures are common. Cortical lamination can often be seen to be imperfect and irregular with the naked eye. The microscope reveals a marked paucity of cortical cells, whilst many of those present show pronounced irregularity of arrangement and imperfection of development. In addition to these gross and microscopical developmental anomalies, a large proportion of cases are complicated by other morbid processes. The chief of these are internal and external hydrocephalus, false porencephalus, gliosis resulting in areas of atrophic sclerosis, thickening and adhesion of the dura, thickening and opacity of the pia

* Houzé, "A Case of Hereditary Microcephalus," *Bull. de la Soc. d'Anthrop de Bruxelles*, tome xxi.

† Larsen, *op. cit.* In addition to these, C. Bernstein (*Journ. Heredity*, 1922) records 5 cases of microcephaly in a fraternity of ten. G. L. O. Frey (*Archiv. für Anthropol.*, 1900) records 4 cases in a fraternity of eight. Hara Sei (*Fol. Anatom. Japonica*, 1927) records 3 male microcephalics in a fraternity of six. L. S. Penrose in his "study of 1,280 cases of mental defect" found that one microcephalic had two microcephalic sibs, another had one, and two microcephalics were twins.

‡ T. Brushfield and W. Wyatt, "Microcephaly," *Brit. Journ. Child. Diseases*, January-March, 1927.

subarachnoid cysts, and granulation of the ependyma. In the majority of cases the spinal cord is also under-developed, being much thinner and shorter than normal. On microscopical examination, the defect is seen to be greatest in the pyramidal tracts and columns of Goll, the anterior columns and direct cerebellar tracts being less affected. The cells of the anterior horns are fewer in number and show developmental imperfections. In the cerebellum, the hypoplasia and irregularity of development are much less pronounced.

The weight of the brain varies very much in these cases. The lightest on record is the one described by Dr. Sander, as mentioned by Ireland, which weighed only 170 grammes (about 6 ounces). A case described by Dr. Fletcher Beach weighed 198·4 grammes, whilst the brain of Helene Becker weighed 219 grammes. But these are somewhat exceptional examples, and typical microcephaly may be present with a brain weighing several hundred grammes more than these.

Description—*Physical Condition.*—The two chief clinical distinguishing features of this variety of amentia are the peculiar configuration of the skull and the (usually) very small stature. As a result of the cerebral hypoplasia, there is a marked recession of the frontal and a flattening of the occipital region of the cranium, which in consequence shelves away in a curiously "sugar-loaf" or cone-like manner. This shape is always present in microcephaly, and, taken in conjunction with the receding chin, gives a very characteristic and bird-like appearance to these creatures. (See Illustrations.) In consequence of the diminished surface of bone to be covered, the scalp is nearly always extraordinarily thick and redundant. In some cases it is permanently thrown into a series of deep furrows running antero-posteriorly, a condition which was first described in this country by Dr. T. W. McDowall, and which seems to be confined to microcephalics. In addition the hair is usually extraordinarily coarse and wiry, and on more than one occasion I have known the teeth of the clipper to be broken whilst the hair was being cut.

As already remarked, the cranial circumference in these cases varies very much, and the diagnostic feature is one of shape rather than of size. There have been several cases recorded in which the greatest circumference was 15 inches or under; on the other hand, I have known several typical microcephalics with a cranial circumference of 19 inches and more, and one whose skull measured as

much as 21 inches. It is to be remembered that the actual brain capacity is less than a mere circumferential measurement would suggest, by reason of the deficiency being chiefly in the upper parts of the skull.

The second characteristic, that of diminished stature, is not so constant; nevertheless, as a class, microcephalics are the smallest of the varieties of amentia, and many of them may be called dwarfs. Few grow to more than 5 feet, although "Joe" (described by Dr. Ireland) reached 5 feet 9 inches in his boots. But this is decidedly exceptional. Microcephalics seldom live to an advanced age; although "Joe" was sixty when he died, and O. Kaplan records a female microcephalic who lived to the age of eighty-nine.

Mental and Nervous Condition.—The intellectual capacity of these persons varies within very considerable limits, and there are microcephalic aments of each of the three degrees of deficiency. A considerable number are idiots, unable to do anything for themselves, unable to understand more than a few words, and incapable of speech. Others, and the majority, belong to the imbecile class, and are capable of understanding most of what is said to them, can say a few words, and can perform simple tasks. A few are merely feeble-minded. The case of "Joe" is probably the best example of the mildest degree of defect, for Dr. Ireland says that until after forty years of age he was apparently able to earn sufficient wages to maintain himself. I know several typical microcephalics amongst mentally defective children attending special schools who can read, write, do simple sums, and who probably possess sufficient intelligence to earn their living under supervision. One woman of this type, with a cranial circumference just under 17 inches, was one of the most industrious inmates of a county mental hospital.

The mental features common to most microcephalics are the absence of any sensory defect, a general vivacity, restlessness and muscular activity, a considerable capacity for imitation, and usually, an inability for sustained effort. In their perceptive faculties these persons often compare favourably with aments of considerably higher general intelligence, and many of them not only have remarkably good hearing and sight, but extremely quick powers of observation. The restlessness is sometimes expressed by the performance of peculiar actions, which have caused them to be likened to various animals. Thus, Lombroso describes a "bird man," a "rabbit man," and a "goose man." Their power of

mimicry is often very marked, and this, combined with their general alertness, causes them to be amongst the drollest inmates of the imbecile ward. There was a chattering, restless ament of this type at Darenth a few years ago, who was very pat in making remarks upon anything coming under his observation, and was a source of endless amusement to the attendants by his witticisms concerning one of them in particular. Another boy, aged eleven years, with a cranial circumference of 15¾ inches, was most adept in mimicking the various performers in the band.

In disposition the majority are affectionate and well-behaved. Many of them, before training, it is true are apt to be quarrelsome and difficult to manage, but they usually soon lose these propensities and become quite amenable to the discipline of an institution.

The majority of microcephalic idiots suffer from a condition of general helplessness, causing them to be unable to do anything for themselves; even many of imbecile grade experience considerable difficulty and are unsteady in walking. This does not appear to be due to actual paralysis (although I have seen a few cases with spastic paralysis and increased tendon reflexes), but to an imperfect development of the tracts of the spinal cord. About half of them are subject to epileptic fits.

In conclusion I may briefly cite the following examples of this interesting condition which have been recorded.*

Dr. Wilbur described (1857) an idiot aged twelve years, in the New York State Asylum, whose cranial circumference was only 13¼ inches. He was passionate, uncleanly in his habits, could distinguish a variety of forms and colours, knew the names of all objects in the schoolroom and about the house, and recognized a great number of pictures of objects. He made but little progress in speaking, and after being in the asylum five years, though improved in many respects, he was found incapable of further progress, and was dismissed.

Antonia Grandoni was described by Professor Filippo Cardona, of Milan (1870). She was a typical microcephalic, with a cranial circumference of 15 inches; her height was 49⅛ inches; and she died at the age of forty-one years. She had no sensory defect, in fact her hearing was very quick and her observation very keen. She understood what was said to her, and was able to converse. She had a good memory for persons and events, was of a sociable,

* For these particulars I am largely indebted to Dr. Ireland's work.

decidedly amorous and erotic disposition, and much addicted to dancing. Although definitely defective, she had sufficient intelligence to do simple domestic duties and to run errands; in fact, considering the extremely small size of her brain, her intelligence was altogether remarkable.

Helene Becker died of phthisis at the age of eight years, and a very careful and complete examination was made, and report published, by Dr. Bischoff of Munich (1873). The girl was a low-grade idiot; she knew her own name, but was practically incapable of understanding anything beyond, although she knew when people were angry with her. Her speech was limited to one word. She was very restless, always moving her hands and arms and the upper part of her body. The brain weighed 219 grammes. Another child in the family was microcephalic.

The "*bird man*," a microcephalic with a cranial circumference of 15 inches, was described by Professor Cesare Lombroso (1873). He was so named from a habit of chirping like a bird, hiding his head under his armpit, leaping on one leg, and stretching out his arms like wings. He was said to be wanting in touch, taste, and smell, was dirty in his habits, and given to coprophagy. Professor Lombroso also recorded two other microcephalics under the designation of the "rabbit man" and the "goose man," also the three brothers, *Nicolo, Serafino,* and *Giovanni Cerretti.* These were aged twenty-one years, thirteen years, and ten years, and had a skull circumference of $17\frac{3}{4}$, $16\frac{1}{2}$, and $16\frac{1}{4}$ inches respectively.

The "*Aztecs*" were a pair of microcephalic aments, boy and girl, of American-Indian origin, who were exhibited all over Europe and America for forty years, and who have been described at various periods by different writers, including Professor Owen. They were seen by Dr. Dalton when aged seven and five years respectively, and were described as being only able to repeat a few isolated words, but very excitable, vivacious, in almost constant motion, and full of curiosity. Their habits as regards feeding and taking care of themselves were those of children two or three years old. They were publicly married in London in 1867, but had no offsprings They were alive in 1893, but I have been unable to find any record of them since that time.

Freddy, who was under the observation of Dr. Shuttleworth for twenty years at the Royal Albert Asylum, died at the age of twenty-nine years, of phthisis. At the time of his death his height was

4 feet 8 inches, the cranial circumference was 15 inches, and the weight of the fresh brain was 12½ ounces. The cranial circumference at eight years was 14⅛ inches, and at twelve years 14½ inches. Dr. Shuttleworth describes him as manifesting good powers of observation, but only able to express himself in a few monosyllabic words. He had considerable will-power, and though it was found impossible to train him to much that was useful, he was in no sense a low-grade idiot. A very complete examination of this case was made and recorded by Professor J. D. Cunningham and Dr. T. Telford-Smith (1895).

Joe, who was examined by Dr. Ireland in the Lancaster Workhouse at the age of forty-five years, had a cranial circumference of 17 inches, and attained the unusual height of 5 feet 9 inches (in boots). Until eighteen months previously he had earned enough wages to keep himself, and he died at the age of sixty years, of phthisis. This case also was fully described by Cunningham and Telford-Smith.

In a district of the Punjab is a shrine to which are brought microcephalic imbeciles from all parts of the country to be placed under the care of Shah Daula, the incumbent saint. These creatures are named Shah Daula's " Rats," from their facial resemblance to this rodent, and they were first described by Ewens. There is a good deal of mystery attaching to their origin, but Ewens suspects that their numbers are kept up by practices which occur at the shrine. An account of them has been given by Couchoud.

Dr. C. Bernstein,* of Rome State School, New York, has given an account of the three brothers August, Charles, and Raymond Pin, all of whom were low-grade microcephalics in his institution. There were in all ten children in the family, and two others were also microcephalics; the parents were normal, and careful investigation of the family history failed to reveal any neuropathic inheritance It is probable that a number of the dwarfs which used to be exhibited in public have been microcephalics. But dwarfs such as Joseph Boruwlaski, Zimmermann, Jeffrey Hudson and Tom Thumb were markedly intelligent in spite of their small cranial capacity, and the explanation is doubtless that given by Hastings Gilford;† namely, that these latter were cases of ateleiosis in which the correlation

* C. Bernstein, *Journal of Heredity*, vol. xiii., No. 1, Washington, D.C., January, 1922.

† H. Gilford, " Disorders of Post-natal Growth and Development."

between size of brain and body was normal. A few cases have been recorded (*e.g.*, by C. Inaba, Hechst and others) in which even with a markedly disproportionate small brain the intelligence has been normal. It is, therefore, necessary to emphasize that microcephalic amentia is not merely the result of a defective quantity, but also of a defective quality of brain, and that in all the cases examined there has been found a pronounced paucity and imperfection of cortical neurones.

SCLEROTIC AMENTIA.

Cerebral sclerosis, due to overgrowth of neuroglia, is found post-mortem in a considerable number of cases of both the primary and secondary forms of amentia. In many of these it is devoid of clinical significance, and gives rise to no symptoms or signs by which it can be diagnosed, or even suspected, during life. But in a small proportion of cases it assumes such a special form, or attains to such a magnitude, as to constitute two distinct and fairly well recognizable clinical varieties of sclerotic amentia. These, which will here be described, are (1) *tuberous* or *nodular sclerosis*, in which the proliferation of glia occurs in more or less circumscribed nodules; and (2) *diffuse sclerosis*, in which the proliferation is diffused throughout a large area of one or both hemispheres.

TUBEROUS SCLEROSIS.

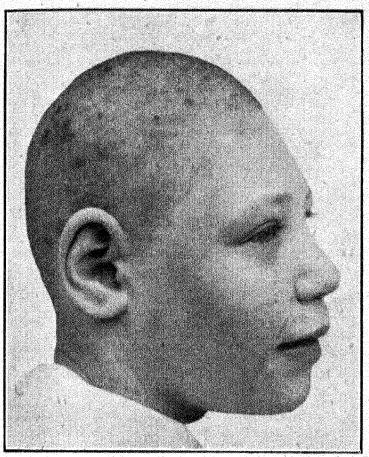
(Epiloia.)

The association of sclerotic nodules in the brain with mental defect and epilepsy, and its differentiation as a special type of amentia, was first recognized by Bourneville in 1880; since then the pathology and symptomatology of this condition have been described in considerable detail by many writers in Europe and America. Two of the most recent and complete accounts published in England are those by Brushfield and Wyatt,* and Macdonald Critchley and Earl;† but the literature regarding its many aspects is now very extensive. The term " epiloia " was suggested for it by Sherlock

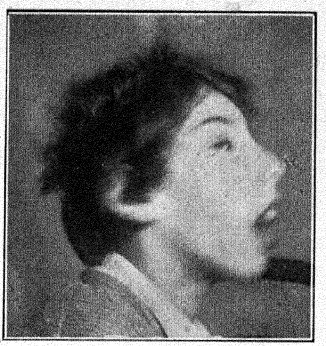
* Brushfield and Wyatt, *Brit. Journ. Child. Dis.*, July-September and October-December, 1926.

† Critchley and Earl, *Brain*, vol. lv., 1932, Part 3. This article gives a number of recent references.

MICROCEPHALY.



Microcephalic imbecile, age 14 years.



Microcephalic idiot, age 9½ years.

(*Photograph by Mr. Derek Martin.*)

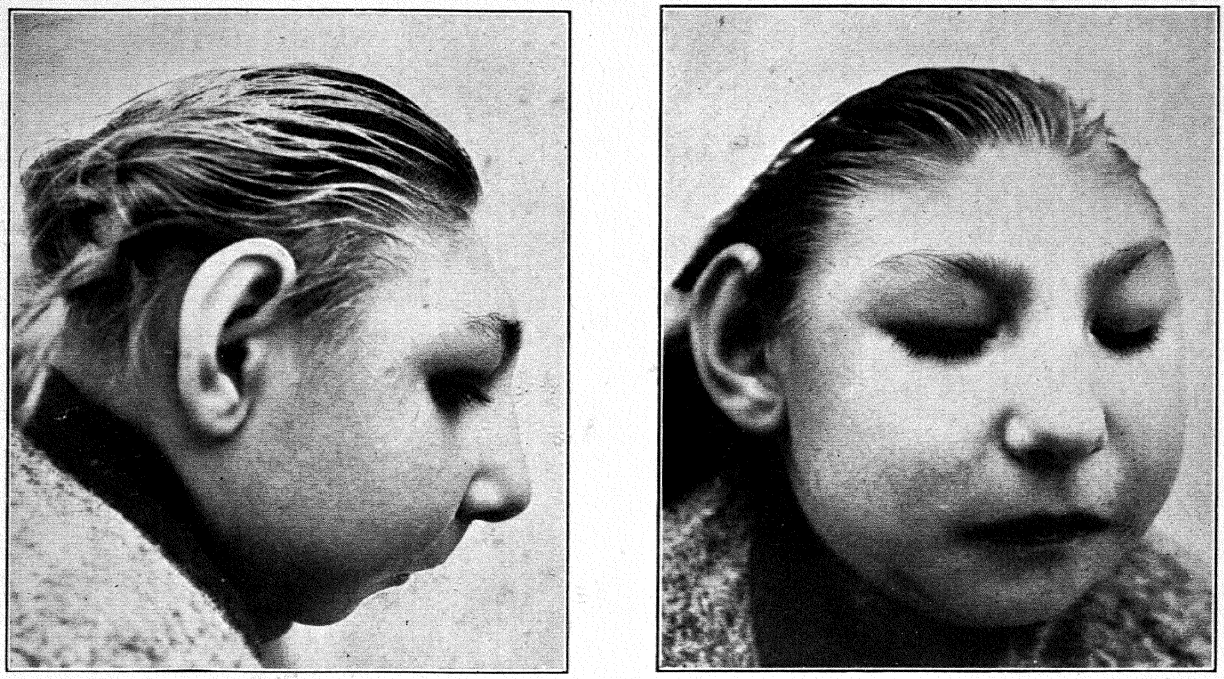




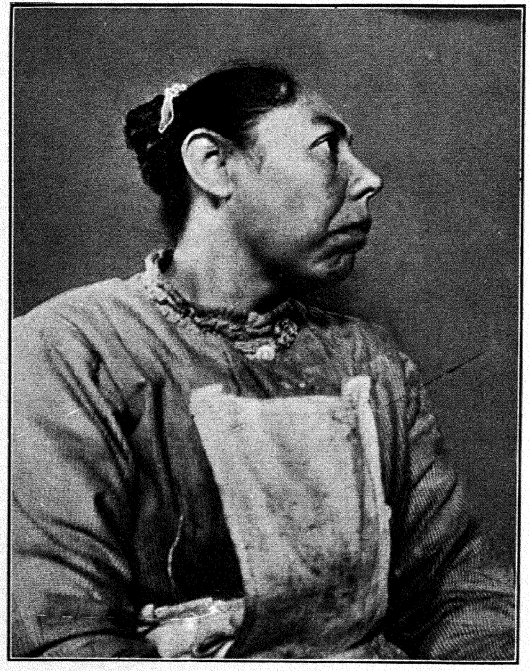
Profile and full face of microcephalic imbecile with partial oxycephaly.
Cranial circumference, 19 inches.

(*Photographs by Dr. J. N. Jacobson.*)

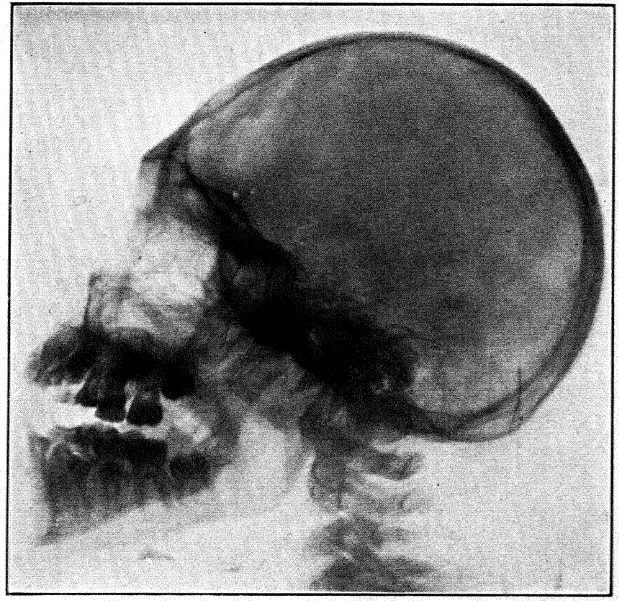
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Microcephalic female idiot. Age 6¼ years.
(*Photographs by Mr. J. E. Stevens.*)



Microcephalic high-grade imbecile; a tolerably good worker in the wards. Head circumference, 17 inches.

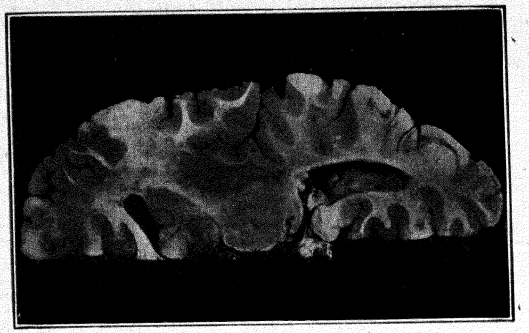


X-ray photograph of microcephalic skull, showing marked defect of frontal development.

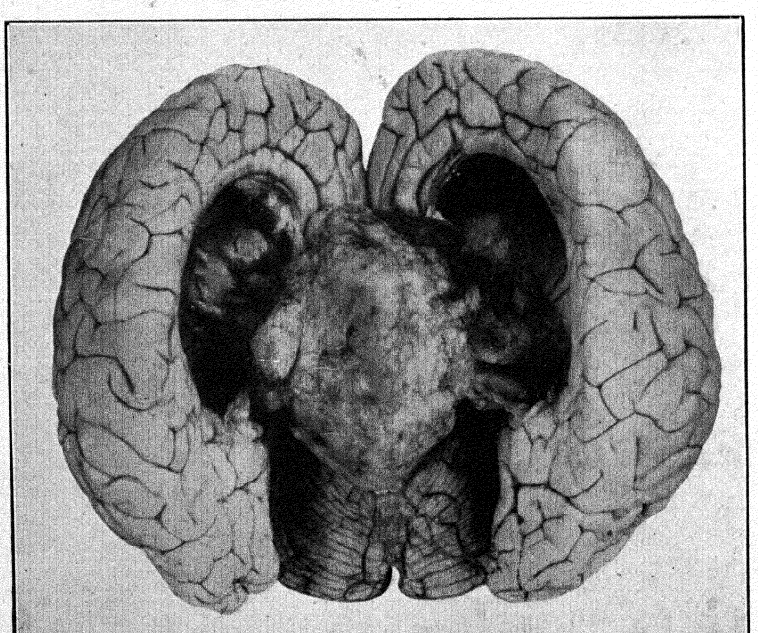
(Photograph by Dr. J. N. Jacobson.)

PLATE XXII.

BRAINS IN TUBEROUS SCLEROSIS.



Showing pale sclerotic areas in the grey cortical matter and nodules growing from the wall of the lateral ventricle.



Brain of imbecile, age 7½ years, showing nodules growing from the walls of the lateral ventricles and a large intraventricular tumour (spongioblastoma).

(*Photographs by Mr. J. E. Stevens.*)

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in 1911; but although this serves a useful purpose in distinguishing it from certain incomplete forms which will presently be mentioned, tuberous sclerosis still remains the usual designation of this variety of amentia.

Ætiology.

Although the pathogenesis is still somewhat obscure, it seems clear that the localized nodules of sclerosis in the brain from which this condition derives its name are manifestations of a widespread tendency to tumour formation occurring in certain families, and which is developmental and germinal in origin. This tendency is usually associated with a pronounced family psychopathic predisposition; although L. S. Penrose considers it to be due to a single dominant gene. The tissues of the body which are mainly affected by the tumours are those of ectodermal origin; but not infrequently those derived from the mesoderm and endoderm are also involved. The complete syndrome consists of tuberous sclerosis of the brain, mental defect, epilepsy, adenoma sebaceum and other anomalies of the skin, and tumours of various organs.

Most of the above-mentioned abnormalities enter into the picture of this variety of sclerotic amentia and will be described in detail presently; but before doing this, it is necessary to point out that the picture is often incomplete, and that some of these anomalies may occur singly; when this happens, however, other parts of the syndrome are often to be found in the relatives. Thus, tuberous sclerosis of the brain with mental defect and epilepsy may occur without any other pathological anomaly. I have myself examined the brains of several aments in which there was typical nodular sclerosis without adenoma sebaceum or tumours in any other situation, and similar cases have been described by Bourneville, Bonfigli, and others. In exceptional cases tuberous sclerosis may even be present without mental defect. Dr. R. M. Stewart* records the case of a woman, aged twenty-one, whose mental and physical condition had been perfectly normal in every way until she suddenly died in what was apparently an epileptic fit. At the post-mortem examination seventeen tumour masses were found in the brain which presented the usual features of tuberous sclerosis and were accompanied by considerable distortion and irregularity of arrangement

* R. M. Stewart, *British Medical Journal*, July 13, 1935, p. 60.

of the adjacent cortical cells. P. Schuster* has also described a case in which there was tuberous sclerosis, epilepsy, and adenoma sebaceum, but no intellectual impairment.

Similarly, adenoma sebaceum, whilst often described as an associate of mental defect, may occur in persons of normal mental development; although several such persons have had occasional epileptic fits or have become insane in later life. Tumours of the kidneys and of the heart have also been found in cases of nodular sclerosis of the brain; but without either mental defect or adenoma sebaceum.

The relationship of neurofibromatosis (von Recklinghausen's disease) to tuberous sclerosis is a matter of dispute; but if they are not actually variants of the same germ abnormality, there are certainly many points of resemblance between the two conditions. Thus, whilst multiple neurofibromata are rare in cases of ordinary tuberous sclerosis, they are sometimes associated with renal and retinal tumours, and not uncommonly with certain skin abnormalities, similar to those which occur in tuberous sclerosis. Further, in both conditions there is often a pronounced psychopathic family history, and it is stated by S. A. Preiser and C. B. Davenport† that 10 per cent. of patients suffering from neurofibromatosis are mentally deficient.

Clinical Description.

The *number* of cases of tuberous sclerosis is not large and probably at the most not more than 0·5 per cent. of all aments. In 2,412 defective children admitted to the Fountain Hospital during twelve years, Brushfield and Wyatt found only 16 cases (7 male and 9 female), or 0·66 per cent. There is usually a pronounced *psychopathic family history*; Critchley and Earl found this in 13 out of 20 cases. Tuberous sclerosis, adenoma sebaceum and epilepsy have also been noted in other members of the family. The condition is commoner in the lower social classes.

As seen in institutions for defectives, the three cardinal symptoms are *mental defect, epilepsy,* and *adenoma sebaceum.* Where this combination is present it is practically certain that the patient has tuberous sclerosis of the brain. In the absence of adenoma sebaceum or other skin anomalies, a positive diagnosis cannot be made

* P. Schuster, *Deut. Zeit. f. Nerv.*, 1914.

† Preiser and Davenport, *American Journ. of the Med. Sciences*, 1918.

during life; although post-mortem examination may subsequently reveal the presence of tuberous sclerosis of the brain and tumours of various internal organs.

Patients suffering from the condition are usually backward from birth, and sitting up, standing, walking, and speech are all delayed. Many patients never learn to talk or walk properly. Screaming fits are common in childhood. *Epileptic fits* are usually present from the first year and continue throughout life. They may be of either Jacksonian or the ordinary idiopathic variety; both major and minor attacks occur. They vary greatly in frequency; some patients have a number of fits every day, others have one or two only in the course of a year, others may have a complete remission for several years. In very exceptional cases fits may be entirely absent. In addition to the fits, some patients have head-nodding and irregular jerkings and forms of myoclonus. A general rigidity is often present and sometimes a localized paralysis.

The degree of *mental defect* is usually a pronounced one, most patients being idiots or imbeciles and incapable of any scholastic education or training. A few can be trained to perform simple routine tasks. As they grow up, however, the majority lose their acquirements and undergo a progressive mental deterioration. In the course of this they may pass into a state resembling catatonic schizophrenia with flexibilitas cerea. A few survive to adult age, but most of them die before reaching maturity. The commonest causes of death are status epilepticus, pneumonia and other respiratory diseases.

Adenoma sebaceum, which is present in the great majority of these patients, makes its appearance, according to Brushfield and Wyatt, about the fourth or fifth year. It begins as a few pale pink spots in each naso-labial fold, and these gradually spread to form a symmetrical pattern over each cheek. A few scattered nodules may also occur in the forehead and neck. They may be brownish or yellowish in colour, but are often bright red. They usually undergo a rapid increase after the second dentition. They are definite papular new growths varying in size from a pin-head to a small pea, and under the microscope are seen to consist mainly of sebaceous glands embedded in connective tissue with an abundant supply of capillary vessels.

In addition to adenoma sebaceum there are certain other skin lesions which frequently exist in these patients. One of the commonest is a collection of small, flattened *fibromata*. These may be

present in large numbers; they occur on all parts of the trunk, but are most abundant on the back. Another anomaly not infrequently seen is a raised and thickened area of skin known as a *shagreen patch*. These patches are commonest over the lumbo-sacral region, but occur elsewhere. In addition, many patients show areas of bronzing or of brown pigmentation known as *café au lait* patches, whilst others show white patches. *Nævi* are also occasionally seen. In a proportion of patients there are *tumours of the retina*. These are small, flat, oval or circular patches of a greyish-white colour, known as "phakomata"; they are visible with the ophthalmoscope.

Pathology.

The macro- and micro-scopic appearances of the brain have been described by many observers, and there is general agreement as to the findings. The sclerotic nodules vary in size from a small pea to a walnut and consist of more or less definitely circumscribed masses which are obvious to the naked eye and, owing to their hardness, still more so to the touch. They occur in two chief situations—namely, the cortex of the hemispheres and the walls of the lateral ventricles. In the cortex they exist as hard, pale masses in the grey and contiguous white matter; they often project slightly above the general level and the piâ is readily stripped from them without causing decortication. The older nodules may show a central umbilication due to contraction, and some of them may be in various stages of cystic degeneration or calcification. The tumours in the lateral ventricles usually grow from the optic thalami; they form isolated or coalescing protuberances of varying size which have been likened to candle gutterings. Nodules have occasionally been seen in the cerebellum, medulla and cord. Exceptionally, one of the sclerotic nodules may develop to such a size as to constitute a definite cerebral tumour, giving rise to papillœdema and the usual signs of increased intracranial pressure.

When examined under the microscope the sclerotic nodules are seen to merge without any definite line of demarcation into the surrounding tissue. The architecture of the adjacent cortex is markedly distorted; its nerve cells are reduced in number, and many of those present show alterations in size, shape and arrangement. The nodules themselves consist of a dense interlacement of neuroglia fibrils which are often arranged in curious bands and whorls.

There is usually an increase in the number of astrocytes, but no marked overgrowth of microglia. A characteristic feature of the nodules is the pressure within them of giant cells of a peculiar type. Some of these, according to Critchley and Earl, approximate in their structure to nerve cells and others to glia cells. Calcification and hyaline degeneration of the vessel walls have occasionally been seen, and in some cases there is slight thickening of the piâ and dura; but generally the vessels and membranes show no change.

In addition to the above changes in the brain, post-mortem examination often reveals the presence of tumours in one or more of the internal organs. The chief of these to be affected are the kidneys and heart; but they have also been found in the liver, spleen, lungs, duodenum, thyroid, thymus and retina. Renal tumours are the most frequent and are present in the majority of cases. They are usually bilateral and are of a mixed embryonal type; they are rarely large enough to be palpated or to give any sign of their presence during life. The tumours of the heart are rhabdomyomata and are usually small and multiple.

DIFFUSE SCLEROSIS.

In this form of sclerotic amentia the proliferation of neuroglia does not occur in circumscribed areas, but is diffused throughout the greater part of the brain. It is accompanied by imperfections of neuronic development similar to those which have been described in primary amentia. The cause of the sclerosis is unknown. Some writers regard it as the reaction to an inflammatory or degenerative process; but in many instances it appears to be a developmental anomaly. However produced, it seems more convenient to describe it in this place. Usually, the gliosis causes a considerable enlargement of the brain and skull, and produces the variety of amentia known as "hypertrophic." More rarely, the brain is smaller than normal, and it is then described as the "atrophic" variety.

Hypertrophic amentia is relatively rare, and is characterized by an enlargement of the brain and skull and by certain bodily and mental symptoms. The largest skull of this variety I have seen had a circumference of 25 inches. Owing, however, to an increase in density as well as size, the brain weight is often considerably greater than would be expected even from the size

of the skull. Dr. Fletcher Beach found the brain of a boy who died at the age of fifteen to weigh 62 ounces (1,755 grammes). Dr. Ireland quotes two cases described by Dr. Daniel Brunet. The brain of one, at the age of seventeen, weighed 1,632 grammes; that of the other, dying at the age of eighteen, weighed 1,780 grammes.

Owing to the cranial enlargement, these cases are sometimes mistaken for hydrocephalus; but, as pointed out by Dr. Fletcher Beach, there are readily recognizable differences. The skull of the hypertrophic ament tends to be square in shape instead of round, and there are sometimes well-marked frontal prominences. In hypertrophy, the greatest circumference is at the level of the superciliary ridges, whereas in hydrocephalus it is greatest over the temples. Thus, although the skull of the hypertrophic patient looks massive, it has not that "top-heavy" appearance so characteristic of the hydrocephalic. Further, in hydrocephalus there is usually bulging of the fontanelle and sutures, whilst in hypertrophy this is not generally the case; in fact, the expansile effects and the tendency to distend the skull seem to be much greater in the former than in the latter condition. The cranium, having reached a certain limit, ceases to expand further, in consequence of the contraction of the neuroglia; whilst hydrocephalus tends to expand the skull indefinitely.

Hypertrophic amentia is usually accompanied by headache, which may be very severe, and by epileptic fits. In some cases the fits diminish in frequency and severity, and they may entirely cease. In others they get steadily worse, and many patients ultimately die of exhaustion following a series of fits. In a considerable number there is a general muscular weakness of all parts of the body, so that the balance is unsteady, the walk slow and tottering, and the grasp feeble. Tremor is often brought on by exertion. In consequence, manual work is performed slowly, clumsily, and with considerable difficulty. Speech is often similarly affected. Most of the cases I have seen have been somewhat undersized, heavy-looking and of good nutrition, also of cheerful although somewhat simple expression.

The degree of mental defect varies very much, and seems to be dependent upon the frequency with which convulsions occur. Where these are slight, it is usually one of mild imbecility, or even merely feeble-mindedness; but if the fits are at all frequent, a

condition amounting to idiocy may be present. Attacks of rage and violence have been described, but these are by no means constant, and I doubt whether they are any more common in this than in other varieties of amentia. Certainly some of these persons are harmless and thoroughly good-tempered. The severe cases, which are accompanied by frequent fits, usually die early, and, judging from the cases which have been recorded, few survive long after maturity. This, however, is by no means so with the milder forms in which fits are comparatively rare, and at the present time there is one of these patients in Earlswood Institution who is fifty-two years of age, and seemingly in excellent health.

Atrophic Form.—These cases are very rare. In those hitherto recorded the mental deficiency has usually been of a pronounced grade, and although there may be some slight response to training at first, progressive dementia supervenes sooner or later. Definite convulsions are uncommon, but a condition of muscular tremor is always present. This varies from a more or less constant shaking of the head to an incessantly repeated fine tremor of the whole body. It is increased under observation or voluntary effort, and is often described as chorea; but it is more akin to the tremor of paralysis agitans. In addition, there is a general muscular weakness with spasm and incomplete contractures of the arms or legs; but there is rarely actual paralysis. The reflexes are increased. In some cases both epileptic convulsions and paralysis are present, and Bourneville (1897) described a case in which these were at first limited to one side of the body; but at the age of thirteen classic epilepsy appeared, and the patient died, aged twenty-one, in status epilepticus. The post-mortem examination showed atrophy and sclerosis of the whole of one hemisphere.

The brain which I examined of an idiot, aged twenty years, who suffered from atrophic sclerosis, presented the following features: The whole organ was small, 896 grammes in weight, and exceedingly firm—in fact, almost cartilaginous in texture throughout. There were no localized patches, but microscopical examination showed the presence of a dense overgrowth of neuroglia diffused throughout all parts of the brain, including the basal ganglia and cerebellum This involved the white as well as the grey matter, and was accompanied by a marked numerical diminution as well as irregular and incomplete development of the nerve cells and their processes. There were no signs of recent degeneration, but the pia-arachnoid

membrane was somewhat thickened in places. The patient had always been helpless and was unable to do anything for herself; but no definite paralysis was noticeable. She was subject to constant choreiform movements, but there were no convulsions.

NÆVOID AMENTIA.

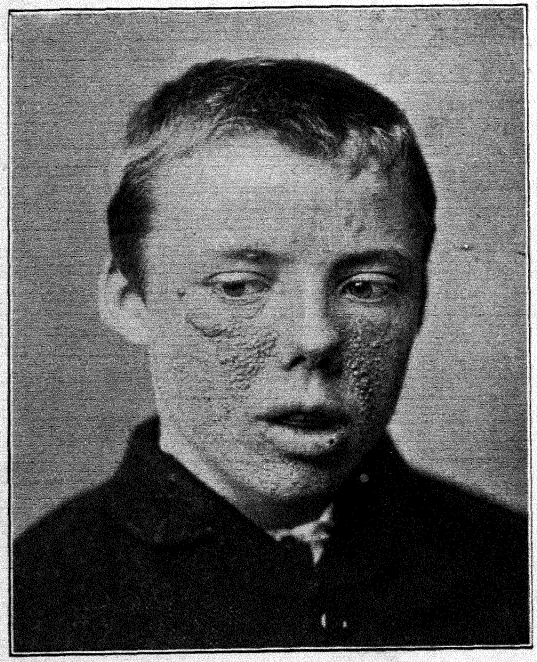
In 1925 Dr. Brushfield, of the Fountain Mental Hospital, showed me the brain of an idiot who had recently died in that institution which presented a very curious condition of the meninges. The brain itself, beyond being somewhat small and simply convoluted, was not otherwise abnormal to the naked eye, but over the greater part of the left temporal lobe, extending from the interpeduncular fossa to the Sylvian fissure, the piâ mater was infiltrated by a curious soft flattened growth somewhat resembling a layer of fine sponge. To the naked eye the condition was suggestive of a gummatous meningitis, but on examining stained sections I found it to be a venous angioma. The patient had had right hemiplegia from birth, with under-development and contracture of the leg and arm. In addition, the right face and neck, and a considerable portion of the body, were covered with congenital venous angiomata. Since then Drs. Brushfield and Wyatt have described other cases,* and I have myself seen several more, so that, although the condition is a relatively rare one, Brushfield finding only three out of nearly 2,500 admissions, the combination of nævoid growths of the skin and meninges, mental defect, hemiplegia, and usually epileptiform fits, may be said to constitute a definite syndrome which may appropriately be called nævoid amentia.

The question naturally arises as to the causal relationship of the meningeal nævus to the mental defect. Is the amentia secondary to the nævus, and could it be prevented if the growth could be removed by operation? Or is the nævus merely a developmental anomaly complicating a case of primary amentia? Regarding this, it is to be remarked that since Kalischer reported a case in 1897, a considerable number of cases have been recorded in which congenital nævi or port-wine marks of the face and body have been associated with similar lesions of the lepto-meninges. Reference to these and a general account of the whole subject of vascular

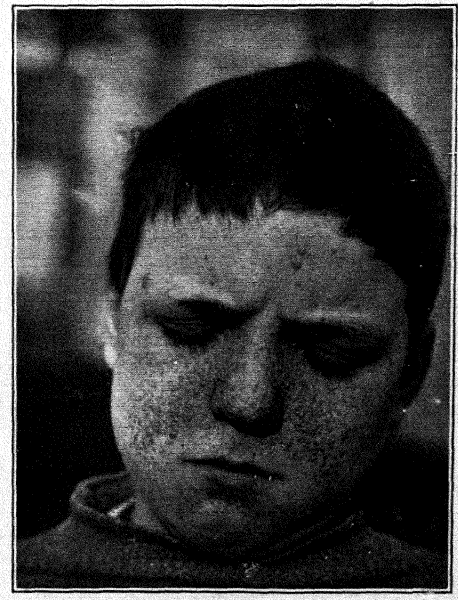
* T. Brushfield and W. Wyttt, *Brit. Journ. Children's Diseases*, April-June, 1927; also April-June, 1928. T. Brushfield, *Proc. Roy. Soc. Med.*, December, 1928, pp. 12-13.

[To face page 224.]

ADENOMA SEBACEUM IN TUBEROUS SCLEROSIS.



(*Photograph by Dr. Coupland.*)



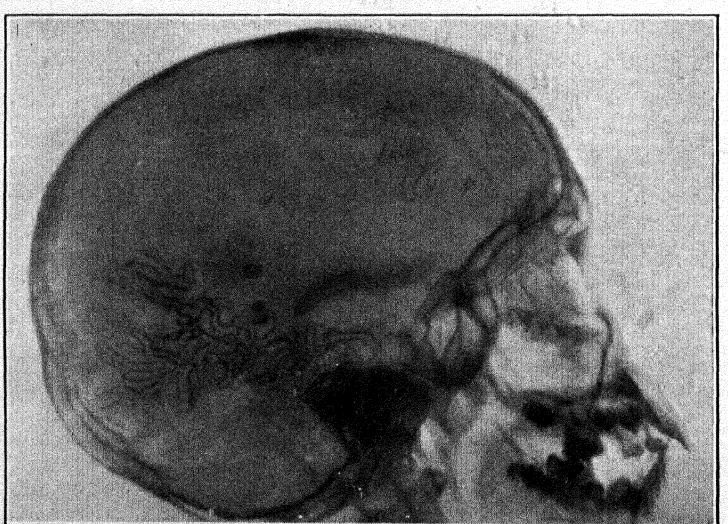
(*Photograph by Dr. Brushfield.*)

PLATE XXIV.

NÆVOID AMENTIA.



Female. Age 11 years. Low-grade imbecile. Showing extensive cutaneous nævus with paralyzed and contracted left arm and hand.
(*Photograph by Dr. Brushfield.*)



X-ray of skull of a case of nævoid amentia showing meningeal nævus.
(*Photograph by Drs. Coldwell and Allchin, by permission of Mr. L. Bathe Rawling.*

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growths of the brain are contained in the important work of Harvey Cushing and Bailey.* The subject is also dealt with in a contribution by Dr. F. Parkes Weber.† It appears to be clear, however, that whilst the majority of such cases have been associated with Jacksonian seizures or some form of cerebral palsy, comparatively few of them have been mentally defective. It follows that amentia is not a necessary consequence of the nævus, and I think that in those cases in which amentia is present this is of the primary form, and the meningeal nævus is merely an associated developmental anomaly. In confirmation of this, it may be stated that other developmental anomalies are usually present, and that in my own cases, also in those recorded by Brushfield, there was a well-marked family history of insanity, epilepsy, or other psychopathic conditions.

In most of the cases where mental defect has been present it has been pronounced, the patients being either idiots or imbeciles. Many of them die before reaching maturity, but some years ago there was a patient suffering from this condition at Tooting Bec Hospital, under Dr. Beresford, who was sixty-seven years old. The diagnosis rests upon the presence of amentia with paralysis, epilepsy, and extensive congenital nævi of the skin. With these conditions it is practically certain that an angioma of the piâ is also present, and this can usually be demonstrated by an X-ray photograph. Such photographs sometimes show that the growth is undergoing calcification. The only treatment which is likely to improve the child is patient and systematic training. Even in the case of the non-defective, Cushing regards the condition as practically inoperable, although he thinks that X-ray therapy might be of service in some cases. In the case of aments, however, even if the growth could be removed, I think it is highly unlikely that it would result in any improvement in the mental condition.

HYPERTELORISM.

This condition was first described and named by Mr. D. M. Greig‡ in 1924, and since then cases have been recorded by D. C. Muir, W. B. Drummond, F. M. B. Allen, J. V. C. Braithwaite, and

* H. Cushing and P. Bailey, "Tumours arising from the Bloodvessels of the Brain," 1928.

† F. Parkes Weber, *Proc. Roy. Soc. Med.*, vol. xxii., No. 4, February, 1929.

‡ D. M. Greig, *Edin. Med. Journ.*, 1924, N.S., xxxi., p. 560.

others. It is a comparatively rare form of mental deficiency, but its characteristics are sufficiently pronounced to constitute a fairly definite clinical type, although some of them bear a certain resemblance to those found in mongolism. In addition to general mental and physical backwardness, the essential feature is the great breadth between the eyes, which is attributed to an abnormality in the development of that portion of the sphenoid bone which arises from cartilage. The skull is brachycephalic, with a flat occiput, prominent frontal eminences, and a median furrow in the frontal bone. The nose is usually small, but broad, turned up, and with a flattened bridge; the palate narrow and high; the ears large and outstanding; the mouth open, and the tongue sometimes fissured. Other features which have been noted in some of the cases, and which resemble those occurring in mongolism, are an abnormally large gap between the hallux and second toe, disproportionately small little fingers, amyotonia, and an unusual fondness for music. Braithwaite suggests that the phenomena common to mongolism and this condition may be due to a secondary affection of the pituitary gland.

OXYCEPHALY.

(Acrocephaly, Tower-Skull, Steeple-Head.)

This curious and rare deformity of the skull is probably due to some anomaly of bone growth; but its precise cause is unknown. In most persons who suffer from it the development of mind is normal; indeed, it has been said that it is one of the few well-marked abnormalities of the skull which is rarely associated with mental defect. This, however, is not so. I have seen a number of cases of mental defect with typical oxycephaly; it therefore merits description as one of the clinical varieties of amentia, although it is probable that it is an added complication, and not the cause of the defect.

True oxycephaly is present at birth; in fact it is often inherited, and several cases have been recorded of its transmission from a parent to one or more children. Dr. W. Sheldon* has recorded a family in which a man, his married daughter, and her three children all possessed the skull deformity; their mental condition was normal. As pointed out by Greig,† however, conditions of *delayed* and *false*

* W. Sheldon, *Proc. Roy. Soc. Med.*, vol. xxiv., No. 5, March, 1931, p. 574.

† D. M. Greig, *Edin. Med. Journal*, April, 1936.

oxycephaly occur which are not congenital, are not accompanied by other deformities, and are probably due to a pathological synostosis of the cranium in childhood. In addition to the detailed description of the skull given by Greig, a comprehensive review of twenty-nine cases has been published by E. A. Park and G. F. Powers,* and a discussion of its pathogenesis by A. N. Bronfenbrenner,† of America. Dr. Ferriman‡ found that of 188 families containing oxycephalics described in the literature there was evidence of heredity in 44; he considers the condition is due to a dominant gene.

The complete syndrome consists of deformity of the skull with consequent abnormality of the eyes; synostosis of fingers and toes (see illustration); and restriction of movement in one or more of the larger joints due to bony changes; but incomplete forms occurs The essential characteristic is a pathological union of the sutures of the skull, including the facial bones, during intra-uterine life. As a result of this, the growth of the brain distends the cranium in an upward direction, causing it to be abnormally high in the frontal region and to rise in a blunted apex at the vertex. At the same time the skull is abnormally thin and presents a marked bulge in the temporal regions, causing the ears to be deformed and misplaced. This thinning of the skull often causes a series of shallow depressions of the internal table which are seen in an X-ray photograph a "digital impressions" or "copper beating." I recently saw a patient suffering from oxycephaly who had been subject to epileptic fits from childhood. At the age of sixty years he fell down in a fit and remained in a state of coma until his death two days later Post-mortem examination showed an abnormally thin skull with many digital depressions and three large fractures due to the fall.

In addition to this thinning and excessive height of the skull, the superciliary ridges and frontal eminences are poorly developed, the palate is high, the pituitary fossa wide and deep, and the orbital openings very shallow. This latter condition is responsible for the second chief characteristic—namely, marked protuberance of the eyeballs. This is at times so great as to cause the eyes to be dislocated outside the lids on slight exertion. The palpebral fissures slope downwards and outwards, divergent strabismus and nystagmus are common, and vision is usually markedly impaired

* Park and Powers, *Amer. Journ. Dis. of Children*, October, 1920.

† Bronfenbrenner, *Amer. Journ. Dis. of Children*, October, 1931.

‡ D. Ferriman, *Proc. VII. Internat. genet. Congress. Edin.*, 1939, p. 120.

owing to optic atrophy. This may result from kinking of the optic nerves or from increased intracranial pressure. Severe headache is usually present, and in some instances smell is entirely lost. In some cases craniotomy has been successful in relieving the headache and improving the vision. The cases which are associated with severe mental defect usually die in childhood; but where the amentia is of mild degree life may be prolonged until well past middle age. I know a feeble-minded man of this type who is sixty-five years old and still capable of engaging in simple occupations and of playing the piano.

LAURENCE-MOON-BIEDL SYNDROME.

This is a condition in which mental defect is associated with pigmentary degeneration of the retinæ and certain anomalies in structures of epiblastic and mesoblastic origin. It was first described in 1866 by Laurence and Moon, who reported four cases in one sibship. In 1922 cases were described by Biedl and Raab, and it is now usually known as the Laurence-Moon-Biedl syndrome. More recently further cases have been described, and an account of six, with discussion and a complete list of references to date, has been given by Cockayne, Krestin and Sorsby.* The condition is relatively rare; but it has been noted in practically all the countries of Europe, in North and South America, and in Japan. It affects males more than females.

The complete syndrome is as follows. 1. *Mental Defect:* Backwardness is usually noticed in infancy; with advance in years it becomes more obvious, so that defect is suspected before school age is reached. It varies in degree from idiocy to mild feeble-mindedness. The majority of the cases are feeble-minded or verging between this and imbecility. 2. *Pigmentary degeneration of the retinæ:* This generally takes the form of retinitis pigmentosa, but in some cases it resembles the condition present in cerebro-macular degeneration. It is often associated with nystagmus, optic atrophy and marked defect of vision, particularly at night time. 3. *Obesity:* This is constant and is usually of the Fröhlich type. 4. *Hypogenitalism:* This may not be noticeable in childhood, but is usually obvious in adolescents. It affects penis and testes, uterus and

* E. A. Cockayne, D. Krestin and A. Sorsby, *Quart. Journ. Med.*, 1935, iv., 93; also Sorsby, Avery and Cockayne, *Quart. Journ. Med.*, 1939, viii., 51.

ovaries. 5. *Polydactyly:* This consists of one or more complete or rudimentary extra fingers or toes. It is not infrequently accompanied by syndactyly.

The above conditions are usually regarded as constituting the complete syndrome; but incomplete forms occur and others in which additional abnormalities are present. The chief of these are dwarfism, microcephaly and slight oxycephaly, genu valgum, kypho-scoliosis, congenital heart disease, head nodding, chorëiform movements and muscular weakness.

Affected individuals have usually been fat as babies and at this time polydactyly may have been noticed. The defect of vision may not attract attention until the child is several years old, and in some cases not until after puberty; but having appeared it tends to increase rapidly and may result in almost complete blindness. Although the mental defect is permanent there is no progressive mental deterioration, in marked contrast to Amaurotic Family Idiocy.

The causation of this curious condition is obscure. It is certainly due to some germ abnormality and has been regarded as the result of two recessive gene defects. The great majority of the cases which have been recorded are familial and several members of the sibship have been affected; but there is no reported instance of the complete syndrome in parents or antecedents, although in some families abnormal obesity has existed and in others there has been a history of alcoholism, epilepsy, mental deficiency or other mental abnormality, blindness and polydactyly, in the antecedents. Consanguinity has been noted in about 30 per cent. of the total number of cases reported.

AMENTIA WITH ICHTHYOSIS.

(Rud's Syndrome.)

In 1929 E. Rud* described a variety of amentia which, although rare, seems sufficiently distinctive to constitute a definite syndrome. The cardinal characteristics are mental defect, usually of low grade, congenital ichthyosis, epilepsy and infantilism. The condition may possibly be related to a familial variety of amentia known as Xerodermic idiocy described by De Sanctis and Cacchiona,† which is

* E. Rud, *Hospitalstidende*, 1929, lxx., 25, and ditto, lxxi., 426.

† De Sanctis and Cacchiona, *Riv. Sper. Freniat.*, 1932, lvi., 269.

similar to that described by Rud, but without the epilepsy. A case has also been described by R. M. Stewart* similar to Rud's, but in which other abnormalities were present, namely, deformity of the long bones, anæmia, and retinitis pigmentosa. The cause of the condition is unknown; I have provisionally included it as a variety of primary amentia, but it may eventually prove to be secondary.

THE COMPLICATIONS OF PRIMARY AMENTIA.

In the preceding pages I have described the chief clinical varieties of primary amentia. It is now necessary to refer to certain conditions which are not sufficiently distinctive to constitute separate clinical varieties, and which, in fact, may occur in any of the types already described; they are therefore best regarded as complications. It is necessary to point out that in certain instances these conditions may *produce* mental defect. But the defect is then of the secondary form, and will be described in a subsequent chapter; in the present place I shall only deal with such as accompany and complicate primary or endogenous amentia.

Epileptic and Other Convulsions.—Epilepsy is the most common complication of primary amentia. It is always present in the sclerotic and nævoid varieties; it is very frequent in the simple and microcephalic forms, but it is rare in mongolism. A special investigation which I made regarding epilepsy in the simple variety showed that in cases in which there was no paralysis or other indication of gross cerebral lesions it occurred in 37 per cent.; whilst in patients presenting signs of gross lesions attacks occurred in 70 per cent. of cases. The incidence of epilepsy increases with the degree of defect. I found that fits occurred in 11 per cent. of feeble minded, 42 per cent. of imbeciles, and 56 per cent. of idiots. It is probable, however, that these figures are somewhat too high for primary aments in general, since they largely relate to patients in institutions, and therefore embrace an undue proportion of the worst cases.

In the great majority of cases the fits were of the ordinary idiopathic type, and in several of the feeble-minded patients there was a definite premonition or aura. In the more severe grades of defect the mental state precludes any inquiry on this point, but experienced attendants can often foretell the approach of a fit by

* R. M. Stewart, *Journ. Mental Sci.*, March, 1939, 256.

the appearance of the patient. The seizures are usually of the major kind, although minor attacks often occur as well. They vary in severity from a brief to a very protracted seizure, and status epilepticus is not uncommon in the lower grades. Their frequency is also subject to great variation. In some patients the first convulsion appears in the early months of life, and they thence continue almost daily during the existence of the patient. In other instances, after frequent fits during many weeks or months of early childhood, the patient remains free for years; he then has a few more, and these are again followed by years of quiescence. In yet other cases, after an initial series of fits, there is no recurrence. I have known several persons who have experienced only two or three seizures in the course of twenty years or more. It is hardly safe to reckon on the absence of epilepsy in any particular sufferer from primary amentia, although as a rule the fits make their first appearance not later than the second decade.

The effect of the convulsions is much the same as in the ordinary individual, and appears on the whole to depend upon their frequency and severity. If severe and often recurring, the patient rapidly loses even his limited acquirements and gradually passes into a state of dementia; if slight and seldom, they may have very little effect upon his mental condition.

In addition to epilepsy, the following other motor disturbances are occasionally seen in primary aments. *Chorea* is not very common, but is found in some instances. Various forms of *athetosis* are fairly frequent in the severer grades. Friedrich's ataxia occasionally occurs. *Intention tremor* is sometimes seen, and occasionally there is a *constant rhythmic tremor* of the whole body. These latter conditions are probably due to sclerotic or other cerebral lesions of the basal ganglia, which, however, may be developmental in origin.

Paralysis.—This, like epilepsy, is usually commoner in the more severe grades of defect. It is due to the presence of a gross cerebral lesion such as localized softening, sclerosis, atrophy or cyst, porencephalus or hydrocephalus. It varies from a slight monoplegia to a severe hemi- or para-plegia. The affected limbs are small, ill-nourished, and often firmly contracted, many of the worst cases being permanently chair- or bed-ridden. In a considerable number of these cases epileptic convulsions also occur. In some cases, especially the microcephalics, the condition is rather one of paresis

and general muscular hypotonus and feebleness than of actual paralysis, and it is then probably due to imperfect development of the efferent tracts.

Hydrocephalus.—Probably most cases of amentia in which hydrocephalus is at all pronounced are of the secondary form, and this condition will be described in a later chapter. But hydrocephalus with its characteristic signs occasionally appears in primary aments, and this condition is not infrequently found post mortem where it had not been suspected during life. It is a very common complication of microcephaly.

Porencephalus.—Both true and false porencephalus are not infrequently found post mortem as complications of primary amentia. The former is a developmental, the latter a superadded pathological lesion. They can rarely be diagnosed during life, although they may be suspected in cases where a congenital hemiplegia is accompanied by considerable under-development of the affected limbs and marked flattening of the opposite side of the skull.

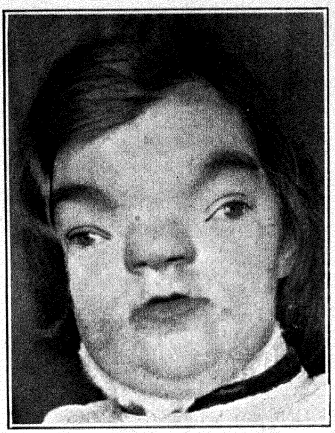
Deafness is seen in a small proportion of primary aments. It is naturally accompanied by mutism, and it imposes practically an insuperable barrier to training. On the other hand, the mental retardation which *results* from this condition is greatly ameliorated, and in many cases entirely remedied, by appropriate education. A number of cases of deaf-mutism are associated with retinitis pigmentosa.

Blindness also occurs in a proportion of cases of primary amentia, and these must similarly be distinguished from the mental retardation which may result from blindness in an otherwise normal child. According to the Third Annual Report of the Advisory Committee on the Welfare of the Blind, there were 1,383 mentally defective blind persons of all ages in 1922, corresponding to 4 per cent. of the blind population of the country. The presence of this complication also makes successful training practically impossible.

Phenylketonuria.—Phenylpyruvic acid is a chemical substance which results from the incomplete oxidation of phenylalamine, and its presence in the urine (which must if necessary be rendered acid) is shown by the appearance of a dark green colour on the addition of a few drops of a 5 per cent. solution of ferric chloride. In 1934, A. Föllings,* of Sweden, recorded the presence of this substance in the urine of ten low-grade aments. The following

* A. Föllings, *Zeitsch. f. Physiol. Chem.*, 1934, vol. ccxxvii.

HYPERTELORISM.



Female. Age 18 years.



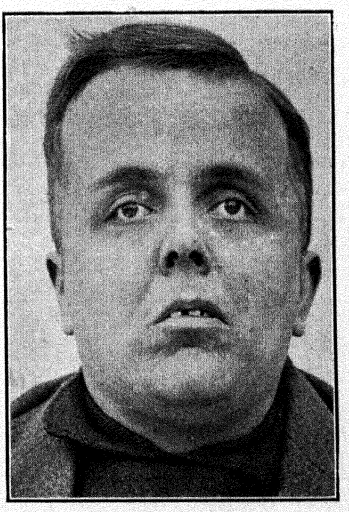
Female. Age 15 years.

(Photographs by Mr. D. M. Greig, Edinburgh.)



HYPERTELORISM.
Female. Aged 8 years.
(Photograph by Dr. Brushfield.)

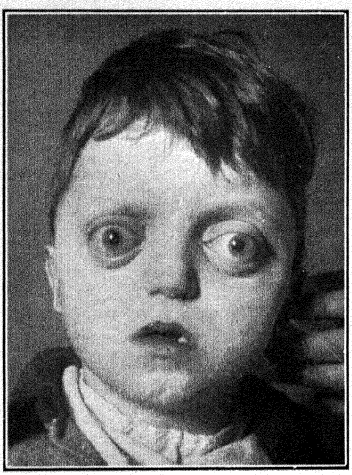
HYPERTROPHIC SCLEROSIS.

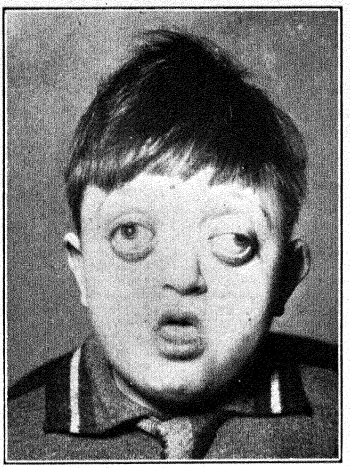


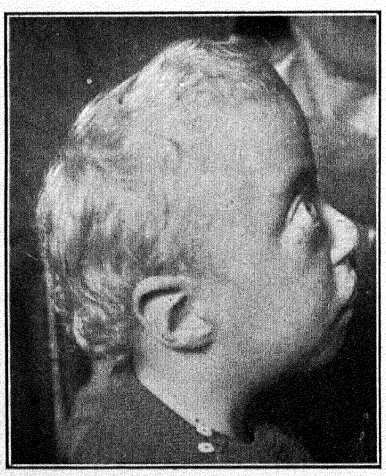
Imbecile. Age 32 years.
Cranial circumference 27¾ inches.
Photograph by Dr. R. M. Stewart.)

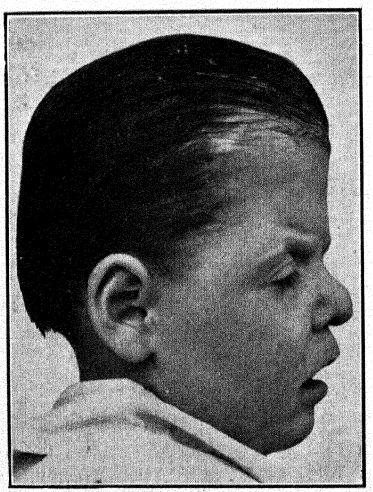
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OXYCEPHALY.



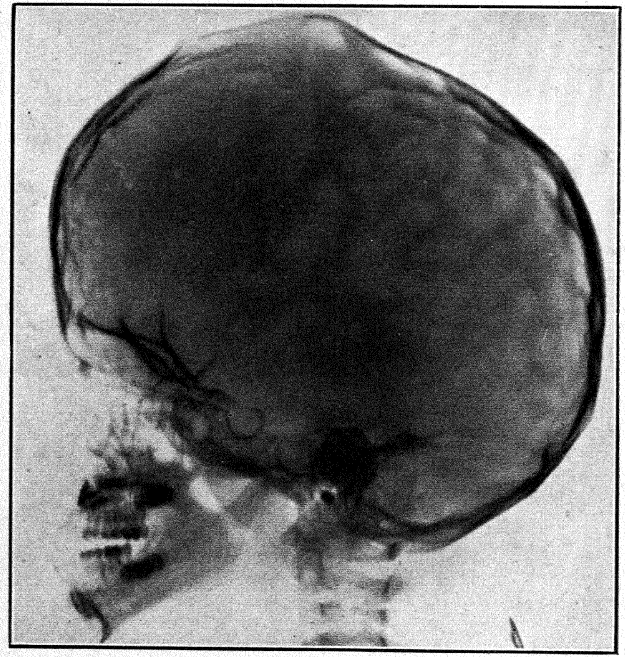


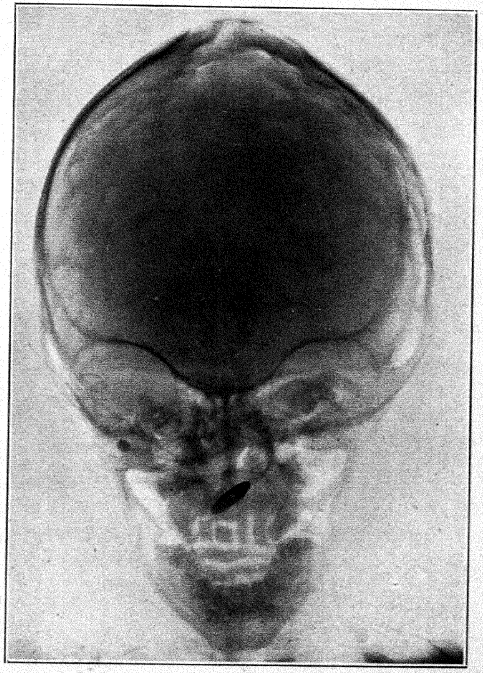




Showing protuberant eyeballs and high forehead.

(Photographs by Mr. Derek Martin.)

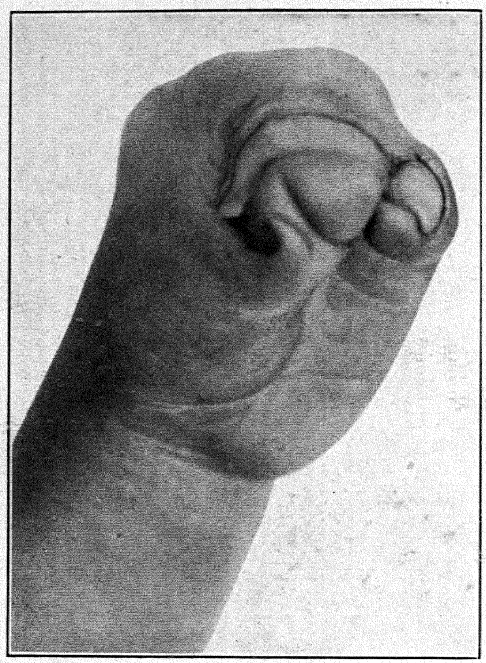




Showing "tower" shape, thinning of vertex and digital impressions ("copper beating").
(Photographs by Dr. J. N. Jacobson.)

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SYNDACTYLY OF HAND IN OXYCEPHALY.





(*Photographs by Dr. J. N. Jacobson.*)

PLATE XXIX.

year L. S. Penrose* reported two cases in the Royal Eastern Counties Institution, and later G. A. Jervis† found a total of 161 cases in various institutions of U.S. America. Jervis's patients were obtained from a total of 20,300 defectives; T. A. Munro‡ found 30 cases among 2,411 imbeciles and idiots in institutions in Britain (1·2 per cent.); but R. M. Bates§ was able to find only 3 cases out of a total of 2,300 defectives of all ages and grades in Stoke Park Colony. Hitherto phenylpyruvic acid has been found only in the urine of defectives, and it does not occur in non-defective members of the same family. There can be no doubt that the condition is caused by an abnormality of the germ; Penrose is of the opinion that it is due to a single recessive gene, and Jervis and Munro agree with this view. It probably results from the absence of some enzyme which is necessary for the oxidation of phenylalamine.

While it is possible that further investigations may justify us in regarding the condition as constituting a definite clinical type of amentia, it is to be remarked that the family histories of the cases recorded show the presence of a pronounced psychopathic tendency in the shape of insanity, amentia, convulsions and intellectual dulness, similar to that occurring in ordinary primary amentia. It seems tolerably certain, therefore, that the error of metabolism is not the cause of the mental defect, but merely an added complication and a further example of the fact that defect of mind is frequently associated with defect of body. Dr. Stewart showed me five of these cases in his institution at Leavesden, but they presented no other special clinical features which would enable them to be distinguished from ordinary primary aments. I have therefore included the condition amongst the complications of primary amentia rather than amongst the varieties.

* L. S. Penrose, *The Lancet*, January 5, 1935, p. 23, and July 27, 1935, p. 192.

† G. A. Jervis, *American Journ. of Psycho-asthenics*, vol. xliv., 1939.

‡ T. A. Munro, "The Genetics of Phenylketonuria," Camb. Univ. Press, 1941.

§ R. M. Bates, *Journ. Ment. Science*, March, 1939.

CHAPTER XIV

SECONDARY AMENTIA AND ITS CLINICAL VARIETIES

HITHERTO we have been concerned with that form of amentia which is the result of abnormality or defective developmental potentiality of the germ cell, and which is therefore termed primary. In the present chapter we shall consider those cases in which this potentiality is normal; but in which arrest of brain development has been brought about by some adverse influence acting directly upon the child either before, during, or at some period after birth before mental development is complete; or in which it is an incidental phase of a degenerative process. This form of amentia is termed secondary.

Whilst difficulty may sometimes be experienced in deciding to which of these forms a particular case belongs, yet, if attention be paid to the family history, to the previous history of the child, and to his mental and physical condition, the distinction can generally be made. In the primary form there is usually a psychopathic family history, and there is no evidence of any external factor which would be capable, by itself, of causing developmental arrest. In most cases of the secondary form, on the other hand, the family history is normal; there is usually fairly clear evidence of the operation of some adequate external cause; and the child's appearance and physical development, apart from conditions consequent on the cerebral lesion, do not differ from those of the ordinary child. It must, of course, be remembered that in some primary aments, especially those of low grade, the mental defect may be complicated by pathological lesions similar to those which cause arrest in the secondary form; or by developmental abnormalities which may produce similar neurological signs; also that occasionally amentia which is really primary, but which has not hitherto attracted attention, may be rendered manifest by some external cause; in such cases, however, this cause is usually quite trivial and not such

as would be capable of resulting in irreparable damage to the brain of an intrinsically healthy child.

It has been stated that, if aments of all ages and grades be considered, there are probably about 80 per cent. of primary and 20 per cent. of secondary cases. It must be pointed out, however, that a considerable number of secondary cases die before reaching adult age, owing to the fact that they are due to pathological lesions of the brain; also that many of the milder cases of primary amentia do not come under observation until the second decade. It follows that during childhood the proportion of secondary cases is higher than this, and it is probable that of cases seen during the first decade of life secondary aments amount to 30 per cent., or even more, of the total.

The factors which may cause arrest of development of the cerebral neurones and produce mental defect are of the most diverse kind. We may, however, divide them into four groups, which we may designate: (1) *Traumatic*; (2) *Infective*; (3) *Degenerative*; (4) *Deprivative*. I shall describe these respective groups, and their clinical varieties, in greater detail presently; it will be sufficient here to state briefly their main distinguishing features.

The *Traumatic* group includes all those cases of amentia, approximately 5 per cent. of the whole, which are due to the brain having been damaged by some form of violence, usually during the act of birth, although it may be before or after this. Injury to the brain due to hæmorrhage consequent on Rh. blood factor incompatibility will also be included in this group.

The *Infective* group includes all those cases, approximately 11 per cent. of the whole, which are due to the development of the brain having been arrested by some infective process.

The *Degenerative* group includes all those cases, approximately 3 per cent. of the whole, in which the amentia is an incidental phase of a degenerative (usually progressive) process affecting the brain.

The *Deprivative* group includes all those cases, approximately 1 per cent. of the whole, in which the amentia is due to the lack of some hormonic, nutritional, or other factor, which is essential for complete mental development.

These groups, with the clinical varieties belonging to each of them in the order in which they will be dealt with in this chapter, may be set out in tabular form as follows:

GROUP.	CLINICAL VARIETY.
1. *Traumatic*	TRAUMATIC. CONGENITAL DIPLEGIA. RH. BLOOD FACTOR INCOMPATIBILITY.
2. *Infective*	MENINGITIC. ENCEPHALITIC. HYDROCEPHALIC. SYPHILITIC.
3. *Degenerative*	AMAUROTIC FAMILY IDIOCY. SCHILDER'S DISEASE. GARGOYLISM. WILSON'S DISEASE. EPILEPTIC. SCHIZOPHRENIC.
4. *Deprivative*	CRETINISM. NUTRITIONAL. ISOLATION.

1. TRAUMATIC GROUP.

This group includes all those cases of mental defect which are the result of direct violence to the brain. Such violence may be inflicted before, during, or after birth. The first is very rare; although I have seen cases of amentia which have been alleged to be due to a severe blow upon the pregnant uterus, and others to extreme tight-lacing in an attempt to conceal the fact of pregnancy. Amentia due to injury to the brain after birth is also uncommon. But it does occur, and I have seen cases in which there was definite evidence of the defect following a very severe fall or blow upon the head during infancy, with an absence of any other causal factor. Injury during birth is far and away more frequent, and unquestionably the large majority of cases of amentia due to trauma arise during birth. Even so, I doubt whether they amount to more than about 4 or 5 per cent. of all defectives. Cases of brain injury due to anoxæmia consequent on birth asphyxia are also included in this group.

Injuries to the head, or severe anoxæmia, may result in gross lesions of the brain with consequent mental defect; but certain infections, by causing inflammation of the brain, also result in gross lesions; it is therefore desirable first to refer to some points regarding the *relationship between cerebral lesions and mental defect* which are of general application.

It must be pointed out that lesions of the brain, whether due to

trauma or inflammation, may exist without causing mental defect, or, indeed, any mental abnormality at all. In general, however, three phenomena tend to result from severe lesions, namely, *amentia*, *paralysis* and *epilepsy*; and any of these may occur singly or there may be various combinations of them. In a number of cases the only result is paralysis, in others it is epilepsy, and in others it is amentia. In a proportion, however, combinations of these conditions occur, and the commonest is that of amentia with paralysis, in many instances also accompanied by epilepsy. It is sometimes stated that if paralysis results from one of these lesions some degree of mental defect will inevitably result. This is certainly not so. I have seen a number of instances in which there was a mono-, hemi-, or even di-plegia, without any intellectual impairment whatever; indeed, in some of these cases the mental capacity has been above the average. Nevertheless, it is true that where paralysis occurs, especially diplegia, some degree of mental impairment is often present.

I think the presence of epilepsy is of more serious augury than paralysis, and if the lesion produces frequent seizures, even if they are only of the minor variety, it is highly probable that some degree of amentia will supervene. But even under these circumstances amentia does not invariably follow, although it is likely that sooner or later the patient will become demented. Some years ago I examined a case in which there was right hemiplegia with constant epileptic fits from birth. The patient died, aged thirty-five years, from exhaustion following a series of fits, and post-mortem examination revealed chronic meningo-encephalitis of the whole of the motor region of the left hemisphere. There was considerable non-development of this hemisphere, its weight being 105 grammes less than the right; there was also sclerosis, with diminished number of nerve fibres, throughout the corresponding upper efferent tract. Examination showed a large increase in the number of Betz' cells of the opposite hemisphere, and there is no doubt these had to a great extent compensated for the lesion. The patient showed no trace of amentia, and, in spite of his paralysis and epilepsy, was able to earn his living until nearly twenty years of age. He was then admitted to a mental hospital in consequence of the fits. At the time of his death there was practically no dementia.

The varying results of these lesions are dependent upon several factors, of which probably the most important are their site and

extent. If they are confined to the motor cortex or its projection fibres, the result may be paralysis only. It is to be remembered, however, that a lesion in this situation often induces epilepsy, and that this in turn may lead to mental arrest. At first the convulsions may be Jacksonian, but ultimately they resemble the usual major attacks. Exceptionally, a lesion in or near the upper motor neurones may cause epilepsy without paralysis, and in such cases amentia may be induced and paralysis supervene at a later age. A lesion of the prefrontal or parietal areas is very likely to produce amentia only. Other things being equal, amentia is more likely to result from a lesion of both hemispheres than of one only.

In addition to the site and extent of the lesion, it is probable that the result with regard to mental arrest is to some extent dependent upon its nature. Mild and severe grades of defect occur in both traumatic and inflammatory lesions; but on the whole I am inclined to think that the defect tends to be more severe and less amenable to training in the inflammatory than in the traumatic cases. The explanation of this may lie in another factor—namely, neuronic *compensation*, or the development of neuroblasts to take the place of the cells which have been destroyed.

The brain of the new-born child contains a large number of neuroblasts lying among more fully developed cells; indeed, such are to be found in the adult. It would appear that in this, as in other matters, Nature makes provision greatly in excess of ordinary needs; and that the healthy human brain has a developmental potentiality which is not normally realized, but which may be drawn upon in certain circumstances. There is certainly evidence, in the case of the motor neurones, that a lesion of one side may be thus compensated by increased development of cells of the opposite hemisphere. In addition to the case I have just mentioned, many instances have been recorded in which the greater part of one cerebral hemisphere was practically useless by reason of porencephaly or hemiatrophy, and yet the mental and motor defect was quite insignificant.* If this is so of the motor neurones, there would seem to be no reason why it should not be so of those subserving psychic functions. For compensation to take place, however, the developmental capacity of the neuroblasts must be intrinsically sound, and they must be called into play before they have lost their growth impetus.

* Such cases have been recorded by W. G. Spiller, von Monakow, Déjèrine, Mahaim, Thomas, Zacher and G. Anton.

It is probable that the condition of the neuroblasts in the unaffected portion of the brain will be better in the case of a lesion due to localized trauma than in one which is consequent on a state of infection or toxæmia. Moreover, most cases of trauma occur at an earlier age than do those of inflammation. It follows, provided there is no psychopathic predisposition, that compensation is more likely to take place in traumatic than in inflammatory lesions.

With the lapse of time very considerable changes occur in the brain which has been damaged by either of these means. The destruction of neurones, vascular occlusions, hæmorrhagic foci, hæmatomata, and meningeal inflammation gradually give rise to such conditions as localized areas of softening, atrophy, sclerosis, agenesis, heterotopia, cysts, membranous adhesions and thickenings, hemiatrophy, porencephalus and hydrocephalus. These, in their turn, produce developmental arrest or degeneration in portions of the encephalon which are far removed from, but functionally related to, the initial lesion. Owing to these changes it is sometimes impossible, when the brain is examined years afterwards, to say what was the nature of the original pathological processes, although careful examination will enable this to be done in most cases. These secondary pathological changes may cause a considerable alteration in the clinical signs, and some of them, as, for instance, hydrocephalus, give rise to such distinctive features as to constitute a clinical variety. In others, such as porencephalus and hemiatrophy, the clinical signs are less obvious, and whilst the condition may be suspected during life, it can rarely be definitely diagnosed.

TRAUMATIC AMENTIA.

As already remarked, in the large majority of cases the injury to the brain is inflicted during birth, and it is this type which will here be described. Cases of amentia due to trauma before or after birth do not present any essential clinical or pathological differences.

The first writer in modern times to draw attention to the importance of birth injuries was the obstetrician, Dr. Little,* in 1862, and such cases are accordingly usually termed "Little's disease." For many years following there was practically no new work on the subject. More recently, however, interest in it has revived, and since 1920 there have been a number of important books and

* W. J. Little, *Trans. of the Obstetrical Society of London*, 1862.

articles dealing with this question. The chief of these having a bearing upon mental deficiency are by Doll, Phelps and Melcher*; Ehrenfest†; Ford‡; Eardley Holland§; Lord‖; Schwartz¶; Sharp and Maclaire**; and Shroeder.†† This recent work has added greatly to our knowledge of cerebral birth injuries, although there are numerous details which still remain unsettled.

It is necessary to point out that some cases of amentia accompanied by diplegia dating from birth, and which were formerly attributed to birth trauma, are now considered by many writers to be of pre-natal origin. Freud, Collier, and others regard these diplegic cases as due either to developmental anomalies or to some inflammatory or degenerative process *in utero*, and as being entirely independent of any brain trauma. I think the evidence in support of the view that cases of this kind occur is sufficiently strong to justify considering them in a separate category, and subsequently I shall do this. In the present place I shall deal only with those cases of amentia which are due to trauma; which trauma, for all practical purposes, may be regarded as inflicted during the process of birth.

Pathology.—The damage to the brain may be of several different kinds and produced in different ways; but it is commoner in first-born children and in difficult labours, although it also occurs in premature and precipitate births. Occasionally there may be a fracture of the skull with contusion or actual laceration of the brain. But such cases are relatively rare, and in the large majority the lesion is an intracranial hæmorrhage. The hæmorrhage is practically always venous, and its site, in order of frequency, is subdural, subarachnoid, intracerebral, and intraventricular. Meningeal hæmorrhage is probably by far the commonest and is usually due to rupture of large meningeal vessels, or of the tributaries of the veins of Galen, or the veins entering the longitudinal sinus, consequent on the overriding of the bones which occurs during

* Doll, Phelps and Melcher, "Mental Deficiency due to Birth Injuries," 1932.

† H. Ehrenfest, "Birth Injuries of the Child," 1931.

‡ F. R. Ford, *Medicine Monographs*, vol. xi., 1927.

§ Eardley Holland, *Ministry of Health Reports on Public Health*, No. vii., 1922.

‖ E. E. Lord, *Genetic Psychology Monographs*, May, 1930.

¶ P. Schwartz, *Zeits. f. d. ges. Neur. u. Psych.*, 1924.

** W. Sharp and A. S. Maclaire, *Journ. of the American Med. Assoc.*, January 30, 1926.

†† P. L. Shroeder, *Journ. of the American Med. Assoc.*, January, 1929.

the moulding of the head. E. Holland found that in 81 out of 167 still-born children, there was tearing of the tentorium cerebelli, and that in 75 of these there was subdural hæmorrhage. In a smaller proportion of cases the bleeding is within the brain itself and usually consists of multiple punctate hæmorrhages. It seems probable that these are due to the intense venous congestion which is caused, as shown by Schwartz, by differences between the pressure within the presenting head and the external atmosphere. Schwartz's work goes to show that such hæmorrhages are much commoner than was formerly thought. Hæmorrhage has been found to occur with considerable frequency in premature births, and it is then probably due to the incomplete development and greater fragility of the vessels.

There seems little doubt that intracranial hæmorrhage, to some extent or other, is very common during birth. Indeed, Ehrenfest is of the opinion that it occurs so frequently in first-born children that it may be regarded as normal. It is clear, therefore, that if the blood is not great in amount it may be absorbed without producing any marked clinical signs or any subsequent ill-effects. It is even said that meningeal hæmorrhage of considerable size may undergo absorption without causing damage. On the other hand, there is no doubt that some hæmorrhages are quickly fatal, and it has been shown that a considerable proportion of the deaths which occur within the first few days or weeks of life are due to this cause.

Between these two extremes there is an intermediate group in which, although death does not occur, a permanent legacy results. Thus, a subdural hæmorrhage may form a localized hæmatoma, and this may be followed by cyst formation, softening, sclerosis, or arrest of development of the neurones of the underlying cortex. In some instances a subdural hæmorrhage and vascular occlusion may interfere with the development of the brain to such an extent as to produce cerebral hemiatrophy, or the condition known as false porencephaly. It seems probable, also, that thickening of membranes or organization of blood clot at the base of the brain may occasionally interfere with the circulation of the cerebro-spinal fluid to such an extent as to cause hydrocephalus. Lastly, it is probable that the punctate intracerebral hæmorrhages which result from intense venous congestion or asphyxia may result in localized arrest of growth and destruction of cortical neurones with or without sclerosis. It is with this intermediate group that we are here concerned.

Clinical Signs of Cerebral Birth Injury.—It is to be remembered that the neopallium, which is so important to psychic activity, is relatively undeveloped at birth and plays little part in the life of the child for the first few months. It may well be, therefore, that multiple hæmorrhages in this part of the brain, unless sufficiently large to produce a definite rise of intracranial pressure, may give rise to no signs whatever in the neo-natal stage. Usually, however, if hæmorrhage is at all severe, the intracranial pressure is considerably raised, and this is attended with very definite clinical signs, either at birth or within the first few days of life.

At birth, the child whose brain has been injured is often still-born; he is either cyanosed or markedly pale and is revived with great difficulty. He may then be restless and fretful for a time; but he usually gradually passes into a state of torpor. He remains torpid for several days, with feeble pulse and respiration, tense and bulging anterior fontanelle, and usually contracted pupils. He does not cry and it is difficult to rouse him to take food. His sucking reflex may be absent or defective. His muscles are rigid, opisthotonos may be present, and there are often frequent muscular twitchings or even convulsions. If lumbar puncture is performed at this stage it will yield a fluid under considerable pressure. This fluid may contain blood, but the absence of blood does not negative intracranial hæmorrhage.

Although I have seen cases presenting signs as grave as these recover without any subsequent impairment, they must be regarded with considerable anxiety. Many such children die within a few days, and a proportion of those who escape death show indications of cerebral damage at a later age. Some form of spastic paralysis is often the first sign to make its appearance. Then it is noticed that the child's mental development is retarded. He is lacking in interest and initiative, is late in sitting up, in understanding what is said to him, in saying his first words, and in acquiring sphincter control. As time goes on he lags further and further behind the normal child, and it becomes clear that his intelligence is impaired. In some cases the child is idiotic from the beginning and remains so throughout life. In others, the initial signs having passed off, the child appears to be developing normally until he goes to school; he is then found to be incapable of sustained mental effort and of acquiring school knowledge. While, in my experience, a large proportion of mentally defective children in whom there is a definite

history of birth trauma show some degree of paralysis, I have also seen patients with the same history who have suffered from no motor disability, but who have been mental defectives or intellectual dullards. This intellectual impairment, as we shall see presently, is often associated with a considerable impairment of emotional control, and with abnormality of behaviour.

Description.—It will be clear from the preceding account that, when they are seen in later childhood, adolescence, or adult life, sufferers from traumatic amentia differ very greatly in their physical condition and degree of defect. Some of those of idiot grade are badly crippled, dwarfed and repulsive in features, although they present none of the developmental anomalies which are so common in primary aments. Others are well grown, free from any paralysis, and comely and attractive in appearance. I know one youth of this type who is twenty years old, nearly six feet high, of most graceful deportment and strikingly handsome appearance; but it has been impossible to teach him to count how many fingers he has or to learn the letters of the alphabet.

In a considerable proportion of cases some degree of *paralysis* is present. This varies from a slight monoplegia to a severe hemiplegia, paraplegia, or quadriplegia, and is usually of the spastic type with greatly exaggerated reflexes. Such lesions are due to involvement of the pyramidal tracts and are often followed by contractures and deformities. In other cases there is no definite paralysis, but a marked degree of *athetosis*, consisting of irregular, inco-ordinated, squirming movements somewhat resembling chorea, and which are increased by emotion or voluntary effort. This condition denotes involvement of the extrapyramidal system and is probably due to a lesion in the corpus striatum. It often seriously interferes with articulation and swallowing. It occasionally happens that both pyramidal and extrapyramidal systems are involved, resulting in both spastic paralysis and athetosis. In a proportion of these patients convulsive attacks are present which may at first be unattended with any loss of consciousness. Usually, however, they are replaced by attacks in which consciousness is lost and which resemble those of *idiopathic epilepsy*. Attacks of petit mal often occur also.

The degree of *mental defect* varies very greatly. Many sufferers from traumatic amentia are low-grade idiots and are incapable of acquiring even the rudiments of cleanliness. Others are of

imbecile grade and, although of very limited intelligence, are capable of performing simple routine work. Others are merely feeble-minded, some of quite high grade, and, although simple and childish in their outlook, are able to perform many kinds of useful manual work. Whilst a proportion of these high-grade defectives are stable, contented, affectionate, well behaved and give no trouble, there are others who are the reverse of this. Indeed, I am inclined to think that mental instability, showing itself in loss of emotional control, marked impulsiveness and irritability, is a common feature of this variety of amentia. Such persons are often very suspicious, unduly ready to take affront, intolerant of discipline, unamenable to authority, perverse, difficult to manage, and prone to commit serious acts of misconduct. In many of their characteristics they resemble epileptics, although they may never have any convulsive seizures. Patients of this kind often prove unsuitable for a training institution, and it may become necessary to send them to a mental hospital. One such patient attending my hospital clinic, a young woman twenty-two years of age, was subject to sudden storms in which she used the most disgusting language and violently attacked anyone who came across her path. In the intervals she was well behaved and fairly industrious; she expressed the deepest contrition for what she had done and swore that if she were only given another chance it should not happen again. But in a few days there was invariably another outburst, and eventually she had to be sent to a mental hospital. In this case there was a very definite history of birth trauma; the patient was a high-grade defective with right hemiplegia and she had been subject to attacks resembling idiopathic epilepsy since three years of age. But enquiry into the family history elicited the fact that her father was a man of violent temper who had been certified insane and that several of her mother's family were epileptics.

Cases of this kind, and I have seen many, raise the very interesting question of the causal relationship of the cerebral trauma to epilepsy, mental instability, and abnormal personality traits. There is no question that such trauma may be inflicted without being followed by any of these conditions; even without producing any mental impairment. Whilst I do not doubt that mental defect may be produced by brain injury, the fact that traumatic amentia may be present without epilepsy or mental instability suggests that some other factor may be necessary to give rise to these latter conditions.

In the case above quoted it is probable that the storms were epileptic equivalents, and the additional factor would appear to have been an inherited psychopathic predisposition. This emphasizes the necessity for investigating the family history in all these cases, which is not always done. In other instances the epilepsy and mental instability may be determined by the site of the lesion, or, in paralytic cases, they may possibly be of psychogenic origin and due to the frustration of effort and desire. This, however, is conjecture, and the subject is much in need of investigation.

Prognosis and Treatment.—It is important to realize that in these cases of traumatic amentia the potentiality for mental development is often much greater than would at first sight appear. Some, of course, are hopeless idiots from the start; but others are capable of very considerable response to training, and this is so even where marked paralysis is present. Indeed, the extent of the paralysis is a very uncertain guide as to the prospects of intellectual development; although if epilepsy is present the prospect is not good. Paralysis itself, especially of the legs, by preventing the child getting about, and so limiting his environment and depriving him of contacts and educational stimuli, may greatly interfere with the realization of his intellectual potentiality. Every effort should therefore be made to overcome it by appropriate surgical and remedial measures, and these should be accompanied by systematic kindergarten and scholastic training. It is very difficult to forecast the result in any particular case; but the improvement is often much greater than in primary amentia, and some patients with a marked degree of paralysis and athetosis, and whose articulation is almost unintelligible, develop to a surprising extent. I think it may be said that whilst some of these cases are the most hopeless, others are amongst the most hopeful of the clinical varieties of amentia. There is no doubt that the earlier training is begun the better the result will be; although it occasionally happens that patients who have been neglected in childhood make very great progress when subsequently provided with training. In this respect I may quote a case, described by Dr. Shuttleworth, of a boy suffering from right hemiplegia with athetosis due to an injury during birth who was admitted into the Royal Albert Institution at the age of twelve years. " In spite of his physical drawbacks, he rapidly developed graphic abilities, and after a course of scholastic instruction in writing, drawing, reading, etc., with suitable physical

and manual exercises, he was trained to woodwork in the joiner's shop, where he gradually attained such control over his irregular movements that he became an expert workman, making tables, chests of drawers, and decorative sideboards. He showed a nice taste for wood-carving, and ultimately became so skilful in it that he is now employed as instructor in this art. He is also a clever scene-painter. He is now practically ambidextrous, his right hand having been trained to be serviceable."

The question arises whether this variety of amentia might be prevented. Since most cases of trauma are due to abnormality of abour, it seems probable that some diminution in their number might result from improved midwifery practice. But even where hæmorrhage has actually taken place it is possible that craniectomy might still save some children from becoming aments. For this to happen, however, the operation must be performed before the brain has been irrevocably damaged. I am of the opinion that any child in whom the definite signs of intracranial pressure which have been described have not abated by a week after birth should be operated upon without further delay.

AMENTIA WITH CONGENITAL DIPLEGIA.

It has been mentioned that many cases of amentia associated with congenital diplegia which were formerly attributed to birth trauma, and included in the category of "Little's disease," are now considered to be of intra-uterine origin and independent of intracranial hæmorrhage. This explanation was first suggested by Freud in 1897, and it has since been adopted by Collier,* Ford,† Patten,‡ and others. Although it is not always possible to make the distinction, it seems to me there is sufficient evidence of some cases of amentia with birth paralysis being of intra-uterine origin to justify their consideration as a class apart from traumatic amentia. The reasons for this view are briefly as follows: In many of these cases the birth has been easy and unattended by any abnormality; the lesions are much more symmetrical than those usually resulting from meningeal

* J. Collier, "The Pathogenesis of Cerebral Diplegia," *Brain*, February, 1924.

† F. R. Ford, B. Crothers and M. C. Putnam, "Birth Injuries of the Central Nervous System," *Medicine Monographs*, vol. xi., 1927.

‡ C. A. Patten, *Archiv. Neur. und Psych.*, March. 1921.

hæmorrhage; pathological examination shows destruction of nerve cells accompanied by glial overgrowth, demyelination, thickening of membranes, atrophy, microgyria, and imperfect development of convolutions, which are suggestive of intra-uterine lesions. One of the commonest histological changes found is a symmetrical atrophy of both hemispheres which is accompanied by atrophy of nerve cells and increase of glia and is known as " atrophic lobar sclerosis." It is likely that some of the cases described under the heading of " diffuse atrophic sclerosis " in a previous chapter are of this type.

But, whilst many writers agree as to the fœtal origin of these cases, there is no agreement as to their pathogenesis. In fact, it seems probable that " congenital diplegia " is not an entity at all but that it should rather be regarded as a term at present applied to a heterogeneous collection of cases which may differ greatly in their causation and pathology.* Some of them would certainly appear to be developmental in origin, and these may possibly link up with some forms of microcephaly. Others may be the result of a primary neuronic degeneration and be akin to amaurotic family idiocy or other forms of infantile cerebral degeneration. Others may result from an intra-uterine encephalitis of unknown cause, or may be due to anoxæmia or nutritional deficiencies.

As seen clinically, cases of congenital diplegia present very considerable differences, which are doubtless chiefly dependent upon the region of the brain affected and the nature of the morbid process. In a number of instances the birth is perfectly normal and nothing unusual is observed until the child is a few weeks old. It may then be found that he does not take notice of things and people like a normal child, and from this onwards he shows the usual signs of mental retardation. The clinical picture, when complete, is usually made up of mental defect, spastic paralysis, and irregular involuntary movements.

The degree of *mental impairment* ranges from complete idiocy to a mild degree of feeble-mindedness, or even only dulness. As in the traumatic cases, it often appears to be much greater than it really is, and some of these children make a very good response to training, although the paralysis is a great handicap. The *paralysis* is spastic and usually symmetrical. It involves all the limbs, but is

* *Cf.* R. M. Stewart, " Observations on the Pathology of Cerebral Diplegia," *Proc. Roy. Soc. Med.*, vol. xxxvi., 1942.

always most marked in the legs, which are commonly held in a rigid position of extension and adduction. Adduction at the hip joints is often so great as to cause the legs to be crossed in the position known as "scissors legs." The reflexes are increased and the plantar responses are extensor. In course of time contractures and deformities result. The *irregular movements* are usually in the form of athetosis or chorea. They are greatly increased by emotion or voluntary effort and are often accompanied by marked difficulty in speaking, masticating, and swallowing. Epileptic fits are uncommon. The treatment is similar to that of traumatic amentia, and, unless the mental defect is very severe, many patients undergo marked improvement with training.

AMENTIA FOLLOWING ICTERUS GRAVIS NEONATORUM.

Rh. Blood Factor Incompatibility.

It has long been recognized that a small proportion of cases of amentia occur in children who have been severely jaundiced at birth. This jaundice differs from the ordinary physiological type (which affects 50 per cent. of infants, appears between the second and fifth days after birth, and disappears after a week or two at the most leaving no ill-effects), in that it is present at, or very shortly after, birth and affects several or all the siblings. This familial type has been shown to be due to blood hæmolysis (erythroblastosis fætalis) consequent on Rh. incompatibility. In six cases which came to autopsy Schmorl* found considerable blood staining and damage to the brain and cerebellum, but more particularly to the basal ganglia, and he gave the name *Kernicterus* to this condition.

Where the child survives, mental defect may supervene. The degree of this varies from feeble-mindedness to idiocy and it is often accompanied by athetosis and extra-pyramidal rigidity. Such cases have hitherto been regarded as rare, and Yannet and Lieberman,† out of a series of 1,200 admissions to a colony for mental defectives, were only able to find a single instance. The same authors, however, as a result of investigations into the Rh. blood group of a series of defectives and their mothers, produce evidence which suggests that mental defect may arise from this cause in the

* *Verhandl. Deutsch. path. Ges.*, 6, p. 109, 1904.
† *Amer. Journ. Ment. Def.*, 49, p. 133, 1944.

absence of motor involvement, and even without severe jaundice having been present. These observations have been confirmed by Snyder, Schonfeld and Offerman,* who found in a series of defectives of undifferentiated type that the number who were Rh.-positive with Rh.-negative mothers was almost twice as many as would be expected in a sample of the general population. It is therefore probable that although the proportion of defectives due to Rh. incompatibility is still not great, it may be considerably higher than was formerly thought. Moreover, since it is likely that damage to the brain may be inflicted while the child is still *in utero*, the usual treatment of familial icterus gravis by intramuscular injection of the mother's serum may not avail to prevent mental defect.

In a male child which I saw at the age of six months there had been severe jaundice at birth with rigidity of the limbs and head retraction. It had been treated by the injection of Rh.-negative blood serum. At the time of my examination there was very considerable mental retardation. The child could not hold up its head, it made no attempt to use its hands, and did not appear to know its parents or to understand anything said to it. Its cranial circumference was $\frac{3}{4}$ inch less than normal, it was subject to violent screaming attacks, and it went into a state of general rigidity when stimulated by a loud noise or by handling. The child and its father were Rh+ and the mother Rh −. Two older children had also been jaundiced at birth, but these were now of average mental development and showed no abnormal neurological signs.

2. INFECTIVE GROUP.

This group includes all those cases of mental defect in which the arrest of development has been brought about by some infection of the brain. It comprises approximately 11 per cent. of all aments. It seems probable that in some cases the effect of the infection may be merely to interfere with neuronic development, without producing any gross cerebral lesions. In the majority of cases, however, the infection causes an inflammation of the brain or its membranes, resulting in the *meningitic* and *encephalitic* varieties of amentia. In some instances the inflammation results in lesions which obstruct the circulation of the cerebro-spinal fluid, causing distension of the ventricles and producing the *hydrocephalic* variety of amentia.

* *Journ. Heredity*, 36, p. 9, 1945.

It will therefore be convenient to describe hydrocephalus in this section, although some forms of this are traumatic in origin.

In general, therefore, infective is synonymous with *inflammatory* amentia, and the majority of these cases have suffered from some form of meningitis or encephalitis. These may be produced by many different organisms. The meningitis which results from the tubercle bacillus, pneumococcus, and streptococcus is often fatal, so that the question of mental defect does not arise; although in recent years treatment of the two latter with sulphanilamides and penicillin has greatly reduced their mortality rate and probably the supervention of defect. Measles may produce encephalitis, and I have seen a few cases of amentia which were due to this cause. As will readily be understood, when these cases of inflammatory amentia are first seen by the mental specialist some years after the initial illness, as they usually are, it may be very difficult, or even impossible, to say what the infecting agent has been. I have, however been able to keep in touch with a number from the time of the attack, and in others have been furnished with details of it by the practitioner in attendance, and I think that in most cases in which mental defect has resulted the initial illness has been either *meningococcal meningitis, polioencephalitis,* or *epidemic (lethargic) encephalitis.* It has been stated that in some cases of congenital diplegia the pathological changes found after death have been suggestive of an encephalitis during fœtal life. If this is so the cause is unknown. In general, it may be said that the meningitis or polioencephalitis which causes amentia occurs in infancy or early childhood, whilst encephalitis lethargica may occur at these or later ages.

AMENTIA DUE TO MENINGITIS.

The form of meningitis which most frequently gives rise to amentia is that due to the meningococcus, or diplococcus intracellularis meningitidis of Weichselbaum—the organism of cerebro-spinal fever. Formerly it was customary to make a distinction between posterior basic meningitis and cerebro-spinal meningitis, as it was thought that the former tended to run a relatively protracted and the latter a more acute course. But it is now recognized that they are both due to the same organism and that there are no constant differences in their symptoms and clinical course. Doubtless, some of the cases which will here be considered are due to polioencephalitis

and not meningococcal meningitis; but since, when they are seen afterwards, it is usually impossible to make any distinction, I shall consider them together.

The history of these cases is usually as follows: The birth of the child was normal; his mental and physical progress was quite satisfactory until, at some time in infancy or early childhood, he was struck down by an acute illness. The illness was accompanied by a rise in temperature, vomiting, and signs pointing to involvement of the brain. In some cases there was stupor or coma, in others restless delirium; very often there was headache, some kind of paralysis, rigidity of the neck, and convulsions. The child was seriously ill for a fortnight or more; he had then begun to improve and he had gradually recovered. But it was found that he was not the same child. In some cases the paralysis did not clear up, in others he continued to have convulsions. In all of them his mental development was affected and his progress was either brought to a complete standstill or was greatly retarded. In some instances he had actually retrogressed, and had been robbed of the acquirements he had made and did not regain them. In others he had undergone an obvious change in his character and personality.

As seen in later life, some of these sufferers from meningitic amentia are speechless, low-grade idiots who have to be fed, washed and dressed like infants. Others are somewhat less defective; but, although they can do little things for themselves and may understand much of what is said to them, they remain incapable of saying more than two or three words. Sometimes incurable deafness is present, and not infrequently paralysis and epilepsy. Yet others show only a moderate degree of mental retardation until they go to school. They are then found to be incapable of learning or of mental application. They are readily distracted from any task, and as time passes they are left further and further behind in a state of mild or severe imbecility. Whilst some of these children may improve considerably with special training, I think that as a rule the outlook is not nearly so good as in the cases due to trauma. In addition to their intellectual defect, many of them are markedly unstable, lacking in attention and emotional control, liable to sudden impulsive acts, and generally difficult to manage. Some of those in whom the defect has at first appeared to be comparatively slight have subsequently undergone a gradual degradation. When once amentia has appeared there is little to be done beyond the physical and

pedagogic training similar to that given in the traumatic cases. It is probable, however, that if the condition were diagnosed and promptly treated at the time of the acute illness there would be fewer rendered defective. Many who are so treated make a complete recovery without any subsequent impairment.

AMENTIA DUE TO ENCEPHALITIS LETHARGICA.

Lethargic encephalitis is a form of inflammation of the brain which appeared as an epidemic in England in the spring of 1918. It was at first regarded as a new disease; but medical records reveal that outbreaks which were probably of the same kind occurred in Copenhagen in 1615, in England in 1673, in Tübingen in 1712, and in various parts of Europe in 1890. In England it reached its maximum incidence in 1924, in which year 5,039 cases were officially notified. Since then it has gradually declined, and at the present time only a few sporadic cases occur. Its cause is unknown; but it is usually regarded as due to virus infection. Epidemics of hiccup have been noticed to occur at the same time and are probably due to the same cause.

The disease attacks persons of all ages. During the epidemic I saw it in children under a year and in persons over seventy. Its clinical signs and symptoms differ so enormously in their nature and severity that it is difficult to realize that they are due to the same disease. I have myself seen cases, subsequently proving to be encephalitis, which have presented the clinical signs of, and have been at first diagnosed as, such widely different conditions as influenza, cerebral tumour, cerebral hæmorrhage, chorea, epilepsy, hysteria, neurasthenia, melancholia, confusional insanity, sunstroke, infantile paralysis, myasthenia gravis, trigeminal neuralgia, multiple neuritis, and appendicitis. With regard to severity, some patients have been stricken with such suddenness and violence as to be brought within sight of death in a few hours. Others have had the disease in such a mild form that they have not even discontinued work or sought medical advice. There is not the slightest doubt, as is shown by the subsequent development of Parkinsonism and other changes, that encephalitis may exist without any acute onset at all, and in many cases the initial symptoms have been merely those of a common cold or a mild attack of influenza. The results are similarly very varied. In about a third of the recognized cases the

patient dies. In about another third or less he appears to make a complete recovery, although serious changes subsequently appear in many of these. In approximately another third there is no recovery, and the patient passes directly into a state of physical or mental infirmity.

The physical changes which result are very varied. One of the most important is *Parkinsonism*, which is characterized by slowness of movement, rigidity, tremors, head shaking, unsteady and festinating gait, mask-like face, and excessive salivation. The picture is similar to that of paralysis agitans and is due to degeneration of ganglion cells at the base of the brain; but its course is more rapid than in non-encephalitic cases and its appearance is usually the prelude to a progressive dementia. Instead of Parkinsonism various forms of paralysis and irregular athetotic and choreiform movements may be present. Marked *obesity* is often present, and this is probably due to pituitary dysfunction. Many patients show *inversion of sleep rhythm*, being inert and lethargic during the day, but restless, excited, and sleepless at night. *Disturbance of respiratory rhythm* is sometimes seen, the breathing becoming alternately quick and slow or even ceasing for brief periods. *Ocular pareses* and *oculogyric crises* occur in some patients. The mental changes may take the form of an acute psychosis, not infrequently necessitating care in a mental hospital; or there may be a less acute but permanent intellectual deterioration. In the case of children and young persons whose mental development has not attained completion, this deterioration may amount to definite and certifiable amentia.

Whilst it is impossible to give accurate figures of the number of persons who have been rendered mentally defective by this disease, there is not the slightest doubt that it is very considerable. In the county of London alone there were hundreds thus affected, and the total number throughout the country must run into thousands.

The mental defect of these persons is seen in two ways—namely, loss of emotional control and intellectual impairment. In a small proportion of cases the defect is intellectual only. The child's perception is dulled, he becomes forgetful, unable to concentrate on his work, and incapable of mental effort. He is unable to make any progress in school, gradually loses all interest and ambition, and passes into a state of listless indifference to his surroundings. Many of these cases subsequently develop Parkinsonism. In the majority

of cases the intellectual impairment is less marked, and, whilst examination will usually reveal definite defect of the higher intellectual processes of prevision, judgment, appreciation of consequences, and ability to profit by experience, the dominating feature is loss of emotional control. In a few instances this is of a comparatively minor character, and takes the form of a general irritability and impulsiveness, an intolerance of restraint, a liability to fits of temper, and a marked change of disposition. In a very considerable proportion, however, the defect is much more serious. The individual, who has previously been quiet, affectionate, and perfectly well-behaved, undergoes a complete alteration of character, and evinces marked and very often serious antisocial propensities. He becomes utterly irresponsible, and appears to have lost all affection, all sense of right and wrong, and all control over his emotions and primitive instincts. He wanders away from home, lies, steals, and commits acts of violence and destruction. When remonstrated with or questioned about his misdeeds, he uses filthy and abusive language or makes a violent onslaught upon his questioner. One youth of fourteen years whom I was examining took offence at some innocent remark, jumped up, swore, picked up and hurled a large flower-pot through the window, and then made a violent attack upon my shins with his feet. Another small boy of eight was only prevented in the nick of time from cutting his baby sister's throat with the carving-knife. Another girl of ten years happened to look over the garden fence and saw the next-door neighbour's perambulator unattended. She rushed indoors, got a box of matches, climbed the fence, set fire to the perambulator, and gleefully watched it burn. Fortunately the baby was not inside, but I doubt whether it would have made the slightest difference if it had been. Again and again I have been told by parents that their child, who had previously given no trouble whatever, has become utterly unmanageable and a complete little fiend after an attack of this disease.

It is inevitable that cases of this kind should come into conflict with the police, and not a few of them have been convicted in the courts and actually sentenced to imprisonment. Before the amendment of the definition which was made by the Act of 1927, great difficulty was experienced in certifying them as defectives. This no longer exists, and if the defect has existed before the age of eighteen years, and is of such a nature as to render the

individual in need of care, supervision, and control, he can now be certified as a mental or moral defective. In course of time, and under suitable institutional care, a small proportion improve to some extent; but in the majority of cases which show a marked degree of intellectual and emotional disturbance the outlook is not good, and it is probable that the condition will last until degeneration supervenes.

AMENTIA DUE TO OTHER FORMS OF ENCEPHALITIS.

In addition to lethargic encephalitis, inflammatory changes in the brain may result from other infections. The histology of these cases varies very considerably. In many of them there are focal areas in which the myelin sheaths have undergone disintegration; hence it is usual to group them together under the general heading of " demyelinating diseases." In a number of instances, however, there is also destruction of the neurones, collections of lymphocytes in the peri-vascular spaces, and subsequently areas of sclerosis or softening; these changes may involve both the brain and cord.* Whether these histological variations are due to different forms of infection or represent different modes of individual reaction is not known; indeed our present knowledge of the whole question is very incomplete.

The exanthems would appear to be particularly associated with these various forms of encephalomyelitis, and cases have been recorded following measles, rubella, variola, varicella and mumps; also after vaccination for smallpox and rabies.

The clinical features at the onset of the involvement of the central nervous system vary greatly and embrace motor, meningeal, and mental signs. A proportion of cases make a complete recovery, while others die. In those who survive, the commonest motor disturbance is hemiplegia, but there may be ataxia, aphasia, choreiform and athetoid movements, and epilepsy. The chief mental changes are an alteration of the personality and mental defect. This latter varies from a mild degree of feeble-mindedness to low-grade amentia.

* R. R. Grinker and P. Bassoe have described six different pathologica types, *Archiv. Neurol. and Psychiat.*, 1931; see also W. Russell Brain, " Recent Advances in Neurology," 1940; J. G. Greenfield, *Brain*, lii., 1929; F. R. Ford, *Bull. Johns Hopkins Hosp.*, xliii., 1928.

HYDROCEPHALIC AMENTIA.

The excess of cerebro-spinal fluid which constitutes hydrocephalus may be within the ventricles (internal), or in the subarachnoid space (external). The external form is always secondary and compensatory to disease or non-development of brain tissue, and the excess of fluid is in the vicinity of the local lesion or defect. Where there is a general atrophy of the convolutions the dilated sulci are filled with pale, clear fluid. Where the atrophy is localized the fluid is confined to form a cyst, as is seen in pseudo-porencephaly.

In internal hydrocephalus the accumulation of fluid is within the ventricles, and this may occur under two conditions. In one of these the dilatation of the ventricles is due to developmental defects. It may be consequent upon hypoplasia of the cerebral hemispheres, as is frequently seen in microcephalics, or it may be due to imperfection of the iter of Sylvius. In the latter case it may be associated with a spinal meningocele. In the second condition the dilatation of the ventricles is due to obstruction of the circulation of the cerebro-spinal fluid by some pathological lesion. The chief lesions which act in this way are intracranial hæmorrhage during birth, meningitis, syphilis, and cerebello-pontine tumours. The experimental work of Dandy* has shown that the chief sites of obstruction are the aqueduct of Sylvius, the foramina of Majendie and Luschka, the space between the free edge of the tentorium cerebelli and the crura cerebri, and the subarachnoid basal systems. The effect of the increased ventricular pressure is to destroy the substance of the cerebral hemispheres, and in extreme cases it may do this to such an extent as to result in a huge sac having only a thin wall of grey cortical tissue. This sac may contain several pints of fluid. Whilst hydrocephalus, of both developmental and obstructive origin, may accompany primary amentia, the term " hydrocephalic amentia " is best restricted to those cases of mental defect which are secondary to, and consequent upon, this condition.

The expansile force of the fluid is usually marked upon the skull, the bones of which become widely separated; and this, with the general enlargement, produces a clinical picture which cannot well be mistaken. But in some instances hydrocephalus may exist with a small skull, owing to premature ossification of the cranial

* Dandy and Blackfan, *Amer. Journ. Dis. Children*, viii., December, 1914, and xiv., December, 1917.

TYPES OF SECONDARY AMENTIA.



Female. Due to meningitis.
Imbecile with paraplegia.



Male. Due to meningitis in infancy.
Imbecile with hemiplegia and epilepsy.



Female. Due to meningitis in infancy.
Imbecile with spastic paraplegia.

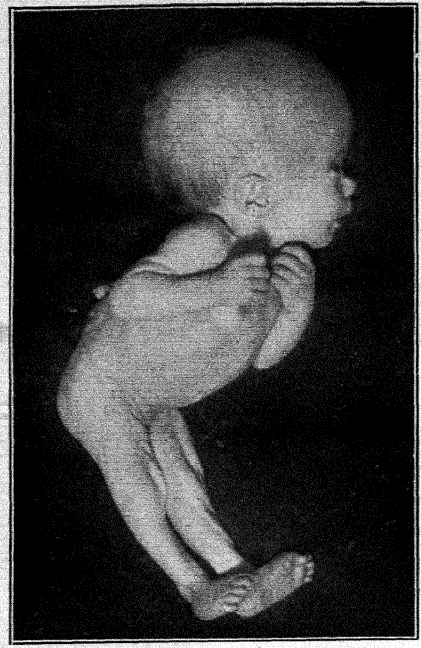


Male. Due to birth trauma.
Imbecile with paraplegia.

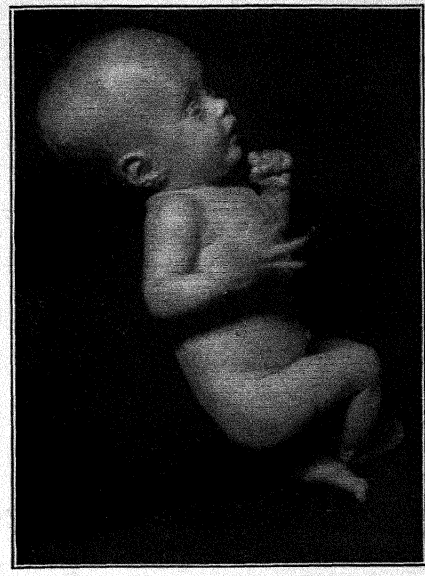
(*Photographs by Dr. Brushfield.*)

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Hydrocephalus in infancy. Note the spinal meningocele.



Hydrocephalus in infancy.

(*Photographs by Mr. Derek Martin.*)

PLATE XXXI.

bones, and the condition will then only be revealed after death. Such are usually pronounced idiots, convulsions are frequent, and death takes place early.

Occasionally hydrocephalus exists before birth; but if at all severe it is rarely possible for the child to be born alive, and in the majority of cases met with the onset takes place in the first few months, or it may be years, of life. There can be no doubt that a great proportion of children so affected die within a few years. In other cases a spontaneous cure takes place, and it has even been affirmed by Edinger that a mild hydrocephalus occurring in childhood, which becomes cured, may actually favour mental development owing to the distension of the skull cavity causing a lessened resistance to the growth of the brain. In most cases, however, there results some degree of mental deficiency.

The subsequent course varies, and, in the main, there are two types. In one, whilst the patient may be imbecile, or even idiotic, the mental condition is of secondary importance, in view of the active and steadily progressive nature of the disease to which it is due. Such children are acutely ill, the body is wasted, convulsions are frequent, and severe paralysis is generally present. Many of them are bedridden. They may be blind or deaf from the pressure of fluid, and optic atrophy is often seen. Although the psychiatrist may be consulted with regard to these cases, their place is the hospital ward, and not the special institution, and death soon closes the scene. In some instances considerable amelioration of the mental symptoms takes place immediately before death.

The second type, those cases usually seen in special institutions, or which come under notice on account of amentia, are those in which the hydrocephalus is either increasing very slowly or has undergone spontaneous arrest. In these cases the mental deficiency varies from a mild degree of feeble-mindedness to pronounced imbecility, and, as a rule, a moderate amount of improvement takes place as a result of special training. Dr. Ireland quotes the case of a boy under his care who lost his hearing after being several years at Larbert, and gradually lost many of the words he had learned. "He was taught a number of figurative signs, and also to spell on his fingers; and although he had the additional disadvantage of obscurity of sight—having dimness of the cornea, resulting from ophthalmia—his progress was as well marked as that of any pupil in the establishment."

The majority of hydrocephalic aments are quiet, confiding, affectionate, and obedient, and although paresis may prevent the performance of much in the way of manual work, they are usually very willing to do what they can. Owing to their muscular weakness, movements are clumsy and badly co-ordinated, and in some cases severe paralysis may be present. The legs are more frequently and more severely involved than the arms. Impairment of sight and hearing are also common; strabismus is frequent; and in the more severe cases nystagmus occurs. Epileptic convulsions are usually present in the acute stage, but tend to diminish, and often disappear altogether, in the chronic cases seen in institutions. Most patients are undersized, but there are no developmental abnormalities.

The peculiar enlargement of the skull makes diagnosis easy. The hydrocephalic skull is uniformly increased in all directions, and thus tends to assume a globular shape. The forehead is high and projecting, and there is usually a characteristic bulging at the root of the nose, but the greatest circumference is at the level of the temples. The fontanelle is tense, and the sutures often widely separated. In the arrested cases, however, these become filled in with Wormian bones, and the component parts of the cranium become firmly united. The scalp is thinned, and often marked by large and prominent veins. The excessive size of the cranium in relation to the face causes the head, as seen from the front, to have a very characteristic conformation resembling an inverted pyramid, thereby producing a curiously "top-heavy" appearance. The circumference varies from a little above the normal to as much as 30 inches or more. The average measurement of the chronic cases seen in institutions is about 25 or 26 inches, but there is no constant relationship between the size of the skull and the degree of mental impairment. The prognosis will depend upon whether the disease is stationary or slowly progressing. In the latter dementia is usually the ultimate result.

The two conditions which might be confounded with hydrocephalus are hypertrophic amentia and rickets. The distinction in regard to the former of these has already been given. In rickets the skull is often enlarged, but such is due to a thickening and increased density, and not a distension. Moreover, the rickety skull is usually asymmetrical, bossed, and ridged; the fontanelle, if still open, is depressed, and not elevated; there is an absence of

the thin and prominently veined scalp, and other signs of rickets are present.

Attempts have been made to promote the absorption of the fluid by means of such drugs as thyroid extract and diuretin, but the results hitherto have not been very satisfactory. It has also been attempted to relieve the pressure by various operative measures, and the claim has been made that when this has been done sufficiently early benefit has resulted. However this may be, I think it is more than doubtful if such means can effect any improvement when once signs of mental deficiency have appeared.

Amentia accompanied by Porencephaly and Cerebral Hemiatrophy.

In addition to hydrocephalus, traumatic and inflammatory lesions sometimes result in the pathological conditions known as *False porencephaly* and *Hemiatrophy*. The former is really a grave form of cortical agenesis or atrophy affecting the convolutions around the lower extremity of the Rolandic fissure, and is usually due to vascular occlusion. Hemiatrophy* is the imperfect development or atrophy of the greater part of one hemisphere. Many cases have been recorded in which the affected hemisphere weighed 300 or 400 grammes less than the opposite one. It might be thought that such extensive lesions would be accompanied by distinctive clinical signs, and occasionally this is so. But in most cases they can only be suspected during life, and they are often found after death when there had been nothing to suggest that more than a minor pathological process was present.

During life an ament may be suspected to be the subject of porencephaly or extensive hemiatrophy if there is severe hemiplegia accompanied by contractures and marked non-development of the affected limbs, and if convulsions are also present. But, as already remarked, the hemiplegia in some cases of pronounced porencephaly discovered post mortem is often astonishingly insignificant, and it rarely involves the tongue or face. The convulsions are of the usual epileptic type, and are fairly frequent, but cases have been recorded in which they were absent. Sometimes much headache is complained of. The diagnosis is rendered more probable if, in addition, there is marked flattening of one

* Mott and Tredgold, "Hemiatrophy of the Brain," *Brain*, part xc., 1900.

side of the skull, but in many of these cases the space is filled up by excess of fluid or growth of the inner table, so that the external conformation of the skull is not altered. I know of no other distinguishing features. The amentia may be of any grade, from a mild imbecility to gross idiocy, and developmental anomalies may be present or absent according as the case is one of primary amentia complicated by these lesions, or one of secondary amentia due to them. In the latter dementia often supervenes, and death frequently results from tuberculosis or follows a succession of fits.

SYPHILITIC AMENTIA.

The term syphilitic amentia is applied to those cases of mental defect in which the arrest of development is due to infection with the *Spirochæta pallida*. This infection may, of course, occur at any period of life, and it is quite possible that infection at birth, or during the early years of childhood, might damage the brain to such an extent as to prevent its complete development. Usually, however, syphilitic amentia is the result of infection before birth—that is, of congenital (or so-called " hereditary ") syphilis. Even so, the infection may possibly occur in different ways and at different times. It is conceivable that in some instances the ovum might be infected at the time of its fertilization, and if abortion did not result one would expect that in such a case the interference with development would be very marked and widespread. But the usual mode of infection is probably through the placental circulation of a mother who is herself syphilitic.

In a considerable number of cases where syphilis is thus acquired *in utero* the child is born dead. Others are born alive, and, beyond being somewhat small, anæmic and under weight, present no abnormality of mental development. Others are intellectually dull, and a proportion are mentally defective. What this proportion is I cannot say; but it is clear that many children suffering from congenital syphilis grow up without showing any signs of mental impairment, just as many persons who acquire syphilis in later life fail to develop any form of neuro-syphilis. This has led to the suggestion that involvement of the nervous system is due to a special " neurotropic " strain of the spirochæte; but it may possibly be due to an inherited or acquired susceptibility or predisposition of the nervous system. It has, for instance, been noticed that a family psycho-

pathic tendency is present in a number of patients who develop dementia paralytica, and this is so in a number of syphilitic aments. It may be that syphilis has a predilection for finding out the weak spot, and that the chances of a congenital syphilitic being rendered mentally defective are considerably greater if he comes of a psychopathic than of a non-psychopathic stock.

Incidence.—The proportion of syphilitic aments to the total number of mental defectives is a matter regarding which opinions differ very widely. If one relied solely upon a parental history of syphilis, or the presence of the usual signs of congenital syphilis in the child, this proportion would be very small. Not only, however, are such histories notoriously inaccurate, but it is well established that a child may suffer from congenital syphilis without presenting any of the usual clinical signs of this condition. It might be expected that the Wassermann reaction would settle the question, and this test has now been applied to a very large number of mental defectives. The earlier investigations made before 1920, when the technique was very imperfect, gave such widely different results, ranging from a positive reaction in 1·5 per cent. to 44 per cent. of cases, that they are not worth quoting in detail. More recent investigations still reveal discrepancies, although less marked. Thus, R. M. Stewart,* of Leavesden, found a positive reaction in 19·75 per cent. of 800 defectives. On the other hand, N. A. Dayton† obtained a positive in only 3·4 per cent. of 1,631 defective children in the Wrentham State School, Massachusetts; F. R. Hall‡ found that of all the boys admitted to the Rome State School (America) during the years 1915 to 1925 only 1·15 per cent. gave a positive reaction; Bronfenbrenner§ obtained a positive reaction in 5·5 per cent. of 2,463 institutional cases; Weiss and Izgur‖ found that 2·5 per cent. of 1,633 unselected cases were positive; and Paddle¶ found evidence of syphilis in 6·3 per cent. of 1,598 defectives in Caterham institution.

In considering these figures it must be remembered that many syphilitic aments are of low grade and are often afflicted with blind-

* R. M. Stewart, Metropolitan Asylums Board, Annual Report for 1925-6.

† N. A. Dayton, "Mental Hygiene," 1925. This paper also gives a list of references to, and a short review of, the findings of previous observers.

‡ F. R. Hall, *Amer. Journ. of Syph.*, vol. x., 1926.

§ A. N. Bronfenbrenner, *Psychiat. Quart.*, vol. v., January, 1931.

‖ M. Weiss and L. Izgur, *Journ. Amer. Med. Assoc.*, vol. lxxxii., 1924.

¶ K. C. L. Paddle, *Journ. of Neurol. and Psychopathology*, October, 1934.

ness, deaf-mutism, and various forms of paralysis which cause them to be sent to institutions. I think there is no doubt that Stewart's series contained an undue proportion of such cases. It must also be borne in mind that many congenital syphilitics die in childhood and that in those who survive there is a tendency for a positive reaction to become weaker, and eventually negative, with advance in age. On the whole, I am of the opinion that, in regard to the total number of defectives, the proportion of syphilitic aments is probably about 3 per cent.

Description.—There would appear to be two types of syphilitic amentia, dependent upon whether gross lesions are or are not present in the brain. I have seen a few cases in which there was a definite history of maternal syphilis but nothing abnormal in the family history: other siblings were mentally defective or had the usual signs of congenital syphilis, and the patient himself had such signs; and yet he showed no indications whatever of any gross brain lesion, and only suffered from amentia. It is to be presumed that the syphilis had merely interfered with the development of the cortical neurones. Such patients have usually been retarded from infancy, they have been late in talking, and made little progress in school; but they have proved capable of a certain amount of trade training and have reached a state upon the borderland of imbecility and feeble-mindedness. Some of them have been merely feeble-minded and have continued at work until middle age without showing any indications of deterioration.

In other cases neurological signs are present pointing to gross brain lesions. These patients are usually epileptic and often paralysed; deafness, strabismus, unequal pupils, and partial blindness are present; the ophthalmoscope may show optic atrophy. The defect in these is much more severe and is usually idiocy or low-grade imbecility. Such persons make little or no response to training, they gradually become demented, and rarely survive to adult age. Post-mortem examination of the brain shows gross pathological lesions such as meningo-encephalitis, endarteritis, gummata, hydrocephalus, localized atrophy, softening and sclerosis, and various developmental anomalies.

Dementia Paralytica.—It is of interest to note that a proportion of syphilitic aments who have shown no signs of gross cerebral lesions and have appeared to be simple defectives, develop general paralysis shortly before or after puberty. The first indication is usually

a change of conduct. The patient becomes either solitary, apathetic and depressed, or noisy, excited and quarrelsome. In some cases there are violent emotional storms alternating with phases of depression. Hallucinations and delusions of identity or persecution occur, and I have known attempts at suicide. This mental state may persist with exacerbations and remissions for one or two years, and then mental deterioration sets in with the physical signs of spastic paralysis, inco-ordination, tremors, convulsive attacks, increased reflexes, dysarthria, Argyll-Robertson pupils, increasing debility and wasting. The patient eventually becomes bed-ridden, trophic sores appear, and he sinks into a comatose state and dies. In some cases the end comes within two years of the initial symptoms, but in others it is protracted to five or six years. This progressive mental and physical deterioration is practically identical, both clinically and pathologically, with the dementia paralytica which occurs in juvenile and adult non-defectives. R. M. Stewart* estimates that 1 per cent. of syphilitic aments develop general paralysis.

It has been stated by Hirsch that all juvenile general paralytics have previously been of feeble intellect. With this I cannot agree, as I have known several such patients whose mental status has been quite up to the normal prior to the onset of the degenerative change. The advent of this necessarily brings about a state of amentia; but this is only an incidental phase of a progressive dementia.

Diagnosis and Prognosis.—The *diagnosis* of syphilitic amentia rests upon the presence of the usual signs of congenital syphilis (which may, however, be absent), or a positive Wassermann reaction in a mentally defective individual. A psychopathic family history may or may not be elicited; but if there is clear evidence that the patient suffers from congenital syphilis, this may fairly be considered to be a contributory, if not the sole, cause. In one of my patients the signs were indefinite, but his mother had died of general paralysis. In another, a history of syphilis was present, but no stigmata could be found in the patient; a brother, however, presented the characteristic signs. In both these cases mental retardation had been present from infancy and the defect was considered to be due to syphilis; both subsequently died of general paralysis. The *prognosis* is largely dependent upon the presence or absence of signs pointing to gross cerebral lesions. If paralysis, epilepsy, and other organic neurological changes are present, the patient will not develop

* R. M. Stewart, *Journ. Ment. Science*, lxxix., 1933.

beyond the stage of low-grade amentia, and it is probable that dementia and death will not long be delayed. In the absence of organic signs a moderate amount of development may result from training, and the patient may be usefully employed for many years; but there is always the possibility of dementia paralytica supervening. If signs of dementia have appeared, anti-syphilitic *treatment* may result in some temporary improvement; but it is doubtful whether it will do more than delay the dementia, and it will not remove the mental defect.

The following are cases of syphilitic amentia with supervening general paralysis.

T. C., male. Father alcoholic and insane; his mother and all his brothers and sisters alcoholic. The patient is the second of a family of eight; the first-born died aged two and a half months, and the mother was told by the doctor that, had it lived, " it would have been blind and an idiot." The fourth child, whom I have seen, has marks of congenital syphilis. The patient was backward in walking and talking; his mother says " he could never get his words out properly." He went to school, but could never learn, and the schoolmaster said he was " a regular fool." He subsequently had several situations, but no one would keep him very long. At fifteen years of age he began to get very bad-tempered and strange in his manner; he had attacks of screaming which lasted for hours; and ultimately, at seventeen years, was sent to a mental hospital with acute mania. This gradually subsided, revealing a condition of mild imbecility with beginning dementia. When asked his name and age, he would plaintively reply: " I ain't got no name " and " I ain't got no age." The dementia progressed and became extreme, and he died, aged nineteen, of exhaustion following a bout of seizures.

The post-mortem examination revealed a simply convoluted brain, weighing 1,167 grammes, and having the characteristic appearances of general paralysis. The microscope showed a condition of imperfect neuronic development, plus subacute degeneration similar to that occurring in general paralysis.

Daisy K——, female, twenty-two years. The father contracted syphilis several years before marriage, and was treated for this for two years. Both the mother's parents died of apoplectic strokes. The patient is the only living child; she was backward in development and always dull mentally, left school aged fifteen years, and

has been at home since, as she never seemed sharp enough to earn her living. For the last twelve months has been subject to what mother calls "hysterical fits," during which "she screams, throws herself about, and does not seem able to control herself at all." For the last nine months her memory has been failing, and she has become less capable of doing little jobs about the house; she has also been getting much thinner, and there has been a marked alteration in her manner of walking—"She seems to be losing power in her legs." During the last six months her mother has noticed trembling of hands and mouth, she has become slovenly in her feeding, and on several occasions has wetted herself. She got rapidly worse, and when brought to me there was very considerable wasting; the nose, cheeks, and extremities were livid and cold; there was much tremor of hands, tongue, and mouth; her handwriting was so shaky as to be illegible; the pupils were unequal and did not react to light; interstitial keratitis and well-marked syphilitic teeth were present; the knee-jerks could not be obtained; the hand-grasps were very feeble, and the walk staccato in character. Mentally there was considerable loss of memory and intellectual impairment. To many questions she made no response, and to others only after a long silence. She knew where she was, but had no knowledge of the day or year. She was at times silent and depressed, but at others noisy and excited; she refused food, resisted being washed and dressed, and was constantly wet and dirty. She was removed to a mental hospital, where she died a few months later of general paralysis.

3. DEGENERATIVE GROUP.

There are certain pathological processes occurring in infancy, childhood and early adolescence which are of a degenerative nature, and which tend to progress and end in dementia. In their course they interfere with neuronic and mental development and in so doing produce a secondary amentia. In some of them the course is so rapid that the patient is not likely to become a candidate for an institution for defectives. In others, however, it is considerably slower; the degenerative nature of the process may not even be recognized and the patient may be thought to be an ordinary defective. Cases belonging to this group form about 4 per cent. of all aments.

Some of these conditions have been recognized for a considerable

time, the best known being *amaurotic family idiocy*. Others, mostly forms of demyelination and probably variants of *Schilder's disease*, have been described more recently. Amaurotic family idiocy, and probably some of the others, are hereditary; moreover, in some cases investigation of the family history reveals the presence of other forms of mental abnormality similar to those in primary amentia. It is, therefore, debatable whether this should be regarded as a primary or secondary form of defect. On the whole, in view of the facts that the process is a degenerative one, that it has now been shown that there is no essential difference between the cases which occur in infancy and in later years, and that prior to the onset of the disease the patient's mental development has proceeded normally, I am disposed to look upon the amentia as an incidental phase and provisionally to place these cases in the secondary group. But should it eventually be proved, as some writers contend, that these conditions are really the result of an inherent defect of neuronic vitality, then I think we should have to consider them as delayed forms of primary amentia. I shall also include in this section *epileptic amentia*, for the reasons that, although in many of these cases there is a psychopathic inheritance, the mental development of the individual has proceeded normally until its arrest by frequently repeated fits, and it seems tolerably certain that were there no epilepsy there would have been no amentia. The amentia is therefore consequent upon, and secondary to, the epilepsy. Amentia which is an incidental phase in the degenerative process of dementia præcox will also be included under the term Schizophrenic amentia.

AMAUROTIC FAMILY IDIOCY.

This condition is characterized by a progressive degeneration of cerebral neurones which gradually results in blindness, muscular enfeeblement and wasting, dementia and death. In its course, arrest of mental development necessarily occurs as an incidental phase; hence, although the condition is really a degenerative one, it may rightly be regarded as constituting a clinical variety of amentia.

The earliest account was given by Waren Tay, of London, in 1881, whose description chiefly referred to the peculiar ocular changes. In 1887, B. Sachs, of New York, described the changes in the brain

in a paper entitled " Arrested Cerebral Development." The condition was accordingly called " Tay-Sachs' disease." It was regarded as being very rare, confined to infants under a year old, and chiefly, but not entirely, to those of Jewish parents. It was found to occur in more than one of the siblings and in some instances to have existed in the family for several generations. Later, descriptions of cases were published by many other writers, the most important being those of Kingdon and Risien Russell in 1897; of B. Sachs in 1903; and of Poynton, Parsons, and Holmes in 1906; but the literature on the subject is now very extensive.

In 1903 F. E. Batten, and in 1904 M. S. Mayou, published reports of cases which, whilst agreeing with Tay-Sachs' disease in many ways, presented certain differences, the chief being that they occurred at a later age and were more common in Gentiles than in Jews. Since then, accounts have been given of its onset at still later ages; many examinations have been made in England, Europe and America, and our knowledge of the subject has been considerably advanced.* It is now generally considered that all the types which have been described are clinical variations of one and the same pathological process, and the disease is now usually described as occurring in infantile, late infantile, juvenile, and adult forms. I shall describe the chief clinical features of these presently; but before doing so its pathology and ætiology will be referred to, since these are essentially the same in all the varieties.

Pathology.—To the naked eye the brain appears hard, and there is widening of the Sylvian fissures with marked atrophy of the frontal convolutions. The most noticeable microscopical change is an accumulation of lipoid substance in the cerebral neurones, with a consequent characteristic ballooning of the cells and swelling of the axons and dendrons. The nucleus is displaced towards the apex of the cell and there are rarely any healthy Nissl granules. These changes are usually most marked in the cortex, but they also occur in the basal ganglia, and to less extent in the cerebellum, pons, cord, and sympathetic nervous system. With them there is usually a degeneration of the myelinated fibres of the white matter and a considerable proliferation of neuroglia; but there are no inflammatory changes in the vessels or meninges. The pathogenesis is not known with certainty, but it is probably a form of lipoidosis similar to that

* *Cf.* J. G. Greenfield and Gordon Holmes, *Brain*, 1925, vol. xlviii.; and E. W. Hurst, *ibid.*

in Gaucher's and Niemann-Pick's disease,* the degeneration of the neurones being a consequence of this.

Ætiology.—It has long been recognized that there is a marked hereditary tendency to this disease, and numerous cases have been published showing its appearance in several generations of a family. In a number of these families other forms of mental defect, abnormality and disorder, similar to those occurring in primary amentia, have also been noted. More recently Sjögren† has made a study of 59 affected families and has come to the conclusion that the disease is probably an enzyme defect analogous to that in phenylketonuria, and due to a single recessive gene abnormality.

Clinical Description.—The affected child may be the first, last, or an intermediate one of the family. The other children may be quite healthy, although not infrequently another is also affected. Norman and Wood‡ record a case in which the condition was present at birth; but usually the child is normal at birth, and prior to the onset of the disease is bright and intelligent and seems perfectly healthy. In the *infantile form*, which is mainly confined to Jews, the first signs of abnormality usually appear about the end of the third month. At this time some weakness of the muscles of the back and neck is observed, and often a suspicion that the child sees imperfectly is aroused. Should the eyes be examined with the ophthalmoscope about the fourth or fifth month there will be found symmetrical changes in the macula lutea, consisting of a whitish-grey patch, somewhat oval in shape (the axis being horizontal), with softened edges slightly raised above the general surface of the retina. In the centre of this patch the fovea centralis is seen as a dark cherry-red spot. These changes in the maculæ remain unaltered and are regarded as pathognomonic. At a somewhat later course of the disease there is optic atrophy and total amaurosis.

A little later the child is unable to sit up; its head falls backwards if unsupported; when lying on its back it is unable to turn over to either side. Objects placed in its hands are grasped but feebly and soon dropped. It is generally apathetic, taking no notice of surrounding objects, and the face bears an expression of mental

* *Cf. Journ. Neurol. and Psychiat.*, April, 1937.

† T. Sjögren, *Hereditas*, vol. xiv., 1930.

‡ R. M. Norman and N. Wood, *Journ. Neurol. and Psychiat.*, July, 1941. This paper gives a full histological account of the brain with discussion.

enfeeblement. Vision is reduced to perception of light, but the sense of hearing is acute, and remains so during life, any sudden sound causing the child to start. The sense of taste is also preserved.

In the final stage atrophy of the enfeebled muscles ensues, and soon those of the whole body are involved. Emaciation progresses and becomes extremely marked. The deep reflexes are exaggerated, and still later in the course of the disease rigidity of the extremities and retraction of the head become prominent features; occasional spasmodic contractions cause the child to start and cry from pain. Convulsions have been noted in a few instances, but they would appear to be an accidental accompaniment, and are, at all events, not the rule. The temperature remains normal throughout the course of the disease. The heart, lungs, and abdominal viscera are also normal.

The duration of life varies from one and a half to two and a half years, but is usually less than two years; the disease is invariably fatal.

The *late infantile form*, as also those occurring at older ages, affects Gentiles more than Jews. The onset is usually between the second and fifth years, and the clinical symptoms and course are similar to those above described, the only essential difference being that instead of the cherry-red spot the macula is pigmented.

In the *juvenile form* the onset is usually between the sixth and tenth years, and in the *adult form* not until considerably later. W. J. Adie* described a case in which the onset was not until the twenty-sixth year. Although the symptomatology in these later cases is less uniform than in the infantile type, all of them present the same three cardinal signs—namely, arrest of mental development gradually passing into dementia, progressive muscular enfeeblement, and impaired vision usually ending in blindness. The ophthalmic appearances are different, inasmuch as, instead of the cherry-red spot, the fundus is either normal or, more commonly, there is a deposit of pigment in the macular region. It is also to be remarked that these cases, whilst invariably ending fatally, tend to run a slower course. A number have been recorded in which the patient survived until the third decade. It will be apparent that cases of this kind occurring in children and young adolescents, and progressing very slowly towards dementia, may readily be thought to be ordinary cases of amentia. Indeed, they are more likely to

* W. J. Adie, *Brit. Med. Journ.*, December 25, 1926.

be mistaken for this than are patients suffering from the more acute Tay-Sachs type. The diagnosis rests upon the history of other cases in the family, the previous mental normality, the progressive mental and muscular enfeeblement, and the ophthalmoscopic signs. In view of the possibility of these conditions, it would be wise to examine the fundi in every case in which mental arrest is associated with marked muscular weakness.

ENCEPHALITIS PERIAXIALIS DIFFUSA.

(Schilder's Disease.)

This disease was first described by Schilder* in 1912 and has since been more fully investigated by Globus and Strauss,† Meyer and Tennent,‡ and others. It is relatively uncommon, although a considerable number of cases have now been recorded. Its essential pathology is a diffuse degeneration of the myelin sheaths, and subsequently of the axis cylinders, of the white matter of the cerebral hemispheres. The process usually begins in the occipital lobes and extends forwards; but it may also involve the cerebellum. The demyelination is followed by a marked proliferation of neuroglia, and results in atrophy and excessive toughness of the brain. The cause of these changes is unknown. Some writers regard the disease as a primary degeneration of endogenous origin; others look upon the demyelination as secondary to an inflammatory process. Further research may possibly show that both these conditions are operative and that there may be two separate forms of the disease.

When Schilder's disease was first described it was considered to be non-familial. Subsequently, cases were recorded by Krabbe§ and others which presented similar clinical features and which were familial. Pelizœus described an hereditary type in which in four generations there were fourteen members of the family affected. Although these familial and hereditary cases were at first looked upon as different conditions, the present tendency is to regard them as variants of Schilder's encephalitis.

The disease usually makes its appearance in childhood or adolescence in an individual who has previously been normal. Its clinical

* P. Schilder, *Zeit. f. d. ges. Neurol. u. Psychiat.*, x., 1912.
† J. H. Globus and I. Strauss, *Archiv. Neur. und Psychiat.*, xx., 1928.
‡ A. Meyer and T. Tennent, *Brain*, lix., 1936.
§ K. Krabbe, *Brain*, xxxix., 1916.

features vary very considerably, but in the main consist of progressive failure of vision or hearing, spastic paralysis, and mental enfeeblement. Failure of vision is usually one of the earliest signs and may be associated with diplopia; but the optic fundi and pupil reactions remain normal. In many cases, in addition to the spastic paralysis, there are inco-ordination of the limbs, tonic or clonic spasms, and convulsive attacks which are indistinguishable from idiopathic epilepsy. In some cases there is difficulty in swallowing and speaking, also loss of smell and taste. The mental impairment usually increases until the patient becomes demented; but the process may be slow, and, unless close attention be paid to the history of the case and the neurological signs, he may be thought to be an ordinary ament. Cases have been reported in which the progress of the disease ceased at about the sixth year, leaving the organic neurological signs and a permanent intellectual impairment sufficient to constitute legal mental deficiency.

GARGOYLISM.

From time to time cases have been reported by various writers which presented a combination of mental defect, peculiar abnormalities of the osseous system, corneal opacities, and enlargement of the liver and spleen. In 1936 Ellis, Sheldon and Capon* published an interesting account of seven cases of this kind which had come under their observation, together with a review of ten previously reported ones, and these authors suggested that, owing to the grotesque and stunted appearance of the patients, the name "gargoylism" might fittingly be applied to the condition. I am indebted to their paper for many of the following particulars.

The chief features of the syndrome are as follows: The *skull* is always deformed and usually enlarged, but the nature of the deformity differs in different cases. In some it is hydrocephalic, in others oxycephalic, scaphocephalic or brachycephalic. X-ray examination of the sella turcica often shows it to be markedly enlarged and elongated. The nose is depressed and the eyebrows coarse and bushy. The *spine* is usually markedly kyphotic in the lumbar or dorsi-lumbar region; this is shown by X-ray examination to be due to abnormalities of the growth of the vertebral bodies. The *limbs* are

* R. W. B. Ellis, W. Sheldon and N. B. Capon, "Gargoylism," *Quarterly Journal of Medicine*, January, 1936.

relatively short, especially the arms, and there is often limitation of extension of the joints of the shoulders, elbows and fingers. Delay in the appearance of the ossific centres has been noted in several cases. Dentition is also usually considerably delayed. *Clouding of the cornea*, due to multiple opacities, is a constant feature. The *liver* and *spleen* are enlarged in most cases, and there is usually marked distension of the abdomen with umbilical hernia, but no ascites. The *mental condition* is generally one of low-grade amentia, and in some of the cases reported mental deterioration subsequently took place.

With regard to *causation*, nothing certain is known. The condition is congenital and affects males and females equally. In some cases another sibling has been similarly affected; but in all the instances recorded, the parents are said to have been healthy, and there has been no record of the condition having existed in the family, or of any psychopathic inheritance. The curious assemblage of abnormalities, involving as they do epi-, meso-, and hypo-blastic structures, is suggestive of some metabolic disturbance, but the nature of this is at present unknown.

PROGRESSIVE LENTICULAR DEGENERATION.

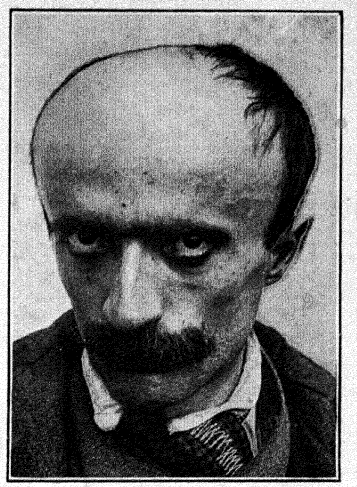
This disease was first described by Sir William Gowers as "tetanoid chorea"; it has since been more fully investigated by Dr. Kinnear Wilson, who suggested its present name. It is now often known as "Wilson's disease." Although it is probable that its causation is different to that of the two conditions just described, the facts that it often occurs in several children of the family, and that it brings about an arrest of mental development, make this the most suitable place in which to give a description of it.

The first signs are usually noticed during the second decade in a child who has previously shown no mental or physical abnormality. They consist of involuntary choreiform movements with tremor, which are increased by excitement or voluntary effort. With the tremor there is difficulty in articulation and swallowing, rigidity of limbs, trunk, and face, and later on contracture. The muscles gradually waste, but there is no actual paralysis, and sensation and reflexes are normal. Owing to the changes in the face muscles the child appears fatuous, with open mouth and a silly laugh; he is also restless, incapable of mental effort, childish and emotional, but perception and memory remain good, vision is unimpaired, and the

SECONDARY AMENTIA DUE TO HYDROCEPHALUS.

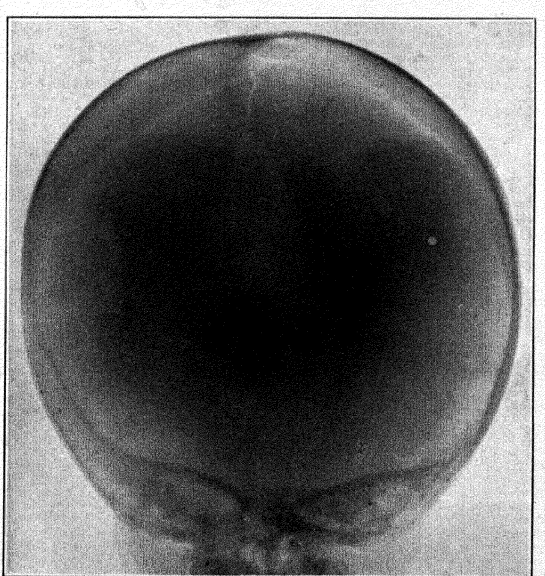


Male. Age 14 years. Cranial circumference, 26¾ inches.



Arrested hydrocephalus. High-grade imbecile. Occasional epileptic fits.

(Photographs by Dr. Brushfield.)

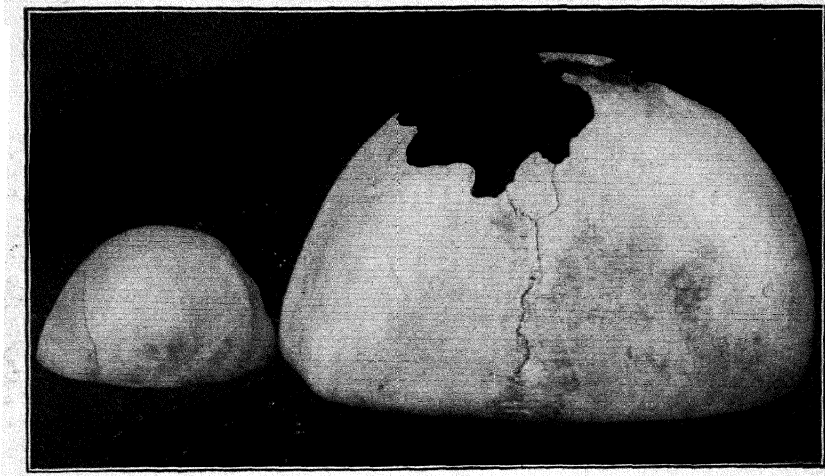


Showing enlarged skull with thinning of bones and opacity due to contained fluid.

Photograph by Mr. J. E. Stevens.)

[To face page 273.]

SKULLS IN MICROCEPHALY AND HYDROCEPHALY.



(Photograph by Mr. J. E. Stevens.)

fundi are normal. The course is steadily progressive, the patient dying of emaciation, the acute cases within six months, chronic ones within three to seven years. The histological findings consist of bilateral symmetrical degeneration of the putamen, and to a less extent the globus pallidus, of the corpora striata. In all the cases which have been examined a polylobular cirrhosis of the liver has been present, and Wilson considers that the primary disease is in this organ, in which a poison is generated having a specific selective action upon the corpus striatum.

EPILEPTIC AMENTIA.

In order to make clear the relationship of epilepsy to amentia, and the meaning of the term epileptic amentia, it is first necessary to refer to some points regarding convulsions in general, more particularly to those which occur in the early years of life before mental development is complete.

Although the precise mechanism of a convulsion is not fully understood, it is now generally regarded as a motor manifestation consequent on a sudden discharge of cortical neurones, whereby potential energy is converted into kinetic energy. Fundamentally, this discharge is probably dependent upon an instability of the neurones themselves; that is, upon some abnormality in their physico-chemical constitution which may be either inherited or acquired. Where such instability is present the trigger may be pulled and the discharge produced by many different causes. Indeed, these causes are so numerous and varied that it is difficult to classify them; we may, however, divide them into two chief groups—namely, (1) organic lesions of the brain and (2) disturbances of metabolism or of general health.

The organic group consists of (*a*) developmental anomalies and (*b*) pathological lesions of the brain. As we have previously seen, in a considerable proportion of cases of primary amentia, especially those of low grade, gross developmental abnormalities are present, and even where no changes are apparent to the naked eye there is usually an unevenness and imperfection of neuronic development. Similarly, in secondary amentia due to trauma or inflammation lesions of the brain are always present in the shape of hæmorrhage, sclerosis, cysts, thickening and increased vascularity of

membranes, or other pathological processes. It may well be that, in the presence of neuronic instability, conditions such as these act as exciting factors and are responsible for the convulsions which occur in such a large proportion of cases of low-grade primary and secondary amentia.

The exciting factors belonging to the second, or non-organic, group are even more varied. They include pyrexia, acute infections and toxæmias, asphyxial states, acidosis, and various forms of metabolic disturbance. It is probable also that in a predisposed person an emotional shock may precipitate an attack. Chief amongst the metabolic disturbances is spasmophilia, which, since it is the commonest cause of convulsions in children apart from organic lesions, merits further description.

The term *spasmophilia* is applied to a hyperexcitability of nervous tissue, with a consequent tendency to convulsions, which is dependent upon a diminished calcium content of the blood and is considered to be associated with parathyroid insufficiency. It usually affects children between the sixth and twenty-fourth months, and is often, although not invariably, associated with rickets, tetany, or laryngismus stridulus. In many instances there appears to be an hereditary tendency, in that several members of the family have been subject to convulsions during infancy. Although the convulsions themselves are indistinguishable from those of idiopathic epilepsy, spasmophilia may usually be recognized by the following signs: (1) Tapping the cheek in front of the ear produces twitching movements of the mouth, nose, or eyelids (Chvostek's sign). (2) Pressure on the brachial artery and nerve in the arm causes clenching of the hand (Trousseau's sign). (3) A minimal electrical current applied to the thenar eminence causes contractions (Erb's sign). (4) Any strong peripheral stimulus, such as teeth-cutting, slight pyrexia, or physical examination, may cause a convulsion. In addition, spasmophilia readily responds to suitable treatment consisting of attention to the diet and bowels, artificial sunlight, and the administration of cod-liver oil and calcium bromide; the convulsions do not recur after the second or third year; and there is no tendency to mental deterioration. It is probable that many so-called " teething convulsions " are due to this condition.

It is thus seen that convulsions in childhood, which in most cases cannot be distinguished from those of ordinary epilepsy, occur under a great variety of conditions. In many instances some particular

cause can be ascertained; but where this is not so and the convulsions continue in the absence of any discoverable excitant, particularly where they are accompanied by attacks of petit mal, they are regarded as *idiopathic*. Idiopathic epilepsy is therefore a condition characterized by attacks of loss of consciousness, with or without convulsions, which occur in the absence of any discoverable cause, but which in all probability are due to an inherent chemical instability of cortical neurones. In about one-third of the cases there is a family history of epilepsy; in a proportion of the remainder there is a family history of other psychopathic conditions.

In many patients suffering from idiopathic epilepsy, but where the fits are infrequent, the intellect remains unimpaired. Thus Plutarch says of Julius Cæsar, " He was of a slender make, fair, of a delicate constitution, and subject to violent headaches and epileptic fits." Mohammed was liable to frequent " swoons " which were probably epileptic. Napoleon and Byron are also said to have been subject to epileptic attacks. But in other cases the result is very different. It is well known that frequently repeated attacks of epilepsy, whether of the minor or major kind, tend to cause a deterioration of intellect which may progress to complete dementia. It is equally true that if such attacks occur in early life, before the development of mind is complete, they may arrest that development and cause amentia. According to Sir William Gowers,* in 12·5 per cent. of cases of epilepsy the fits appear before the age of three years. There can be no doubt that in a considerable proportion of these the patients are rendered mentally defective, the degree of defect varying from idiocy to feeble-mindedness. Indeed, Sir George Savage stated that epilepsy " occurring before *seven* years of age is certain to leave the patient weak-minded." I think that in the main this is true. In my experience most cases of epilepsy in which the attacks have begun before this age and have continued at all frequently have been attended with some degree of mental impairment, although this is not always of a degree to justify certification as a mental defective.

It is thus seen that amentia and epilepsy are associated under three different conditions—namely; (1) Primary amentia in which epilepsy occurs as a complication; (2) secondary amentia and epilepsy which are both the result of organic cerebral lesions; (3) amentia which is induced by idiopathic epilepsy. It is this latter group to which I restrict the term *epileptic amentia* and which

* W. R. Gowers, " Epilepsy," Allbutt's *System of Medicine*, vol. vii.

will here be described. The two former groups have already been dealt with in preceding pages.

Although convulsions are amongst the most frequent of the accompaniments of amentia, epileptic amentia, as above defined, is relatively uncommon. It is doubtful whether such cases amount to more than about 1 per cent. of aments of all ages, although the proportion is probably greater in those under twenty years of age. These persons differ considerably in their physical appearance; but most of them, even those of low-grade defect, are fairly well grown and developed. The diagnosis of epileptic amentia can usually be made by a careful study of the personal history, which will show that prior to the onset of the fits mental development was proceeding normally. It should be pointed out that, even if the convulsions are confined to one side of the body and are followed by a temporary paralysis, it does not follow that they are due to an organic lesion, since this often occurs in idiopathic epilepsy.

The degree of mental deficiency varies from a mild amount of feeble-mindedness to a state resembling idiocy; but this latter condition is more often the result of a superadded dementia than of a pure mental arrest. In the milder cases, although the patients rarely make much headway with school learning, a certain amount of manual training is possible, and many of them are able to do more or less useful work. But the persistence of the fits gradually strips these persons of any acquirements they may have possessed, and in the majority of cases dementia is but a question of time. On the whole, it may be said that the prospects of amelioration by training and the general prognosis of this class are of the most unfavourable description. There are a few cases of epileptic amentia in which the fits cease, and in these the mental condition may improve very considerably. There are other cases in which a diminution of the fits and some degree of mental improvement takes place, apparently in consequence of medicinal treatment and regimen; but these cases are exceptional, and I have not seen any instance in which mental deficiency, once produced, has been cured.

There is one feature which is common to most of these patients—namely, a general irritability and intractability. Epileptic aments are often exceedingly stubborn and difficult to manage; they are prone to sudden outbursts of temper and violence, and they are, in fact, probably the most untrustworthy of all the varieties of mental deficiency with the exception of moral defectives.

With regard to the fits themselves there is little to be said. They may be of either the minor or major variety, or both. They are occasionally preceded by a definite aura, or by some recognizable alteration in the appearance of the patient, and they are usually followed by a varying period of intellectual, sensory, and, at times, motor exhaustion, transient paresis being by no means uncommon. In a certain number of cases they seem to be directly excited by indigestion, constipation, undue excitement, or some determining cause; in others they occur independently of any ascertainable factor. The frequency may be diminished by dieting, careful regulation of the daily life, and the administration of drugs, the most useful of which are bromide, phenobarbitone and epanutin. In many cases, however, the fits persist in spite of all treatment, and hopeless dementia results.

In a number of these cases *psychic epilepsy* or *epileptic equivalents* occur. These consist of a disturbance, or partial loss, of consciousness during which the patient performs complicated acts of which he may know the nature, but not the quality. That is to say, for the time being his functions of discrimination appear to be in abeyance, and he may be guilty of acts of violence the import and consequences of which he is incapable of appreciating, and for which he is later profoundly repentant. Some of these attacks consist of a sudden torrent of abusive and disgusting language; others of a precipitate flight, an outbreak of glass smashing, or an unprovoked, and it may be fatal, onslaught upon any person who happens to be near. Attacks of this kind may alternate with major or minor seizures of the ordinary idiopathic type; but they may occur where such have not been noticed, and their true nature may then not be recognized.

A patient of this kind, a feeble-minded boy of twelve years, was brought to my hospital clinic with the statement that since the age of three he had been subject to attacks in which he threw things about and made a sudden, violent onslaught upon his companions. He remembered afterwards what he had done and said he was sorry; but he could give no explanation for his behaviour except that he could not help it. His mother stated that he had shown no mental retardation and had appeared to be perfectly normal until three years old. At this age, whilst dancing to the gramophone, he said he felt ill and vomited. He then fell down unconscious and passed water and fæces. He remained asleep for about twelve hours and then

gradually recovered. Since that time he had been less bright; when he went to school he had difficulty in learning, and he had been subject to these frequent attacks of violence both at home and at school. He had been attending a hospital where his misbehaviour and dulness were considered to be due to encephalitis lethargica. In view of the periodicity of the attacks and the fact that in between them his behaviour gave no cause for complaint, I was not satisfied with this diagnosis, and on closely questioning the parents elicited that on several occasions during the night he had been observed to have twitching movements lasting from half to one hour, after which he was found to have wetted the bed. This evidence led me to conclude that the original illness had not been encephalitis, but an attack of epilepsy; that he still had occasional attacks of nocturnal epilepsy; that his outbreaks were manifestations of pyschic epilepsy and that he was suffering from mild amentia consequent on this condition. That this view was correct seems to be confirmed by the fact that after twelve months' treatment the attacks had ceased and there was a considerable improvement in his mental condition.

SCHIZOPHRENIC AMENTIA.

Towards the end of the last century Prof. E. Kraepelin described a group of cases characterized by loss or incongruity of feeling, incoherence of thought, and impairment of judgment, which tended to undergo a gradual intellectual deterioration, and, in many instances, ultimately to terminate in dementia. To these he gave the name of Dementia præcox. Later, Bleuler, approaching the condition from the psychological aspect, explained it as the result of a splitting of the intra-psychic life, and called it Schizophrenia. This latter name has now largely replaced the former, and schizophrenia and dementia præcox are often used as synonymous terms. As I have explained elsewhere, however, this is not so.* Schizophrenia is the name given to a particular type of mental reaction; whilst dementia præcox denotes an organic degeneration of the brain.

In the majority of cases this degeneration sets in during late adolescence after the development of mind has been completed. It may, however, begin much earlier than this; I have seen a number

* A. F. Tredgold, "Manual of Psychological Medicine," 2nd ed., 1945.

of cases in which the first signs appeared as early as the fifth and sixth years; arrest of mind then necessarily occurs as an incidental phase in the degenerative process, and produces mental defect. It is with these that I shall now deal; although the term schizophrenic amentia is not strictly accurate, it seems the most convenient designation.

The proportion of these cases is probably about 1 per cent. of all defectives. Prior to the onset of the disease the child's mental development has proceeded normally; then he begins to show little oddities of behaviour, to keep aloof from his companions, to be out of touch with his surroundings, and to be lacking in his usual feeling and interest. Gradually he becomes more a-social, addicted to talking to himself, to repeating senseless questions and phrases, to grimacing and performing bizarre, stereotyped actions. His memory is good, and for a time he retains his school acquirements; but he ceases to make any further progress and his mental development comes to a standstill. Then he begins to show signs of deterioration. The downward march is usually slow; for long periods it may be stationary, and he may remain on the same level for years. But gradually he withdraws more and more into himself, he becomes less interested in and less capable of any occupation, he seems to be living in a fantastic world of his own creation, and it is clear that he is not only suffering from arrest, but also from decay of mind.

It will be apparent that in the early stages of the disease these patients may appear to be simple, high-grade aments, and many of them are sent to special schools or training institutions for defectives. They are distinguished from primary aments, however, by their mental development having been normal before the onset of the disease; by the gradual impairment of feeling, interest, drive, and judgment; the presence of the signs peculiar to dementia præcox as described above; the cessation of mental development; and the subsequent mental deterioration. It not infrequently happens that anti-social, noisy, and aggressive behaviour necessitates sending them to a mental hospital. It should be added that, as well as causing defect, dementia præcox may supervene in a patient who is already a primary defective. It is then a complication of the defect and this condition will be described in a later chapter.

4. DEPRIVATIVE GROUP.

This group embraces those cases in which the amentia is due to the lack, or insufficiency, of some constituent of the environment which is necessary for complete development. There are probably many factors of the environment concerned in the development of brain and mind, and it may be that some of them are at present unknown. There are three, however, whose causal significance seems to be clear, and these will be dealt with in this section. First, it is now established that certain endocrine secretions are essential for normal brain development, particularly that of the thyroid gland, and the lack of this is responsible for *cretinism*. Secondly, some cases of amentia are associated with a marked degree of malnutrition. The cause of this is unknown; it may be some general or special disorder of metabolism; but for the time being such cases, which are uncommon, may be termed *nutritional amentia*. Thirdly, the growth of brain and mind may be interfered with by a lack of sensory stimuli. It seems clear that afferent impressions impinging upon the cerebral cortex through the avenues of special sense not only play an important part in the development of neuroblasts into neurones, but that they are also very largely the basis of mind, since they constitute the experience indispensable for feeling and thought. A defect or insufficiency of such impressions produces the clinical variety known as *amentia due to sense deprivation* or *isolation amentia*. All these varieties of amentia, therefore, may fittingly be regarded as due to deprivation, and will be considered in this section.

CRETINISM.

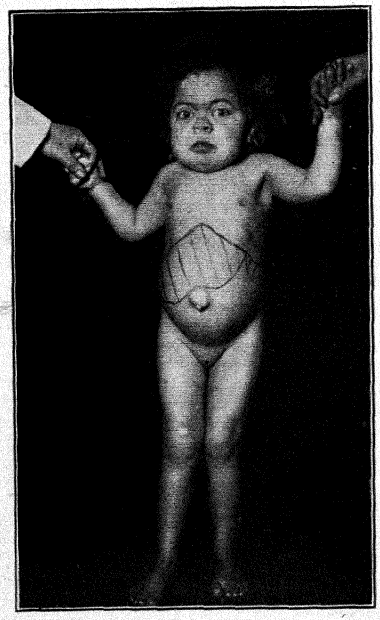
Cretinism occurs in two forms, sporadic and endemic; but while there are certain minor differences between them, they are both due to absence or insufficiency of the secretion of the thyroid gland.

Sporadic Cretinism.

This is the form most commonly seen in this country apart from certain special localities where the condition is endemic. A number of cases are seen each year in the children's department of any large hospital, but the number is not a large one. Owing to the beneficial

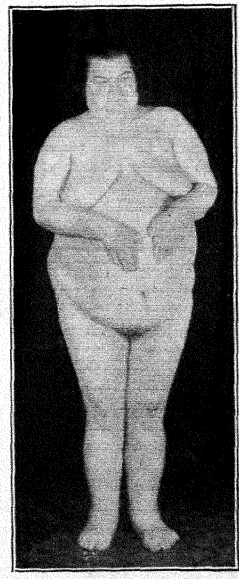
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GARGOYLISM



(Photograph by Dr. R. W. B. Ellis)

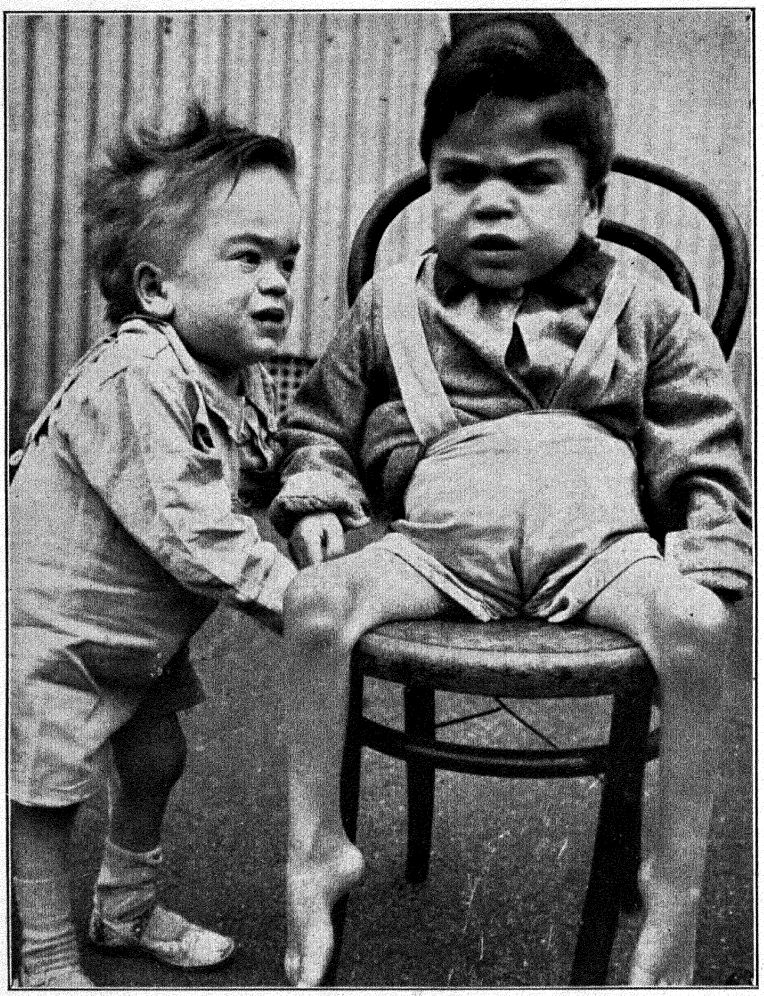
LAURENCE-MOON-BIEDL SYNDROME



(Photograph by Dr. R. M. Stewart)

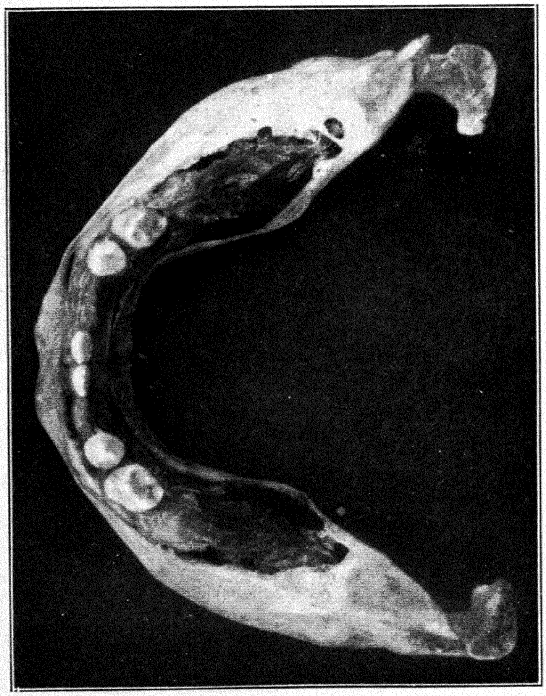
PLATE XXXIV.

GARGOYLISM.

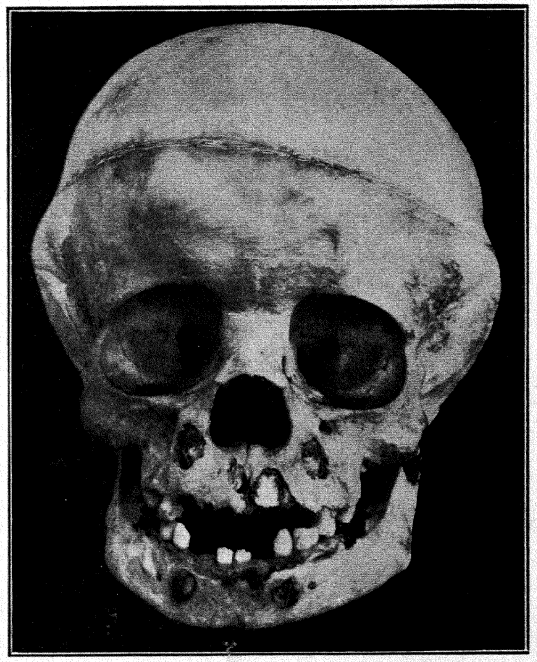


Low-grade imbecile, age 5 years. Low-grade imbecile, age 9½ years.

(Photograph by Mr. J. E. Stevens.)



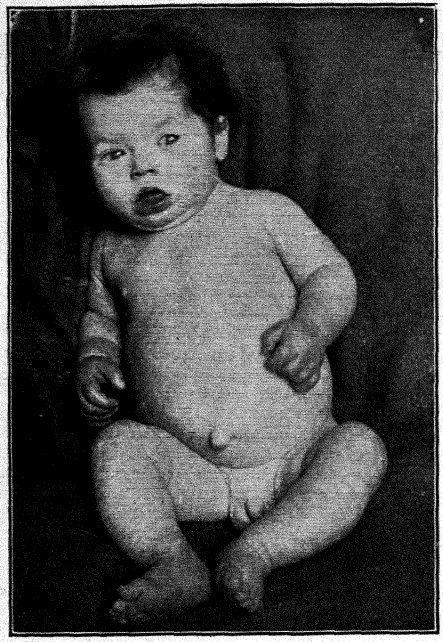
Mandible from above showing deformity.



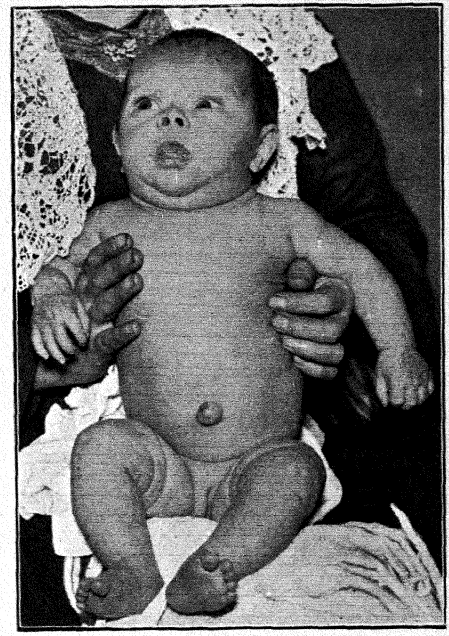
Showing bossed and irregular skull.

(*Photographs by Mr J. E. Stevens.*)

PLATE XXXVI.



Male cretin. Age 12 months.



Female cretin. Age 6 months.

(Photographs by Sir R. Hutchison.)

PLATE XXXVII.

results of treatment, the proportion of cases of amentia due to this cause is considerably less than it used to be. Out of nearly 600 consecutive admissions of mentally defective children to the Fountain Hospital, only four were cretins, and some of these improved to a marked degree under treatment. In sporadic cretins the thyroid gland is generally absent, but as to the cause of this absence we know practically nothing. In some instances the mother has complained of ill-health during the pregnancy, but usually there has been nothing abnormal during this time. It is exceptional for more than one cretin to be born in a family, but occasionally there have been two. G. B. Dorff* reports a case of binovular twins, one of which was a cretin and the other normal. Psychopathic inheritance is not a marked feature, but I found it very definitely present in a proportion of cases in which I was able to get tolerably complete family histories. Dr. John Thomson investigated the family history in seventeen of his patients, and found that in nine there was no history of nervous or mental disease or of alcoholism; of the remaining eight there was a family history of mental disease in four, of epilepsy in one, the fathers of two were alcoholics, and a brother and sister of another were dwarfs. The presence of a psychopathic family history in certain cases, in conjunction with the general experience that a number of cretins show no mental improvement under treatment, although the physical signs disappear, lead me to think that there are probably two distinct types of cretins. In one type the mental and physical retardation are clearly due to hypothyroidism, and the child becomes normal under treatment. In the other type I am disposed to think that the essential condition is one of primary amentia, the hypothyroidism being a superadded complication. In these latter cases, although the physical signs disappear under treatment, the child naturally remains mentally defective. I have examined the brains of a few cretins of imbecile grade who had been under continuous treatment for a considerable period, and in each case found changes in the cortex—namely, paucity and imperfect development of the pyramidal cells, similar to those occurring in primary amentia. Scholz and Zingerle† found in the brains of cretins such conditions as hydrocephalus, hemiatrophy, asymmetry, and areas of localized sclerosis; and these also are more suggestive of primary develop-

* G. B. Dorff, *Amer. Journ. Dis. Child.*, 1934.

† Scholz and Zingerle, *Zeitsch. f. Heilk.*, 1906

mental errors than of a subnormal development consequent on the lack of a specific secretion or a general toxæmia.

Description.—The child usually appears normal at birth, and it is not until about the sixth month that his condition begins to attract attention, although in exceptional cases it may do so earlier. It may seem curious that, with a complete absence of the thyroid gland, signs should not always be present before the age of six months. A probable explanation is that the child has received a sufficient supply of thyroxine through the placental circulation before he was born, or obtains enough through his mother's milk, to enable him to carry on up to this age. It has been stated that the signs are later appearing in breast-fed than in bottle-fed children. It occasionally happens that mental and physical development proceed normally until the second or third, or even the sixth or seventh years; but these are probably cases of acquired myxœdema and not of congenital cretinism, and in practically all the latter well-marked signs are present before the child is a year old. Since it is essential that treatment should be begun as early as possible, the recognition of these early signs is of importance. They are as follows: The child's growth is defective as compared with a normal child of corresponding age; he is apathetic and slow in all his movements, does not readily laugh or smile, and may be so lethargic as to refuse to suck; protrusion of the tongue is sometimes present at birth, but usually before the sixth month; the skin is often yellowish in colour, loose and wrinkled, especially over the forehead, and there is frequently some puffiness of the features with thickening of the eyelids, nostrils, and lips, also of the hands, feet, and back of neck, due to myxœdematous swelling; prominence of the abdomen with umbilical hernia is very common; the hair on the scalp and eyebrows is often very scanty; the temperature is subnormal; the breathing frequently has a peculiar snorting and snoring character, and the child has a peculiar dry " leathery " cry, which Dr. John Thomson considers very characteristic, and a result of submucous infiltration. The actual signs present, of course, differ somewhat in different cases, and it is not perhaps common for all these to be found in one child; but careful examination will usually reveal several of them, and so enable a diagnosis to be made.

With the lapse of time it will be found that the child makes no

* *Cf.* K. H. Tallerman, " A Case of Infantile Myxœdema," *Proc. R. Soc. Med.*, September, 1936, p. 1436.

attempt to sit up, to stand, or to walk; indeed, attempts to walk may not take place until the fifth year, or even later, if the case is untreated. The anterior fontanelle is late in closing and has been observed open in adults. Speech is always delayed, and may not appear until the seventh or eighth year. There is no marked delay in the eruption of the primary teeth. By the time he is a few years old the untreated child has acquired an unmistakable cretinous appearance.

The characteristic features of the fully developed condition are as follows: The body is greatly dwarfed, and many children of fifteen or sixteen years of age do not measure more than 3 feet in height. The accompanying illustration shows a cretin, aged thirty-nine, whose height is only a little over 3 feet. The head is usually large and dolichocephalic, the legs are extremely short and bowed, the hands and feet stumpy and ill-formed. The ossification of the bones is delayed considerably beyond the normal period. The appearance of the face alone is often typical, the nose being broad, flattened, and pug-shaped, the eyes widely separated, the lips thick and pouting, the mouth partly open, and the tongue thick, coarse and protruding. The complexion is usually sallow with flushed cheeks, the eyelids are often heavy and swollen, and the hair coarse and scanty. An important feature is the skin, which is sallow, exceedingly dry, rough, and so redundant as to appear much too large for the stunted body. Doubtless this is the result of the under-development chiefly affecting the tissues of mesoblastic origin. The neck is usually short and thick and the belly protuberant Umbilical hernia is common.

Puberty is usually late in appearing, and the external genitals often retain an infantile appearance until past mature age. Many of these patients are sterile. In the majority of cases the thyroid gland is completely absent, and in a considerable number there are small soft swellings above the clavicles or in the axillæ. These are apparently fatty, and they disappear rapidly under thyroid treatment. The pulse and respiration are slow, and the temperature two or three degrees below the normal. As a result of his examination of the blood, Vaquez found that there was a marked diminution in the number of red corpuscles, as well as of their contained hæmoglobin, with an excessive number of nucleated corpuscles.

These children are often voracious eaters, but, although well nourished and even fat, most of them suffer from a general mus-

cular weakness. This, together with their mental torpidity, causes the bodily balance to be unsteady, the gait slow and waddling, and all movements to be performed with a laboured clumsiness. These bodily peculiarities, associated as they are with their general slothfulness, apathy, and want of expression, produce a clinical picture which can rarely be mistaken.

Mentally, cretins are characterized by a general impairment of all the faculties. There is often considerable defect in hearing; but beyond an obtuseness of perception there is not any other marked abnormality of the special senses. Some of them are pronounced imbeciles, or even idiots, but in most the degree of mental deficiency is one of mild imbecility. Many of these milder cases can be taught to read and write simple words, to count, to do little sums in addition and subtraction, and to perform small tasks. Others, whilst capable of assisting in the domestic work of the institution, make absolutely no headway in book-learning. Most of them can be taught to be methodical and clean in their habits. As a class they are placid, harmless, good-tempered, and affectionate; and although they show little trace of emotion, they are nevertheless capable of being pleased and amused in a dull, heavy sort of way. They are amongst the east troublesome of all aments.

I know of no statistics enabling the mortality of these persons to be compared with that of ordinary aments. The oldest cretin I know is an imbecile man aged sixty-three years. He is looked after by his sister, who keeps a small village shop, and he is apparently in good bodily health. He has never been under thyroid treatment.

Diagnosis.—Where cretinism is fully established the signs are so distinctive that there should rarely be any difficulty in diagnosis. I have known early cases to be diagnosed as *Rickets*, and there is some superficial resemblance to the hypertrophic form of *Sclerotic amentia*; but the differences are usually evident on careful examination. The conditions which are most likely to be mistaken for cretinism are *Mongolism* and *Achondroplasia*. The differential diagnosis from mongolism has already been discussed in treating of that condition. The child suffering from achondroplasia presents a certain general resemblance to the adult cretin, but here again detailed examination will reveal many points of difference. In achondroplasia there is a marked disproportion between the limbs and trunk, the latter being fairly normal whilst the legs and arms

are very much shorter; in the cretin there is not such marked disparity. Further, in achondroplasia the thyroid can usually be felt without difficulty, and there are no fatty tumours, no swollen eyelids, pug-nose, thick lips, nor protruding tongue. Lastly, the achondroplasic child is intelligent and vivacious, whereas the cretin is heavy, lethargic, and mentally defective. It must be pointed out that there are grades of cretinism, and that a number of children suffer from an insufficiency, but not complete absence, of thyroid secretion. In such cases the signs are much less distinctive.

Treatment.—The most convenient method of treatment is by tablets of the dried gland. There are many preparations on the market, and as they differ considerably in strength it is essential to prescribe a particular make. I have found Tabloids Thyroid, B.P. 1932 (B. W. and Co.), satisfactory. The dose for a child of from three to six months old is one $\frac{1}{4}$ grain tabloid daily. This must be gradually increased with age, the normal dose being $\frac{1}{2}$ grain per day for each year of the child's age, with a maximum of 5 grains. In some cases a smaller quantity will suffice, and the amount given must be regulated by the condition of the patient, who should be under medical supervision. If the dosage is too large it may cause diarrhœa, rise of temperature, and marked acceleration of the heart, apparently due to the increased metabolism. Treatment should then be discontinued for a few days and resumed with a smaller dose. The rapid growth of the long bones may cause them to bend readily, and in order to avoid serious curvatures movements must be carefully supervised. Treatment must be continued after the symptoms have disappeared or a relapse will ensue; but in adults a dose once or twice weekly usually suffices to maintain the effect.

Results of Treatment.—In practically all cases the effect of treatment is to bring about a marked alteration in the physical condition. The fatty swellings, sallowness, and characteristic facies gradually disappear, the skin becomes moist and supple, the tongue becomes smaller and ceases to protrude, the abdomen diminishes in size, the temperature rises, and the child grows in stature. In the case of young children, a comparatively short time suffices to remove all the physical signs. Where the child is several years old before being treated the change is slower, and in those who have not been treated until adult life comparatively little change takes place.

In many cases there is a similar improvement in the mental

condition. The apathy passes, the child becomes alert and interested, he begins to talk, to play, and to show initiative, and in a few years' time he may have made up the arrears in his mental development. There is no doubt that where treatment has been begun in the early months of life, many cases have reached a normal mental standard. Dr. John Thomson* mentions a patient who had been under continuous treatment since infancy, and who at the age of thirty years was a capable wife and housekeeper, and the mother of two quite healthy children. But if this amount of progress is to take place, treatment must be begun in the early months of life. I have known low-grade aments undergo considerable improvement even where treatment was not started until the second decade; but they still remained mental defectives. On the whole it is very doubtful whether the cretin whose treatment is neglected beyond the first year or so will fully make up his mental arrears.

There are cases, however, which have been under treatment from the first few months of life, and in whom all the physical signs of cretinism have disappeared, who yet remain mentally defective. This cannot be due to treatment having been initiated too late, because I have experience of such cases where thyroid has been given continuously since the child was six months old; an earlier age, in fact, than in others which have become normal. As previously stated, the probable explanation is that these are primary aments complicated by hypothyroidism. In such the administration of thyroid causes the disappearance of the physical signs, but it cannot be expected to have any result upon the mental defect.

Endemic Cretinism.

Cretinism is endemic in many parts of the world. It is most common in Europe, particularly in the valleys of Switzerland and the adjacent countries; but it also occurs in the Himalayas of India, the Andes and Rocky Mountains of America, Burma, Madagascar, and elsewhere. In England it is not so prevalent as formerly, but cases still occur in Derbyshire, the West Riding of Yorkshire, and Somerset. The chief difference between the endemic and sporadic cretin is that in the former a goitre is present, although this is practically functionless.

Whilst it is possible that more than one factor may be concerned

* J. Thomson, "Clinical Study of Sick Children," 1925.

in the cause of this condition, the chief has now been shown to be a deficiency of iodine in the soil and water. An additional factor in some cases may possibly be some infective agent conveyed by water or some other vehicle, as suggested by McCarrison.

Amentia due to other Endocrine Defects.

In addition to the secretion of the thyroid gland, it is quite possible that the secretions elaborated by other endocrine organs may play a part in mental development, and that their absence or deficiency may give rise to some degree of mental defect. Indeed, as has already been suggested, it is possible that mongolism may eventually be found to be due to some deficiency of this kind affecting the ovum before fertilization. Our knowledge regarding this subject, however, is at present very imperfect, and there are only two other glands—namely, the pituitary and thymus—in which any such relationship has hitherto been noted, and even in these it is by no means established that this relationship is a causal one.

Pituitary Gland.—It is now well established that this gland plays an important part in metabolism and in the development of certain tissues, and insufficiency of its secretion (hypopituitarism) leads to the syndrome described by Fröhlich, or *dystrophia adiposo-genitalis*. The physical signs consist of obesity, affecting the abdomen and mammary regions rather than the limbs, increased sugar tolerance, defective stature, and an infantile condition of the genital organs. In the cases where the gland is involved by a tumour, there is usually headache with bilateral hemianopsia, and an X-ray examination of the skull may show enlargement of the sella turcica. In cases of primary defect of the gland, headache and defect of vision do not occur, and the X-ray examination may then show an unusually small fossa with enlarged and encroaching clinoid processes. Whilst there is no constant relationship between the degree of intelligence and the condition of this gland, I have seen several cases of mental deficiency presenting Fröhlich's syndrome, and in some of these X-ray examination showed the pituitary fossa to be decidedly smaller than normal. I must confess, however, that I have not experienced any beneficial result from the administration of pituitary extract in these cases. R. M. Stewart* has recorded the case of a female mongol who developed Fröhlich's syndrome at the age

* R. M. Stewart, *Journ. of Neurol. and Psychopath.*, April, 1931.

of thirty-seven years; and G. C. Johnston* has described cases of epilepsy beginning between fifteen and twenty-five years of age, and gradually increasing in frequency and severity, but without any history of previous injury or illness, in which X-ray examination revealed a marked overgrowth of the anterior and posterior clinoid processes, presumably with hypopituitarism.

In some cases hyperpituitarism may be associated with mental defect. I have at the present time a patient, a boy not yet fifteen years of age, suffering from feeble-mindedness with the usual signs of acromegaly. He is 5 feet 11 inches in height, weighs 12½ stone, has massive hands, an enlarged and protruding lower jaw, and a cranial circumference of 22 inches. X-ray examination shows an unusually thickened skull with a greatly enlarged sella turcica, and the ossification of the bones of the hands is practically completed. But whether the hyperpituitarism is causal, or merely a fortuitous accompaniment of the amentia, I am not prepared to say. It is interesting to note, however, that he has an aunt who is a mongolian imbecile.

Thymus.—This gland contains a nucleo-proteid exceedingly rich in phosphorus, and this, in conjunction with the fact that it normally undergoes degeneration and ceases to exist as a gland at, or before, adolescence, indicates that it plays an important part in development. Whilst I do not think it is established that mental defect is a direct result of thymus insufficiency, it is interesting to note that the gland has been shown to be absent in a very considerable proportion of cases. Thus, in 28 mentally weak children examined post-mortem by Bourneville, the thymus was absent; in another series of 292 cases of mentally deficient children the organ was absent in 74 per cent.; whilst autopsies performed at the Bicêtre upon 408 non-cretinous idiots ranging in age mostly from one to five years showed the gland to be present in only 104 instances. As against this Katz, on performing autopsies upon 61 mentally normal children, varying in age from one month to thirteen years, who had died of various diseases, found the gland present in every case.

Adrenals.—It is interesting to note that, according to Leri and Ruju, the condition of anencephaly is associated with absence of these glands; and Garrod mentions the case of a child in whom a marked advance of development followed, and apparently resulted

* G. C. Johnston, "The Pituitary Gland in its Relation to Epilepsy," *Surgery, Gynæcology, and Obstetrics*, April, 1914.

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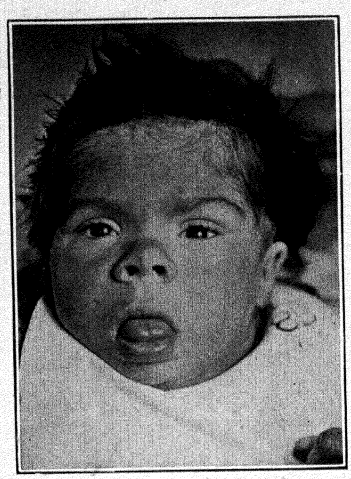
A. —An untreated cretin imbecile. Age 39 years.



B.—The same cretin, showing relative stature.

PLATE XXXVIII.

CRETINISM



Female cretin. Age 7 years. Idiot grade. Before treatment.



The same cretin after two years' treatment. Much brighter mentally, and is beginning to walk.

SYPHILITIC AMENTIA





Full-face and profile of a syphilitic idiot. Age 12½ years.

(*Photographs by Dr. Brushfield.*)

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from, the administration of suprarenal tablets. It is possible that the adrenals and the gonads may play a part in protecting the nervous system against toxins, and that consequently a defect of their secretion may be a causal factor in amentia and early dementia, but any such views are at present only speculative.

It is known that interstitial nephritis occurring in early childhood may cause the condition known as *renal dwarfism*, but neither this nor *pancreatic dwarfism*, is causally associated with any intellectual impairment. I have seen one case of mental deficiency in which *ateliosis and progeria* were present; but in general, with the exception of Fröhlich's syndrome, most persons suffering from the various forms of *infantilism* due to endocrine disorders are of normal mental development.

NUTRITIONAL AMENTIA.

(AMENTIA DUE TO MALNUTRITION.)

A state of general malnutrition is by no means uncommon during intra- or early extra-uterine existence. In many cases, particularly those happening before birth, the cause is obscure. There is no hereditary defect, the mother has appeared quite well during gestation, and yet for some reason or other the child at birth is exceedingly small, feeble, and is reared with the greatest difficulty. Many of these children are the first-born, others are the last-born, of a long family, and it may be that in the one the female generative organs have not attained their full physiological capacity for nourishing the ovum, whilst in the other this activity is on the wane. In some of these cases there is a very definite history of harassment, hardship, ill-health, or even serious disease whilst the mother was carrying, and then the feeble condition of the child is more intelligible. But cases occur in which none of these adverse factors have been present, and in which no cause can be found for the child's defective nutrition.

After birth, malnutrition may be dependent upon disease, insanitary surroundings, or mismanagement. Although there has been a considerable improvement in recent years, it is still unfortunately a fact that the conditions under which thousands of children are reared, particularly in our large towns, are highly inimical to development. This is sufficiently attested by the high infantile mortality rate.

What is the effect of such malnutrition upon the development of the brain? However good may be the inherent potentiality, it is clear that development cannot take place to the full in the absence of a food-supply which is adequate in quality and quantity, and consequently under such adverse conditions it is by no means uncommon to find considerable mental retardation. Such cases may simulate amentia so closely as to make a diagnosis impossible at the time, but my experience is that it is extremely rare for mental growth to be *permanently* arrested by these causes. Some embarrassment is felt for a time, but when the adverse factors are removed, the child rapidly makes up the arrears. The condition, in fact, is one of mental retardation. Exceptionally, however, it may happen for the malnutrition to be so severe, or to persist so long, that the arrears are never made up, and then some degree of mental deficiency of the secondary form is produced. I do not think such a result is at all common, but I have now seen a number of cases in which the most searching inquiry failed to discover any other cause, and I am disposed to think that it may occur. It is perhaps not unnecessary to point out that defective nutrition may be merely the determining factor where the potentiality for development is already defective, and such cases form one variety of developmental or delayed primary amentia; also that a large number of primary aments suffer from malnutrition as a consequence of their defect. In the present place we are, of course, only concerned with that very small proportion of cases which are the direct result of malnutrition.

It is obvious that the longer the period during which nutrition is disordered, the greater will be the probability of permanent defect. It would also appear that severe malnutrition before birth is more likely to lead to mental defect than when it occurs in infancy. Nearly all the cases of this type which I have seen have been due to malnutrition during intra-uterine life. Some of the children have been born prematurely, others at full term, but all have been very much below the normal weight, have shown marked signs of feebleness, and have been reared with the greatest difficulty. One case of this kind which I saw recently was the only child, and was born at the seventh month. The mother was in her usual health during gestation, but she is a delicate woman. At birth the child was extremely small, and when a fortnight old weighed only 2½ pounds. As a result of unremitting care and attention, the

parents succeeded in rearing her, but she was always backward in body and mind, and when I saw her at the age of three and a half years, she was no bigger than an average baby of twelve months She could crawl, but was quite unable to stand or walk, and the dorsiflexion of the great toes indicated that the myelination of the spinal motor tract was still imperfect. Movements of the hands and fingers were fair, she could seize anything, and could pick up a sixpence from the table. She was quite unable to speak, and made sounds like a baby during its first year. The circumference of the skull was 17¼ inches, corresponding to that of a normal child between the ninth and twelfth months, and there was a considerable deficiency in the frontal and parietal regions; but there were no other developmental anomalies. The child's special senses appeared to be normal. She could understand, and obey simple commands, was fond of pictures, and pointed to such common articles as a key, penny, knife, when told to do so. Her power of attention was good, and she would amuse herself for a considerable time with toys. She was clean in her habits, and could feed herself; in fact, her mother said that she was able to eat an egg with a spoon as neatly as a grown-up person. Unfortunately, the child succumbed shortly afterwards to enteritis, but I think it is highly probable that had she lived there would always have been some mild degree of mental impairment. A somewhat similar case was that of a girl brought to me at the age of six years, who in her mental and physical development corresponded to a normal child of about three years. There was no record of the weight at birth, but she was said to have been so small that it was thought she could not possibly live. Here, also, I think it is very doubtful whether mental development will ever be complete. I have seen several similar cases which have arrived at maturity, and have then presented a mild degree of feeble-mindedness.

With regard to malnutrition arising after birth, the effect does not seem so serious, and, as I have already remarked, although there may be some mental retardation, this is usually of a temporary nature, and is recovered from as the physical condition improves. Occasionally, however, a mild degree of defect remains, but it is always mild, and I have never known or heard of idiocy, or even imbecility, resulting from this cause.

One of the commonest disturbances of nutrition occurring in infancy is that due to rickets, and a " rachitic idiocy " has been

described. I have never seen such a case. Rickets may, of course, complicate primary or secondary amentia, and there can be no doubt that the mental development of the rachitic child is often delayed and abnormal; but, so far as my experience goes, rickets alone has never produced amentia. On the contrary, I know several adults of marked intellectual ability who show clear evidence of having suffered from severe rickets in childhood.

ISOLATION AMENTIA.

(Amentia due to Isolation or Sense Deprivation.)

The growing brain cells not only require to be supplied with their own particular food, but they must also be stimulated by vibrations transmitted through the organs of special sense. The effect of these may be compared to that produced by rays of light upon plant development; and in their absence growth of the neurones may be as imperfect as if the brain had been starved. This is well shown by the agenesis of the occipital cortex which occurs as a consequence of congenital non-development of the organs of vision—a fact which has been utilized by J. S. Bolton to map out accurately the visual area. But not only are sensations thus necessary for growth: they are also the raw materials of feelings and ideas. Should a single sensory avenue be closed, as in blindness or deafness, the mind must for ever remain the poorer for the lack of the impressions which would have entered through this channel, and if two or more special senses are defective the mind may be so impoverished as to constitute amentia.

As we have already seen, such sensory defects are occasionally present in primary amentia, and they are then complications which usually impose an insuperable obstacle to successful training. In secondary amentia, however, which we are now considering, there is no intrinsic incapacity of the cortical neurones, and if other sensory channels can be so utilized as to compensate in some degree for those diseased, the mental capacity may be but little impaired. Suitable training may therefore prevent the development of secondary amentia from these causes. That this is so is fully shown by the excellent results achieved in training establishments for the blind and deaf, as well as by some classical examples in which disease of several sensory channels had existed.

The commonest cause of the sensory deprivation in these cases is

inflammation resulting from one or other of the infectious fevers. The lesion may be central, but is usually at the periphery, and the organs most frequently affected are those of sight and hearing. I have, however, known it to follow injury to the brain cortex by hæmorrhage from a fractured skull. Amentia can only result when the damage occurs during early childhood, whilst cerebral development is immature, and where special educational training has been withheld, or has failed. I believe failure to be exceedingly rare, and the cases of this form of amentia which are met with are nearly always in persons whose early education has been neglected. They are, in fact, as much sufferers from a deprivation of special education as of special sense. In past years I met several instances in remote country districts. The child, deprived of sight or hearing in early life, was excluded from the village school. The local authority did not provide any special form of education, and did not further concern itself with him. He grew up without any training and became an ament. The necessity for, and great benefit to be derived from, training is now much more generally recognized, also better facilities for this are available, and in consequence cases of amentia due to sense deprivation are now rarely seen.

These patients are usually well grown and free from developmental anomalies. In the majority of instances the mental defect is mild, but it may be accompanied by hallucinations and delusions, and sometimes the behaviour is so erratic and untrustworthy as to necessitate committal to a mental hospital.

Illustrative Cases.

The following case is an example of this form of amentia.

Mild Amentia consequent on Congenital Blindness.—E. W. C., male. Born blind. No education. Admitted into imbecile institution at the age of fifteen, but found to be intractable and violent, and transferred to mental hospital. He is now twenty-nine years of age, and is a tall, well-developed, and well-nourished man of pleasing expression. Cranial circumference, 22¾ inches. He is quite blind, the eyes being represented by rudimentary bulbs of white, opaque, sclerotic tissue without any indication of cornea or iris. His memory is good; he has a tolerably good knowledge of places and events, can understand all that is said to him, and can

give a fair account of himself. He possesses imagination, but his ideas are simple and childish, and his reasoning is defective. He cannot read, write, sum, or do any kind of work, and he spends the day rocking himself to and fro in a chair and muttering to himself. After answering a question, he rambles on to himself in an incoherent way about analogies and philosophy. When asked what a philosopher is, he says: " A man who tries to make everybody else better." He then immediately goes on to talk about *Ally Sloper*, which, he says, has been read to him. He has aural hallucinations and delusions, and is very emotional and untrustworthy. In spite of his beatific appearance, he is liable to frequent outbreaks of sudden violence, and has repeatedly attacked the other patients. He is also a confirmed masturbator.

The following well-known cases may be briefly referred to in this place, as showing the really remarkable results which may attend the systematic education of patients suffering from severe sense deprivation.

*Laura Dewey Bridgman.**—An attack of scarlet fever at the age of two years caused suppuration of both eyes and both ears; taste and smell were also impaired. She was quite deaf, and sight was entirely abolished in the left eye; but she retained a slight perception of light in the right eye up to the eighth year, after which she became completely blind. She was admitted to the Perkins Institution for the Blind at Massachusetts at the age of seven years ten months, and received systematic education under Dr. Howe until she was twenty. Owing to the unremitting care and patience of Dr. Howe in training her cutaneous sensation (the only sense unimpaired), she became able to read and write in the deaf and dumb language, to express many of her feelings, to sew, knit, and perform certain household duties, and, in short, to live to a great extent the life of an ordinary person. She remained in the Perkins Institution until her death, at the age of sixty years. The general conclusion arrived at regarding her by Mr. Sangford was that " she was eccentric, not defective; she lacked certain data of thought, but not in a very marked way the power to use what data she had."

* See the " Life of Laura Bridgman," by M. S. Lamson, Boston, 1878; also an account by Dr. Howe in the Forty-Third Annual Report of the Perkins Institution and Massachusetts Asylum for the Blind. An abstract of this is given by Dr. Ireland in his " Mental Affections of Children."

The brain was examined by Dr. H. H. Donaldson and described by him in the *American Journal of Psychology*, September, 1890, and December, 1891.

The post-mortem examination showed that the auditory nerves, the optic nerves and tracts, and the olfactory bulbs, were very small. The grey matter of the cortex generally was thinner than normal, especially in the occipital, cuneus, and temporal lobes. In these situations there was also a deficiency in the number of nerve cells. There was considerable under-development of the inferior frontal and temporo-sphenoidal convolutions covering the island of Reil, particularly marked on the left side. The cranial circumference was 20·8 inches.

In another pupil of the Perkins Institution—*Helen Keller*—the result was even more remarkable. Miss Helen Keller lost sight and hearing at the age of nineteen months. She received unremitting care, and soon mastered the deaf and dumb language. By means of the Braille system she subsequently acquired French, German, Greek, and Latin, and then developed the power of oral speech. She passed the Harvard preliminary examination with honours at the age of nineteen years, and had a distinguished college career, afterwards writing several books, and evincing high intellectual ability.

Meystre, of Lausanne (Switzerland), was born deaf and dumb, and lost his sight by an accident at the age of five years. As a result of training he learned to articulate, and at the age of eighteen he was described as " a lively, intelligent and good-humoured fellow, an excellent carpenter, a first-rate turner, and runs about the building with a certainty and confidence which none of the merely blind pupils acquire. He has a great many ideas, and an instinctive dread of death."

*Agnes Halonen** was born in Finland in 1886. At the age of eighteen months she became blind from scarlet fever, and a year afterwards became deaf. She very soon ceased to speak, and expressed her wants by means of a few simple signs, such as putting her hand to her mouth when she wanted food. She could recognize members of her family by touch. At the age of eight she was sent to the Blind School at Helsingfors. Here she was taught to sew and knit, as well as the finger alphabet. At the age of seventeen she could read books in Braille and Moon's characters, and she could also write. She had some knowledge of geography, which had been taught her by means of raised maps. She knew many of

* " The Blind Deaf-Mute, Agnes Halonen," by Aug. Helin, Stockholm. Abstract in *Journal of Mental Science*, April, 1904, p. 336.

the capitals, mountains, and rivers in Europe and Asia, and she had a knowledge of the habits of plants and animals. She was able to sew, spin, crochet, plait, and make brushes, and generally was very intelligent.

Kaspar Hauser.—No account of this subject would be complete without a brief reference to this celebrated and mysterious case. It differs from the foregoing in that there was no disease of the sensory pathways, but the environment of the child for many years was such that they could not be exercised. It may truly be described as a case of mental arrest due to isolation.

On May 26, 1828, a youth, apparently about sixteen or seventeen years of age, was found near one of the gates of Nuremberg. He was unable to give any account of himself, and inquiries failed to discover how or whence he came or who he was. He was 4 feet 9 inches in height, very pale, with short, delicate beard on his chin and upper lip. His feet were tender and blistered, and showed no signs of having been confined in shoes. He scarcely knew how to use his fingers or hands, and his attempts at walking resembled the first efforts of a child. He could not understand what was said to him, and replied to all questions by a single phrase: " I will be a trooper, as my father was." His countenance was expressive of gross stupidity. He appeared to be hungry and thirsty, but refused everything offered to him except bread and water. He held in his hand a letter stating that the bearer had been left with the writer, who was a poor labourer with ten children, in October, 1812, and who, not knowing his parents, had brought him up in his house, without allowing him to stir out of it. This was regarded as being intended to deceive. Upon a pen being placed in his hand, the youth wrote the words " *Kaspar Hauser.*"

After an official inquiry—which, however, revealed nothing—he was adopted by the town of Nuremberg, and Professor Daumer undertook his education. He was found to be extremely child-like, and to have no knowledge of the most simple facts of every-day life. But he had a remarkable faculty of smell and for seeing things in the dark, and under the instruction of Daumer his mind expanded in a wonderful manner. In fact, probably as a consequence of its sudden awakening into activity, he became ill, and his education had to be discontinued for a time.

He was taught the use of language, and after a time was able to record his recollections. He said that he had always lived in a

small, dark cell, continually seated on the ground. He had had no covering, except a shirt and trousers, and had never seen the sky. When he awoke from sleep he was accustomed to find near him some bread and a pitcher of water, but he never saw the face of the person who brought them, and he had no knowledge that there were any other living creatures besides himself and the man who brought him food. This man eventually taught him to write his own name, and finally brought him to the Nuremberg gate.

For a time mental development took place with great rapidity; but the prolonged isolation had wrought an effect upon the brain cells from which they could not completely recover, and after a time their potentiality became exhausted and no further progress was made. He was taken under the protection of Lord Stanhope, and he was subsequently employed in the Court of Appeal, but he showed little real capacity for work. On October 17, 1829, he was found bleeding from a slight wound which he said had been inflicted by a stranger. On December 14, 1833, at Anspach, he met a stranger by appointment, on the promise that the mystery of his birth would be revealed. During the interview he was mortally stabbed and died three days afterwards.

A post-mortem examination showed a somewhat thickened skull and rather small brain, which did not completely overlap the cerebellum. The convolutions of the brain were also simpler than normal.

The mystery of Kaspar Hauser's birth and death attracted widespread interest, and has never been solved. It was contended by Earl Stanhope and the Duchess of Cleveland that he was an impostor; but this view was strongly combated by both Professor Daumer and the eminent Bavarian jurist, von Feuerbach. The latter considered that Hauser was heir to a princely German house, and was put out of the way to favour another succession. A careful examination of the facts regarding his condition when first found, his subsequent limited progress, his untimely and mysterious death, and the state of his brain, seem to show that his account was a truthful one, and that he exemplifies in a unique manner the effects of a prolonged isolation upon the cells of the brain.

CHAPTER XV

IDIOTS SAVANTS

We have seen that amentia is often characterized by an irregular as well as a defective mental development, and in a small number of patients this is so marked as to result in special aptitudes which are quite phenomenal, not merely in comparison with aments, but often with the acquirements of ordinary persons. These persons are suitably described as "idiots savants." The condition is relatively uncommon: but a considerable number of such cases have been recorded.

Presumably the special aptitude is related to an increased development of certain groups of neurones, but as to how this is brought about we can only conjecture. In many of the cases indications of the special tendency have been present in early life, although similar tendencies have rarely existed in the ancestors, and I can only assume that this has either been due to some primary developmental anomaly, or to some early fortuitous circumstance which has aroused the child's interest in a particular direction, and thence led to the concentration of all his mental activities upon the one object. The talent, whatever it is, and however originating, certainly owes much of its development to constant exercise.

It is to be noted that although these persons are spoken of as "idiots," they are rarely of the lowest grade of mental defect. Most of them would more properly be classed as imbeciles or merely feeble-minded. It is remarkable, however, that they almost invariably belong to the male sex, female idiots savants being very rare.

Peterson is of the opinion that the talents of these persons lie chiefly in the direction of imitation, and that they have no capacity for originating. He also thinks that they are frequently lost before adult life. These statements are undoubtedly true of many cases, but they are by no means invariably so. I doubt whether the latter

one is even the rule, and several illustrations to the contrary will be cited in the following pages.

The nature of these phenomenal acquirements varies considerably. In some persons the talent consists of an extraordinary development of one of the *special senses*. Thus, Jules Voisin described an imbecile with a wonderful delicacy of smell. She never ate or drank anything without smelling it, and if given coffee (for which she had a great fondness) in a glass which had contained wine, she would at once detect this and refuse to drink it. Some imbeciles are able by smelling to pick out their own and their companion's clothes, and Séguin noticed even idiots in whom this faculty was developed to an extraordinary degree.

In other cases there is an increased development of the visual sense. Several of the drawing and mechanical geniuses have a wonderful capacity for detecting slight differences of form and size, whilst the following case, shown to me by Dr. R. Langdon Down, is an excellent example of this class. It is that of a boy, a patient at Normansfield, whose hobby was the collection of small bright articles of any description, and this interest had so cultivated his quickness and sharpness of sight that nothing in the shape of a pin, a minute fragment of broken glass, or any shining particle, invisible to the ordinary person, ever escaped him. Other patients have a phenomenal sense of hearing—as, for example, the wild boy of Aveyron described by Itard, as well as some who will be mentioned later on account of their speech and memory. Finally, there are some cases in which the hyper-development concerns the tactile sense. Dr. R. Langdon Down told me of a boy at Normansfield whose sense of touch was so delicate and his fingers so deft that he could take a page of the *Graphic* and gradually split it into two perfect sheets, as one would peel a postage-stamp off an envelope.

In another group of cases these extraordinary talents concern the *motor functions*. Sometimes there is an almost incredible ability for the performance of mechanical work requiring the greatest cunning and dexterity: as an example of this the Earlswood case, which will presently be described, is probably unique. In other persons the gift takes the form of drawing, and many of the walls of Earlswood are adorned with beautifully executed crayon copies of well-known pictures drawn by the mentally deficient brother of the patient just referred to. Occasionally the talent for drawing passes beyond mere picture-copying, and shows real artistic capacity of no mean

order. This was so with the celebrated Gottfried Mind,* who had such a marvellous faculty for drawing pictures of cats that he was known as "The Cats' Raphael." Gottfried Mind was a cretin imbecile born at Berne in 1768, where he died at the age of forty-six years. At an early age he showed considerable talent for drawing, and as it was obvious that he would never be able to earn his living in any ordinary occupation, his father's employer interested himself in providing young Gottfried with some training. He could neither read nor write, he had no idea of the value of money, his hands were remarkable for their large size and roughness, and his general appearance was so obviously indicative of mental defect that his walks through the city were usually to the accompaniment of a crowd of jeering children. In spite of all this his drawings and water-colour sketches not only of cats, but of deer, rabbits, bears, and groups of children, were so marvellously lifelike and skilfully executed that he acquired a European fame. One of his pictures, of a cat and kittens, was purchased by George IV.

Under the heading of motor may also be described those cases possessing, if not the gift of tongues, at all events an extraordinary capacity for reproducing spoken words. Dr. Martin W. Barr described an epileptic idiot, aged twenty-two years, who, in spite of the most careful teaching, could neither learn to read nor write, although he was able to perform small domestic duties. Spontaneously he hardly spoke at all, and then only short disconnected words or the simplest sentences; but he had an extraordinary capacity for repeating fluently and with proper intonation everything said to him, whether in his mother-tongue or in such languages as Greek, Japanese, Danish, Spanish, etc. Those cases in which an imbecile will reel off cantos of poetry verbatim probably also belong to this category.

In a considerable proportion of these idiots savants the gift is one of *memory* in some form or other, and many interesting and remarkable examples of this have been described. There are two such in Earlswood Institution. One is a man, sixty-five years of age, suffering from high-grade amentia, whose penchant is biographical history. It is only necessary to mention to him the name of any prominent personage in early or ancient history, and out will flow a full account of his birth, life, and death in a steady, unhesitating

* See an interesting account of Gottfried Mind, with many illustrations of his work, in *The Animal World*, January, 1909, by E. G. Fairholme.

stream. His knowledge has been acquired by poring over biographical details in such books as were available, and is, of course, simply a matter of memory. It is not, however, merely repetitive, for he stands cross-questioning in a manner which shows that he has some knowledge, although not full understanding, of the occurrences he is talking about. Dr. Caldecott told me that until the last few years there was no decline in this man's capacity; latterly, however, he has begun to show signs of mental and bodily old age. The other is a younger man, aged fifty-six years, whose memory also related to dates and occurrences, but only such as have come under his own notice. He is a most valuable referee on matters connected with the previous life of the institution, and can repeat the year, month, and day of coming and going, of all the medical officers during his period of residence.

Dr. R. Langdon Down showed me a similar case at Normansfield: the patient is a high-grade imbecile, thirty-eight years of age, whose phenomenal memory chiefly relates to numbers, but he also has a pronounced sense of locality. His speciality is the calendar, and if given any date during the last five years, he will without any hesitation state the correct day of the week. But he seems almost equally at home with a hymn-book, and will promptly give the number of any hymn of which he is given the first line, or *vice versa*. His home is near Maida Vale, and on being asked what streets he would have to pass through in going home from Waterloo station, he named each one in the right order. This patient can also give the product of any two numbers under twenty with the rapidity of a reflex movement.

A similar case was shown by Dr. Witzmann at a meeting of the Society for Psychiatry and Neurology in Vienna. The patient, an inmate of an idiot asylum, aged twenty years, possessed an extraordinary memory for certain of the data recorded in calendars. He could tell with the utmost readiness what day of the week it had been, or would be, on any given date in any year between 1000 and 2000 A.D. He also knew the patron saint of each day of the month. Such test questions as the following were put to him, and he instantly answered correctly. *Question:* What was the day of the week on October 3, 1907? *Answer:* Thursday. *Question:* What was the day of the week on June 14, 1808? *Answer:* 1808 was a leap year; June 14 was a Tuesday. The patient could read and write only tolerably well, was backward in arithmetic, and had no

aptitude whatever for manual work. It seemed probable that he had learned by heart the date of Easter for each year between 1000 and 2000, and that his memory of this, together with some kind of simple code of his own devising, enabled him to give the correct answers.

Dr. Forbes Winslow described the case of a man who could remember "the day when every person had been buried in the parish for thirty-five years, and could repeat with unvarying accuracy the name and age of the deceased, and the mourners at the funeral. But he was a complete fool. Out of the line of burials he had not one idea, could not give an intelligible reply to a single question, nor be trusted even to feed himself."

In other cases this phenomenal memory exists in the simplest automatic form. Thus, there are many idiots who cannot speak a single word, and yet can hum a tune, which they have only heard once, with perfect accuracy. Other aments will reel off poetry almost *ad infinitum*, but without any understanding of the sense of what they are saying, or even of the meaning of the words. Dr. Langdon Down has described the case of a boy who, having read a book, would recite correctly whole pages word for word. Dr. Maudsley mentions the case of an imbecile who could similarly repeat verbatim from a newspaper he had just read; also of another more remarkable patient who could repeat backwards what he had read.

Many aments are fond of music, and some particularly so; but in a few instances this propensity has an extraordinary development. One of the most striking examples of this was given by Dr. Trélat, and this case is also interesting in being a female. Dr. Trélat said "they had in the Salpêtrière an imbecile born blind, affected with rickets and crippled, who had great musical talents. Her voice was very correct, and whenever she had sung or heard some piece she knew perfectly well the words and the music. As long as she lived they came to her to correct the mistakes in singing of her companions; they asked her to repeat a passage which had gone wrong, which she always did admirably. One day, Géraldy Liszt and Meyerbeer came to the humble singing-class of our aslyum to bring her their encouraging consolations." Dr. Séguin and Dr. Barr* also record cases in which pronounced musical ability was present.

Lastly, in marked contradiction to the general failing of aments in this respect, a few of these persons have an extraordinary capacity

* M. W. Barr, "Mental Defectives," 1905.

for arithmetic and calculation. One case described by Dr. J. Langdon Down is that of an inmate of Earlswood Institution, an imbecile boy of twelve years, who could multiply three figures by three other figures with astonishing speed. Dr. Howe has also recorded the case of a low-grade ament who, if told the age of anyone, would in a very short time calculate the number of minutes he had lived. Dr. Wizel* also records the case of an imbecile (apparently suffering from secondary amentia) who had a most remarkable faculty for arithmetic, particularly multiplication and division. For instance, she divided (mentally) 576, 560, and 336 by 16 with astonishing quickness: she multiplied such numbers as 23×23, 45×18, 78×78, almost immediately and by a peculiar method of her own. And yet she was remarkably poor at addition and subtraction, and said that $57+63=141$, $48+53=163$.

A still more interesting case† was described by Dr. L. Lotte of Armentières. It is that of a young man named Fleury, an inmate of the asylum, who was completely blind from ophthalmia neonatorum, but who developed the faculty of calculating to a degree little short of marvellous. For instance, he could give the square root of any number of four figures in an average of four seconds, and the cube root of any number of six figures in six seconds. When he was asked how many grains of corn there would be in any one of 64 boxes, with 1 in the first, 2 in the second, 4 in the third, 8 in the fourth, and so on, he gave the answers for the fourteenth (8,192), for the eighteenth (131,072), and the twenty-fourth (8,388,608) instantaneously, and he gave the figures for the forty-eighth box (140,737,488,355,328) in six seconds. He also gave the total in all the 64 boxes correctly (18,446,734,073,709,551,615) in forty-five seconds.

I may conclude this chapter on idiots savants with an account of the following extremely interesting case:

The Genius of Earlswood Asylum.

From the year 1850 to 1916 there was resident in Earlswood Asylum‡ a patient who justly earned this title, and whose skill in drawing, invention, and mechanical dexterity was certainly unequalled by an inmate of any similar institution in existence. When I saw him at the age of seventy-eight years he was still actively

* A. Wizel, *Archiv für Psychiat.*, Band xxxviii., Heft 1.

† L. Lotte, *l'Encéphale*, March, 1920, quoted in the *Lancet*, November 20, 1920.

‡ Now the Royal Earlswood Institution.

engaged in his workshop. I am greatly indebted to the late Dr. Caldecott for his kindness in allowing me to examine this patient and his wonderful productions: also for placing at my disposal a mass of particulars and photographs of the case which he took great trouble to collect.

J. H. Pullen was born in the year 1835. The family history was somewhat scanty, the only informant available being the patient's sister; but, as far as could be ascertained, the parents and grandparents were steady, sober, hard-working people, and there was no history of insanity, epilepsy, or any of the usual antecedents of primary amentia. The parents, however, were first cousins. Of thirteen children born in the family, six died in infancy, and of the remaining seven only three were then alive. It is interesting to note that another brother was deaf and dumb, and had an even greater aptitude for drawing than the patient: he died in Earlswood of cancer at the age of thirty-five years.

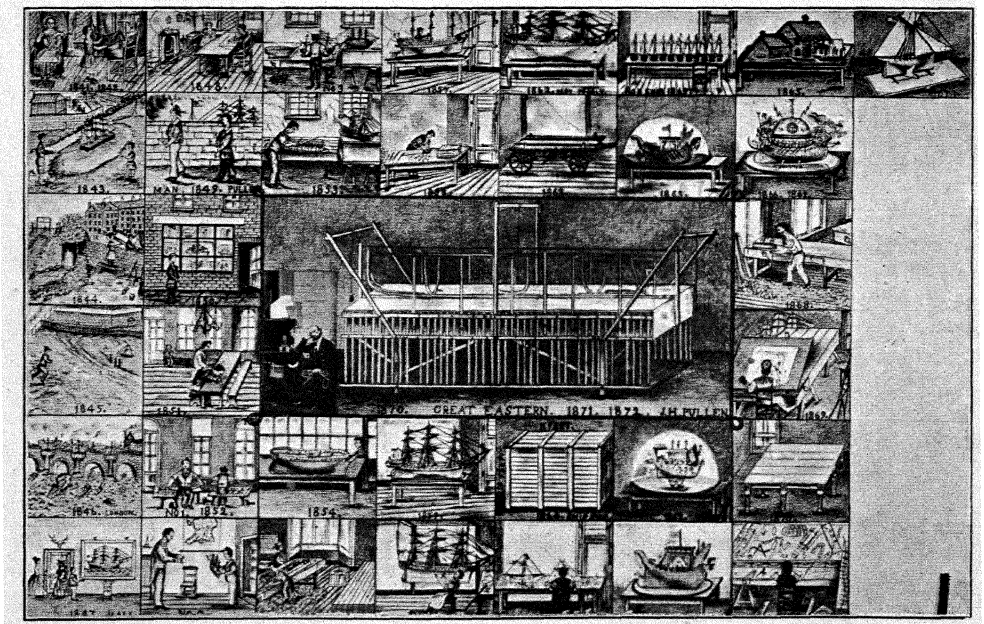
There are no particulars as to when the patient began to walk, but he did not talk until seven years, and for a long time only uttered the word "muvver." He never went to school, as no school would take him. He showed an early taste for drawing, and used to spend the greater part of his time at this occupation or in carving ships out of bits of firewood. Such instruction as he had he received from his parents and brothers and sisters at home, and from these he learned to write and spell the names of simple objects, but this was practically the sum total of his scholastic acquirements.

Pullen was admitted to Earlswood at the age of fifteen years. On admission he was active and well grown, his height being 5 feet 7¼ inches, and his weight 9 stones 11 pounds. The cranial circumference was 21⅝ inches. He was described as having a good memory and power of imitation, and as being fond of drawing and examining how things were made. His senses of taste, smell, and touch were good: he was able to wash, dress, and take care of his person, but his speech was very imperfect and he was *very deaf*.

He was put to work in the carpenter's shop, and soon became an expert craftsman. It was clear, however, that he possessed initiative, imagination, resource, and attention far above the other inmates, and in consequence he was allowed considerable liberty of action and freedom to follow his own bent. The result, after sixty years, is to be seen in the fifty to sixty crayon drawings, the carvings in ivory and wood, and the wonderful models of ships and

[To face page 394.]

THE "GENIUS" OF EARLSWOOD ASYLUM.

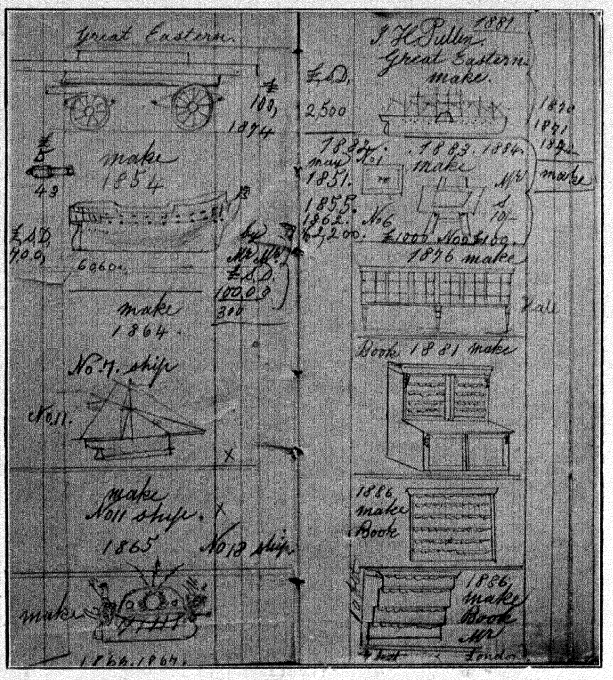


Photograph of the patient's own diagrammatic history of his life, showing his principal occupations and the results of his work between the years 1841, when a little boy, and 1873, when aged 38 years.

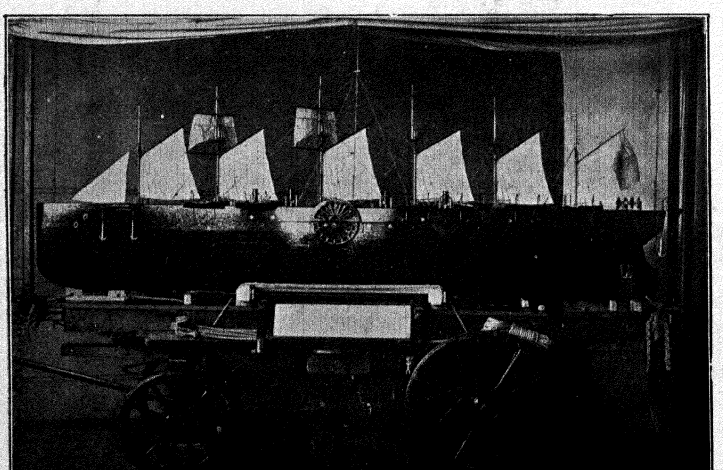
(*Photograph from Dr. Caldecott.*)

PLATE XL.

THE "GENIUS" OF EARLSWOOD ASYLUM.



Photograph of the first page of the patient's private memorandum book.



The *Great Eastern*, with its carriage, as exhibited at the Fisheries Exhibition, 1883. (*For description see text.*)

the like, which to-day adorn the walls and fill the two large work-rooms placed at his disposal in Earlswood Asylum. Some idea of his skill in drawing and mechanical invention will be gathered from the accompanying photographs of his work (see Plates), but, as Dr. Caldecott very truly says, it is difficult by this means really to appreciate their beauty; the originals must be seen to do this.

Pullen designed and drew a pictorial history of his life, which shows his chief occupations between the years 1841 and 1873. A reproduction of this is given in the accompanying Plate.

One of the most wonderful of his works, and the one of which he was the most proud, is the model of a steamship which he named the *Great Eastern*. This, I think, he rightly regarded as his *magnum opus*, and it attracted universal admiration at the Fisheries Exhibition, where it was shown in 1883. It took him three years and three months to complete, and every detail, including brass anchors, screw, pulley-blocks, and copper paddles, were actually *made* by the patient from careful drawings, which he prepared beforehand. The planks of this leviathan are fixed to the ribs by wooden pins to the number of nearly a million and a quarter. All these were made by Pullen in a special instrument which he also planned and made. He also devised and built a strong carriage on four wheels for the conveyance of the ship. The model is 10 feet long, 18⅝ inches wide, and 13⅝ inches in depth. It contains 5,585 copper rivets, and there are thirteen lifeboats hoisted on complete davits, each of which is a perfectly finished model. It is fitted with paddles, screw, and engines, and it contains state cabins, which are decorated and furnished with chairs, tables, beds, and bunks. In fact, the whole thing is complete to the most minute detail, and will bear the closest inspection. He also invented and attached an arrangement of pulleys by which the whole upper deck can be raised so as to show the parts below. I believe that when first put into water the huge model capsized, but that has since been remedied. It is perhaps hardly to be expected that a person with no knowledge of practical boat-building should succeed in making a vessel that would be really navigable, but as a highly finished model it is unmatched in its completeness.

Another of Pullen's productions is an immense but most beautifully finished kite in the form of a ship under full sail. Another is a fully rigged man-of-war of the old wooden type. This is copper-riveted, and contains forty-two brass cannon, all of which were

made by the patient. The rigging contains 200 pulley-blocks, all capable of working. Another production, which testifies to his imaginative as well as mechanical ability, consists of a fantastic barge most beautifully carved out of ivory, ebony, and other woods. Upon the prow are seated four angels carved out of ivory, whilst the stern is occupied by a figure of His Satanic Majesty. There are twelve oars, beautifully jointed, and worked mechanically from a centre-rod.

One of his later pieces of work was a monstrous human form about 13 feet high. This black-bearded, terrrible-looking figure is armed with a gigantic sword, and can be made to perform a variety of movements, such as opening and shutting the mouth and eyes, protruding the tongue, rotating the head, raising the arms, etc., by means of an elaborate internal mechanism. It is calculated to strike terror into the heart of any juvenile beholder. Of this, with the White Knight, he might truly have said, "It's my own invention."

Other productions include bookcases, chairs, tables, work-benches, picture-frames, and the like; in fact, the list alone of his work during the sixty-six years he was in the asylum would fill several pages of this book.

In disposition Pullen was usually quiet, well-behaved, and good-tempered, and he seemed to be perfectly happy so long as he was allowed to work out his own ideas when and how he pleased. He was intolerant of supervision, inclined to be suspicious of strangers, and easily affronted by injudicious busybodies. At times he got a little out of hand, and if denied requests which were quite unreasonable was apt to become sulky or passionate. On one occasion he threatened to blow up the place because a request had been refused. and it is quite likely that he would have attempted to do so had he not been mollified. On another occasion he actually did partially wreck his workshop in a fit of passion. Many years ago there was a steward of the asylum to whom Pullen took a violent dislike, and he spent many days planning his destruction. This culminated in the erection over the door of a most diabolical instrument which was intended to guillotine the unfortunate officer, and there is no doubt that it would have done so had it not gone off a fraction of a second too late.

He once became enamoured of a female whom he had chanced to meet outside the asylum. Nothing would satisfy him but that he should have his discharge and be allowed to marry her. He moped

about, utterly refused to do any work or to listen to argument or persuasion, and the position was clearly critical. A member of the committee had a happy inspiration, and a gorgeous naval uniform, resplendent in blue and gold, was procured. Pullen was invited into the board-room and informed that his case had been carefully considered, and that it had been decided to accede to his request. At the same time it was pointed out to him that the committee would be exceedingly sorry to lose his valuable services, and that, if he would reconsider the matter, they would, as an alternative, grant him a commission as Admiral in the Navy. The uniform was then shown to him as an earnest of their intention. This was too much for Pullen; he took the uniform, and never afterwards alluded to the subject of marriage. This uniform he usually donned on ceremonial occasions.

A note in the case-book describes him as "the quintessence of self-conceit," and a consuming vanity and almost overwhelming sense of his own cleverness and importance were very marked characteristics. Whilst showing me his handiwork he frequently stopped to pat his head and say, "Very clever"; and when I produced a tape-measure and asked permission to measure his cranial capacity he was delighted, and evidently regarded me as a very sensible person. At the same time, in spite of his childish egotism, he was by no means deficient in some power of looking after himself, and on several occasions he was found selling privately and for his own advantage little articles he had made. Many of his works were done under the idea, or pretence, that he had a commission for them at a contract price, and this childish fancy, as well as his extremely limited vocabulary, is illustrated by his private memorandum-book, the photograph of a page of which is shown in the accompanying Plate.

Pullen died on May 31, 1916, at the age of eighty-one years. For several years previously his ability had undergone a progressive decline. He had gradually lost his powers of design and invention, and he spent most of his time carving in bone and ivory, but these productions showed a marked deterioration in comparison with his former work. A post-mortem examination made by Dr. Stephens showed senile decay with a little pneumonia. The brain was examined by Dr. F. Sano,* to whose account I am indebted for the following particulars.

* F. Sano, *Journal of Mental Science*, July, 1918.

The weight of the brain, after being hardened for five and a half months in formalin, was 1,190 grammes. There was senile atrophy with marked arterio-sclerosis and enlargement of the ventricles. Dr. Sano states "The brain is small; its frontal and temporal lobes are badly developed; there is a lack of complexity in the convolutional pattern of these lobes, and this is obviously marked in the speech centre: his deaf mutism was more central than peripheral in origin. The parietal lobes were not so bad, the occipital lobes were good, the corpus callosum was remarkable, and he was bound to have special capacity in the visual sphere of his mental existence."

What conclusion are we to come to regarding the condition of this remarkable man? His observation, comparison, attention, inventiveness, memory, will, and pertinacity, were extraordinary, as is shown by the foregoing account; and yet he was obviously too childish, and at the same time too emotional and unstable, to make any headway, or even to hold his own in the outside world. Without someone to stage-manage him, his abilities would never have sufficed to provide him with the necessities of life; even if they had, his lack of prudence and common sense would have prevented him from efficiently managing his affairs. Beyond simple words of one syllable, he never learned to read or write: he could understand a little of what was said to him by lip-reading and signs, but, except for a few words, most of what he said was unintelligible.

From his mental condition and the state of his brain one can justifiably conclude that Pullen was a primary ament. His defects of hearing and speech were apparently due to developmental abnormalities of the brain. In consequence of his deafness he was refused admission to school, being thereby deprived of systematic instruction and of normal intercourse with his fellows. Left largely to himself, he spent his time copying pictures and carving firewood; the energy of his mind was thus concentrated upon these pursuits until he gradually developed a capacity for drawing, carving in wood and later in ivory, and a manual dexterity of the highest order. I think the combination of these attainments with his deafness, childish simplicity, egotism, suspicion of strangers, and sullen or passionate outbreaks when thwarted, were due to an incomplete and irregular development of his brain; that he was, in fact, an unstable, high-grade, primary ament.

CHAPTER XVI

MORAL DEFICIENCY

HITHERTO we have been mainly concerned with defect of the intellectual attributes of mind as a cause of incapacity for social adaptation; it is now necessary to consider those attributes which more particularly affect the moral relationships and behaviour of the individual, abnormality of which gives rise to anti-social conduct, delinquency and crime. The relationship of mind to misconduct is obviously a question of very great importance, not merely to the psychiatrist and psychologist, but also to the jurist and sociologist; it is, however, only during recent years that this importance has been recognized. In America, it is true, valuable investigations in this field have been conducted for some time past, and the pioneer work of Dr. W. Healy in particular has had far-reaching results; but in England progress has been slower, and the fact that delinquency is largely a psychological problem is here only beginning to be generally appreciated. There are now, however, a number of clinics in this country for the expert examination and treatment of young offenders, and special arrangements have been made for their psychological investigation in a few prisons. There can be little doubt that the extension of such facilities and of child guidance clinics, provided they are kept on sane and proper lines and are not allowed to develop into sentimental fads, will eventually be attended with a decrease in the number of criminals and the amount of crime.

While it is necessary for a proper understanding of the subject that we should first of all consider the psychological basis of misconduct in general, it is desirable to make it clear that the subsequent description will only be concerned with misconduct as it occurs in defectives. But even from this limited aspect the subject is one

of great importance. For not only is there one class of defectives, specially defined by the law as *moral defectives*, in whom crime is the dominating characteristic, but a proportion of ordinary defectives are guilty of criminal acts; also, mental deficiency may be alleged or simulated as an excuse for the commission of crime. Further, the study of misconduct in defectives may throw some light upon habitual criminality and crime in general.

It is necessary to state that I apply the term "misconduct" to any form of behaviour which contravenes the legal or moral standards of the community to which the individual belongs. Legal misconduct is a violation of, or non-conformity to, the law, and is not necessarily immoral conduct. Criminal conduct is a particular and more serious form of legal misconduct. Immoral and vicious conduct is a violation of the social or moral, but not necessarily of the legal, standard. Broadly, it may be regarded as conduct which is opposed to the general feeling and ideals of the community, or, as some would regard it, to the Divine Law. It is clear, however, that these legal and moral standards vary in different races and at different periods in the same race. Behaviour which the members of one race consider to be moral and correct is considered by those of another to be immoral and wrong; as witness the four wives allowed to a man in Mohammedan as compared with the one permitted in Christian countries. Actions which a nation regards as lawful and commendable at one time are reprobated and made criminal at another; as, for instance, the practices of duelling and witch hunting. The former existed in England up to a little over a hundred years ago; whilst "witchcraft" was a capital crime in this country up to the year 1736. Even acts which still continue to be regarded as crimes increase or diminish in their enormity within the course of a few generations. As recently as the year 1777 there was hanged at Tyburn a celebrated divine and hymn-writer, Dr. Dodd, for the crime of forging Lord Chesterfield's name to a bond; an offence which to-day would have met with a few years' imprisonment at the most. And by the side of Dr. Dodd was hanged a love-sick youth whose only offence was that he had attempted to commit suicide. These few examples will suffice to show that legal and moral standards have undergone, and, as is common knowledge, are still undergoing, considerable modification; that, in fact, "crime is made by the law." Misconduct, therefore, is simply the violation of, or failure to conform to, such laws and standards as are current

at the time. The question we have to consider is, what is the psychological basis of this violation or failure? Before this can be answered we must know what are the psychological factors concerned in the regulation of conduct.

THE REGULATION OF CONDUCT.

As we have seen in a previous chapter, the chief mainspring of human conduct lies in certain instinctive tendencies and their related emotions. These tendencies represent specific forms of conation, and have been evolved, and have survived, because they have been beneficial, or even essential, to the preservation of the individual and so to the perpetuation of the race. The instinctive-emotional tendencies of man are numerous, and many of them date from his very early human or pre-human ancestors. They all have certain characteristics in common—namely, each is aroused by a particular emotion or perception; each results in a particular mode of action which is often so immediate as to resemble a reflex; but in each this mode of action is capable of being modified, or even inhibited, by individual experience and the development of higher sentiments and ideals.

If we imagine man as he was in the early dawn of his existence, at a time when the social unit probably consisted of a male with one or more females and their offspring, there can be little doubt that he was not far removed from the animals surrounding him. Doubtless he was more intelligent, he also had the gift of speech and considerable manual dexterity; but his conduct must have consisted largely, if not almost entirely, of a succession of acts due to the arousal of his primitive instincts by the sense-perceptions of the moment. To take, for our present purpose, a few of the chief of these instinctive tendencies: The arousal of the sex instinct by the presence of a female who was sexually attractive would result in an attempt at sexual intercourse; the arousal of the acquisitive instinct by the sight of some desirable object would result in its seizure; the arousal of the pugnacious instinct by the sight of an enemy would result in an immediate attack; the arousal of the self-displaying instinct would lead to arrogant attitudes, vaunting and boastful lying. Instinctive behaviour of this kind is common in many primitive tribes today, and I think there can be little doubt that it was the type of behaviour which characterized primeval man.

How long man remained in this stage we cannot say. Gradually, however, perhaps in the course of hundreds of thousands of years, these simple family units became congregated into small communities with more settled habitations, the members of which had acquired some personal possessions. In such a community some measure of order would at first be secured by brute force, and some restraint would be exercised over behaviour through the fear of retaliation. But the race was gradually accumulating experience and increasing in intelligence, so that in course of time man would realize that some definite rules of conduct must be laid down, that some definite penalties must be prescribed for their non-observance, and that retaliation must be regularized.

It would, no doubt, be a long time before the observance of these primitive laws became general. Many infractions would be committed and many penalties suffered. But eventually most members of the community would realize that misconduct did not pay, and, as a result of his appreciation that certain actions were taboo, and of his fear of punishment should they be committed, man would gradually develop some measure of control over his primitive instinctive impulses. Having reached this stage, he would either succeed in checking the forbidden act altogether, or at any rate in delaying the commission of it until he could do so without risk of detection. The result would be a gradual change in the type of human behaviour. Conduct, whilst still having its roots in man's primitive instincts, would no longer be entirely blind, automatic and reflex; but would become more and more deliberate, discriminating and controlled. Man, in short, would have acquired a brake; he would have attained the first stage in the regulation of conduct, and this stage would be primarily based upon his intellectual recognition of the fact that certain acts were forbidden and others permitted; upon what we may term the beginnings of social and ethical perception.

Apart from the fear of retaliation or punishment, it seems unlikely that man, at this stage, would be capable of experiencing much emotion or sentiment as to the rightness or wrongness of his acts. Such control as he had would only be effective if detection, and punishment, seemed probable. But in course of time further mental development took place. As we have previously seen, there are certain other instincts whose manifestations hitherto would have had but a limited scope, but which, in the changed circumstances of man's social environment and his settled mode of life would now

be able to find much wider expression. Those of particular importance in this respect are the parental and gregarious instincts.

The parental instinct is accompanied by a powerful emotion of protectiveness and tenderness for the individual's own offspring. There can be little doubt, however, that when man became firmly established in a communal life, and in a community which was often in a state of conflict with adjoining ones, these emotions would extend to the unprotected offspring of other members of his own society. In course of time, and as man progressed through barbarism to civilization, these emotions would undergo still further development, until they eventually crystallized into the sentiments and ideals of kindness, mercy, charity and benevolence, relative to conduct in general. McDougall claims, indeed, that the tender and protective emotion experienced by the parent is the prime source of origin of all the altruistic sentiments; but it may be that a reciprocal emotion felt by the child for its parents also plays a part in the development of these sentiments.

In primeval man the gregarious instinct was probably only accompanied by comparatively simple feelings of uneasiness and fear when the individual was separated from his fellows, and of satisfaction and contentment on rejoining them. Many animals, particularly young ones, manifest these feelings in similar circumstances. But as human society gradually became more organized and differentiated into grades and classes; as conformity to law and custom began to be attended with material advantages, and violation and non-conformity with serious disadvantages; as knowledge of happenings became more readily transmitted throughout the community, it became of increasing importance for the individual to gain the approbation of his fellows. Consequently, from the simple feelings associated with the gregarious instinct there were gradually evolved the more complex emotions of self-esteem, satisfaction, obligation, submissiveness, shame and humiliation in regard to man's thoughts of his standing with his fellows; the totality of which emotions and ideals make up the sentiment of self-respect.

This increased development of man's emotions and sentiments, and their incorporation into the structure of mind to form his character, was necessarily attended with important results upon his conduct. He was now able to experience emotions of tenderness, mercy and charity towards others; to experience emotions about himself in regard to the opinion of his fellows; to form ideals of what

was correct and what was incorrect behaviour; not only to know that certain actions were regarded as right and others wrong, but to experience emotions regarding such acts. To do what was enjoined upon him, for instance, gave him a feeling of virtue and increased self-respect; whilst to do, or think of doing, what was forbidden was attended with a sense of disquietude, abasement and remorse. In short, to his simple ethical perception there had now been added a social, ethical and moral *feeling*; a sentiment in regard to conduct, a " moral sense," or " conscience."

With the development of this moral sense man acquired a second brake over his primitive instinctive impulses, and, provided it was developed in sufficient degree, a brake of much greater power than the first. For moral sense, using this term to embrace all the higher altruistic feelings appertaining to ideals of conduct, enables the individual not merely to control his primitive instincts when detection is probable, but to do so in all circumstances, even if it should be to his material disadvantage. Further, moral sense is not merely inhibitory. As we have seen, it has a large emotional content, being made up of feelings of honour, duty, obligation and the like, and these emotions, together with those derived from the primitive feeling of tenderness, invest it with a strong driving force of its own. Moral sense, in short, not only enables the individual to eschew the wrong, but impels him to do the right; often it may be in the face of great difficulties and physical suffering.

The foregoing outline of the evolution of the psychological mechanisms concerned in the regulation of conduct in the race has necessarily been very brief and, owing to the very nature of the subject, largely conjectural. I think, however, there can be little doubt that it was in some such manner that the higher controlling factors of mind were evolved and the regulation of conduct acquired. Some confirmation of this is afforded by the developmental history of the individual, to which I may briefly allude.

During infancy, the child of even highly moral parents has neither ethical perception nor feeling, and conduct is entirely of the instinctive-impulsive type; although, as we have previously seen, the strength of the various instincts varies considerably in different children. Gradually, as a result of precept, example, admonition and, it may be, punishment, the child of a few years old learns that certain acts meet with approval and others with disapproval and do not pay. He develops some degree of ethical preception and verbal morality.

In short, he acquires his first brake, and, as a consequence, his behaviour becomes less impulsive and more discriminating and controlled. During the years of early childhood he may show some evidence of tender feeling towards his parents and even of regard for the opinion of those of whom he is fond; but the subsequent development of these and the evolution from them of the altruistic sentiments will be largely dependent upon the nature of his surroundings. Provided these are satisfactory he gradually acquires ideals of conduct, and develops the beginnings of moral sense. By the time adolescence is reached, in some cases considerably before this, these ideals have usually become firmly established; his emotions of increased self-respect or of self-abasement in regard to his acts have become more pronounced, and he has developed sufficient moral sense to enable him to conform to the accepted standards of his community. It is thus seen that in the individual the development of control over conduct proceeds through similar stages to those which have been outlined as probably taking place in the race. It may be added that the weakening of such control, which often occurs in progressive mental deterioration, takes place in the reverse order of this development; the higher sentiments and ideals being first affected, and subsequently the perceptions.

Let us now consider the general effect of this mental evolution upon the behaviour of civilized, as compared with primitive, man. There is no doubt that man's innate instinctive tendencies are still the basis of most of his behaviour. If we could imagine a civilized human being in whom they were absent, he would be a highly complicated but quite inert piece of mechanism, as McDougall says, "like a wonderful clockwork whose mainspring has been removed, or a steam-engine whose fires have been drawn." There can equally be no doubt that many of the instincts which actuate civilized man are identical with those which moved his prehistoric ancestors; this, for instance, is the case with those to which I have alluded—*i.e.*, sexual, aggressive, and acquisitive—for these instincts are fundamental and essential to the preservation of the individual and the perpetuation of the race. It is obvious, however, that the manner in which these instincts are manifested, and in some individuals the very instincts themselves, have undergone a considerable modification. The sexual instinct is still present; it is, indeed, probably the strongest and most deeply rooted, and the feeling of desire is capable of being aroused in most normal men and

women by the presence of particular members of the opposite sex who, for them, exert a sexual affinity. But the legal and moral standards of civilized society regard the original primitive manifestations of this instinct as criminal, and conformity to these standards requires that the individual shall no longer attain the end by seduction, rape, and promiscuous intercourse, but by means of courtship, marriage, and within the bonds of wedlock.

Similarly with the aggressive instinct. In primitive man the sight of an enemy led to his being immediately attacked, and if possible killed. The same feeling and tendency to action is still aroused in most civilized men by a deliberate insult or the presence of one who has committed grievous wrong; but, although the individual may be consumed by anger and detestation, he realizes that his own interests and the good of society demand that he shall control his instinct to attack; that to give way to it would constitute the crime of assault, battery, or manslaughter, and would be sternly reprobated; consequently he either inhibits action altogether or he invokes the operation of the law. Even duelling, which was for long the accepted method of settling personal affronts, and not merely permitted, but encouraged, is now repudiated both by law and public opinion.

The instinct of acquisitiveness is little less strong than the sexual, and is deeply rooted in human nature. It doubtless had a high survival value because acquisition of goods and property meant increased power and safety, thereby favouring the preservation of the individual and the propagation of his stock. In those early human days existence could often only be maintained by following—

> ". . . the good old rule, the simple plan,
> That they should take who have the power,
> And they should keep who can."

Although the things now desired are somewhat different, ranging as they do from titles, lands, houses, money, jewellery, clothing, to postage stamps and old china, the same instinct to acquire and accumulate is still there and plays a very important part in initiating human activity. But again it is recognized that certain conventions must be followed and that the individual must keep his acquisitive tendencies within the limits prescribed by the law. The person who does not follow the rules and who acts in the primitive way in accordance with his primitive innate instinct commits the criminal act which we call theft.

We thus see that civilized man is subject to precisely the same tendencies to action as those which operated in the case of savage man. They are, indeed, the mainspring and supply the motive force of the greater part of human behaviour. The individual may know nothing about their origin; he may even be unconscious of the ultimate purpose they serve; nevertheless, most of his conduct is shaped at their behest, for they are deeply ingrained impulses which urge him on from the day of his birth to that of his death. And yet, although still subject to these impulses, it is clear that a great change has taken place in their mode of action. In some savage and uncivilized races they are, it is true, still manifested in their original primitive way. We find them struggling for such expression in the untutored child, and we see them again emerging in the degradation of mind which occurs in disease and old age; but in the majority of adult civilized human beings action no longer has the reflex, immediate character that it had in primitive man and animals; it has become so modified that the impelling force may be barely recognizable; in some cases even the actual instincts seem to have been eradicated, and in the highest types of all to have been replaced, to some extent, by other motives to action in the shape of social and moral ideals, which were totally unknown to man's primitive ancestors.

As we have seen, this regulation of conduct is the result of a further evolution of mind, and, broadly, we may divide the psychological processes concerned in it into two groups. First, there are those attributes, largely intellectual, which enable the individual to visualize his acts before they are committed, to appreciate their consequences to himself and to others, to form a judgment regarding them, and to exercise the necessary control and volition in accordance with the judgment so formed. Secondly, there are those attributes of feeling and emotion which enable the individual to experience, not merely a cold intellectual concept, but an actual feeling, or sentiment, as to the rightness or wrongness of acts, a sense of social obligation, of chivalry, honour, humanitarianism, altruism, and of the highest moral ideals—in other words, social and moral sense.

I do not think I am wrong in saying that it is the development of these higher moral and altruistic qualities of mind which constitutes civilization in the real sense; that they exert an even greater restraining influence than does wisdom, and that they may even

reach such a high degree of development as to neutralize the fundamental instincts of self-preservation, as is seen when a person deliberately gives up his life for a principle or for the benefit of his fellow-creatures. I am also inclined to think that, as civilized man travels further and further from his primitive ancestors, and as successive generations of individuals exercise control and imbibe moral and social precepts and ideals, there is a tendency for these primitive instincts to become weakened, for their compelling power to decrease, and for man more easily to acquire propensities to action in accordance with these higher sentiments. I think it even possible that in some persons such tendencies may be actually innate and have, to some extent, the compelling power of instincts; notwithstanding that such a view implies acceptance of the unorthodox doctrine of the transmission of acquirements.

THE PSYCHOLOGICAL BASIS OF MISCONDUCT.

It will be apparent from what has been said that misconduct, in the main, is due to the uncontrolled action of man's primitive, self-seeking, instinctive impulses. It will also be apparent that this may arise under two general conditions: first, these impulses may be so abnormally strong that no ordinary development of the inhibitory functions avails to keep them in check; and, secondly, the inhibitory functions may be so poorly developed that they are unable to control instinctive tendencies which are not in themselves abnormally powerful. Whilst misconduct occurs from each of these causes, I think that it is much more often due to weakness of control than to abnormal strength of impulse. We shall consider these two conditions separately.

Abnormality of Impulse.

Not only does the strength of urge, desire, and conation in general differ greatly in different individuals, but there are also considerable differences in the strength of the various specific instincts. Thus, some persons have an abnormally developed sex instinct, being what is commonly known as "oversexed"; others are abnormally pugnacious, combative and aggressive; others have strongly marked acquisitive tendencies, and so on. In persons so constituted a very well-developed control is necessary to keep the particular tendency

in check, and if control is at all weak, sometimes even if it is present to an extent which would normally be sufficient, the impulse gets the upper hand and misconduct results.

In addition to such cases of unusually strong specific, but normal, impulses, there are others in which the impulse is either definitely perverted, or has features which suggest that it is pathological. Examples of these are seen in impulses to abnormal sexual acts; in impulses to set fire to hayricks, heaths, and houses; to mutilate cattle and horses; to commit homicide and suicide. Some pronounced impulses to steal are also in this category, the things stolen being either always of one particular kind, or, if varied, not being utilized, and indeed quite useless to the thief. Thus, Dr. Mercier* mentions one person who stole fans, and never anything but fans, another who stole spoons, another fowls, another bacon. He also mentions an extreme instance of this type of case which was related by Dr. Gray, lately physician to the Ameer of Afghanistan. It is that of a man "who, after having had first his right hand, and subsequently his left hand, struck off as a punishment for theft, seized with his stumps and made off with an earthenware pot of trifling value and of no use whatever to him. The crime was witnessed, and the criminal at once arrested and taken before the Ameer, who sentenced him, as he must have expected, to be hanged; and hanged he accordingly was." No doubt, morbid or uncontrollable impulse, especially kleptomania in the form of "shop-lifting," is not infrequently invoked by defending counsel without justification; but there is equally no doubt that uncontrollable impulses do occur, and they may be a cause of serious misconduct, even of homicide.

In addition to these instinctive impulses there are others which are really due to *obsessions*. Many of these are harmless, but since some may be a cause of crime they will be referred to here. In some cases the impulse is to count up to a particular number before beginning a piece of work, such as writing a letter; this is termed arithmomania. Sometimes it is to repeat some particular words—the "pink-trip-slip for a three-cent fare" of Mark Twain is a well-known literary example. It is recorded of Dr. Samuel Johnson that he could never take a certain walk without being impelled to touch every post he passed, and that if one were accidentally missed he would have no peace until he had gone back and touched it. I had

* Charles Mercier, "Criminal Responsibility," 1905.

a patient who could never settle to sleep without getting out of bed several times to go and see that the front door was locked, although he knew perfectly well that it was each time he made his journey downstairs. Impulses such as these may be a source of amusement to beholders, and of great worry and distress to their possessors, but they are not dangerous. In other cases, however, impulses occur which are fraught with considerable danger. A patient of mine had for years an almost uncontrollable urge to throw himself in front of any approaching train; in consequence he never dared to go on to the platform of a railway station until the train was stationary. Another patient could never travel by train without being strongly impelled to throw herself out of the carriage door. On one occasion, finding herself left alone in a compartment, she was compelled to seek safety by locking herself in the adjoining lavatory for a distance of forty miles. I am of the opinion that compulsive obsessions are a much more frequent cause of suicide, and perhaps even of homicide, than is generally thought.

Defect of Control.

It will, of course, be understood that by the term " control " I do not imply the existence of any single or special psychological " faculty." I merely use the word as a convenient one for the sum total of the inhibitory functions which have been described in the preceding pages, and which consist of intelligence and wisdom on the intellectual side, and of the higher altruistic emotions and sentiments on the affective side.

Control, in this general sense, may be inadequate in several ways and as a result of different causes. First, its development may be *delayed*, and this may be due either to an unsatisfactory environment and a faulty upbringing or to an inherent developmental peculiarity. Secondly, it may be *defective* owing to the absence of some constituent of mind necessary for its acquirement. Thirdly, it may be inoperative through *disorder or decay*. I shall consider these different conditions separately.

Delayed Development due to Faulty Upbringing and Adverse Environment.—As we have seen, the human mind is in a plastic state for at least the first eighteen years of life, and during this time the nature of its development is very largely influenced by the environment. This is particularly so during the first decade, and in

regard to ideals of conduct and the altruistic feelings and sentiments. The child who is early habituated to be considerate to his fellows and kind to animals, to respect other people's property, to tell the truth and to conform to moral standards, will clearly be much more likely to develop ability to control his primitive self-seeking tendencies than will the one brought up amid surroundings in which there is little affection, where self is supreme, where no discipline is enforced, and where no social or moral ideals are inculcated. I fear there is little doubt that during recent years, whilst what is called the " standard of living " has improved, the same cannot be said of the standard of life and conduct, and this has not been without its effect upon the character of the rising generation. Again and again, in the investigation of misconduct in children and adolescents, I have found the cause to be faulty upbringing and parental mismanagement, and I am disposed to regard this as the most important single cause of delinquency. There would be less need for child guidance clinics if parents had more sense of parental responsibility and more knowledge of how to bring up their children.

Delayed Development due to Inherent Individual Peculiarity.—Delayed development of the social and moral sentiments, however, is not always due to the environment; it may occasionally arise from a peculiarity innate in the individual. In the same way that there are differences in the age at which children learn to walk, talk, and acquire school knowledge, so there are differences in the age at which they develop the higher sentiments, and until these have been acquired acts of misconduct are very likely to occur. Usually, as we have seen, these are present in the later years of adolescence, sometimes even much earlier than this, but I have seen instances in which, amidst a perfectly satisfactory environment, they have not been acquired until even the third decade.

Inherent Incapacity for Development.—In addition to the foregoing there are certain individuals who appear to be inherently incapable of acquiring any feelings of social obligation and moral sense. It may rightly be asked, What is the evidence for this statement? The evidence is that there are certain persons of even middle age, who have been brought up in good homes and refined surroundings, who have been subject from their childhood to everything that could be desired in the way of affection, example, precept and admonition, who have been judiciously punished when other means have failed, but who, in spite of all these, remain utterly

selfish and callous, completely regardless of the rights and feelings of those about them, devoid of all affection and shame, and manifesting not the slightest indication of any sense of social obligation or of altruistic feeling. In cases such as these, of which examples will be given in the following pages, it seems impossible to come to any other conclusion than that the very germ of moral sense is lacking.

What this germ may be is difficult to say. As we have seen, the higher social and moral sentiments, which are so conspicuously lacking in persons of this kind, are evolved from the tender and self-respecting emotions, and these also are defective in such persons. But the tender emotion is associated with the parental instinct, and the self-respecting emotion is closely connected with the gregarious or herd instinct; it may be, therefore, that the essential basis lies in a defect of these primary instincts. But whatever the basis, it seems clear that, as a result of some inherent peculiarity, these individuals are unable to acquire the higher social and moral sentiments. There is, of course, nothing strange in an inherent inability to acquire some of the attributes of mind which are normally present. We have already seen the same thing in non-aments on the intellectual side in regard to scholastic learning; also in the milder aments in regard to wisdom and common sense. Indeed, when we consider that the higher sentiments, in the race and the individual, are the latest acquirements of mind, we should naturally expect that they might be absent, or feebly developed, in a not inconsiderable proportion of individuals.

I think this is actually the case, and that, whilst a complete lack of moral sense is comparatively rare, there are very many persons in whom this sense is very poorly developed. This raises the important question of the influence of such defect in causing misconduct. There is no doubt, as I have already pointed out, that the person who is completely lacking in social and moral feeling will be incapable of experiencing any urge to altruistic conduct. Further, the contemplation, or even the commission, of misconduct will not arouse in him any feeling of repugnance, remorse, shame or diminished self-respect. But, provided he is not also lacking in those intellectual qualities of mind which constitute wisdom, he will not necessarily be guilty of misconduct. For his wisdom will tell him that if he commits an offence the probabilities are that he will be found out and suffer punishment in the shape of social censure, loss of position, or imprisonment—probably all three; and the appre-

ciation of this fact and the fear of these consequences suffice to keep him within the codes laid down by society and the law. He will consequently be a law-abiding citizen; he may even be regarded as one of high principle, for, as many instances testify, he may cover up his lack of moral feeling by regular attendance at church or chapel and fervid religious professions. But, although such persons are not necessarily, and perhaps not usually, criminals, they are highly potential criminals. They are only deterred from misconduct or crime by their realization that they will probably be detected and punished, and, if the gain resulting from a particular crime seems great and the chances of detection small, they may deliberately decide to take the risk. Then society is shocked to hear of a gigantic financial fraud, an outrageous moral lapse, an act of calculated cold-blooded poisoning, or the like, committed by an individual whose reputation had been devoid of reproach.

We see, therefore, that defect of moral sense, provided there is no defect of wisdom, and provided the community is so organized as to make detection and adequate punishment tolerably certain, need not of necessity result in misconduct. The individual still has one brake which may suffice to restrain his primitive instincts. But should it so happen that the individual is also lacking in wisdom, he will then have no restraining mechanism; his primitive instinctive impulses will have full play, and if these, as is so often the case, should be anti-social or immoral, he will of necessity be an habitual and incorrigible criminal. This, as we shall see presently, is the psychological basis of the condition called Moral Deficiency.

Disorder of Inhibitory Mechanism.—Hitherto we have been concerned with misconduct due to delayed and defective development of the inhibitory mechanism. It may also be due to a disorder or breakdown of this mechanism, and such disorder may range from a temporary and comparatively slight disturbance of mental equilibrium to one which is severe and incurable; but while it lasts misconduct may be very marked. For instance, such lapses are by no means rare in neurotic youths and girls after exhausting illnesses, or even during the physiological epochs of puberty and adolescence without any definite illness. They may also result from some psychic shock, from the repression of a marked emotional experience, or from a state of mental agitation due to the individual being out of harmony with his environment; examples of the latter

occur among youths and young women compelled to take up uncongenial work.

I doubt whether this condition of adolescent instability is sufficiently recognized and dealt with by the medical profession, and I am of the opinion that for want of judicious management at this time many individuals develop a definite psychoneurosis or psychosis, or become permanently warped and social failures. The importance of this period in regard to misconduct is evidenced by the fact that statistics show crimes to be more frequent between the ages of sixteen and twenty-one years than at any other time of life.

One of the commonest forms of psychosis occurring during adolescence is schizophrenia, and where misconduct occurs in a youth or young woman it is always well to bear the possibility of this in mind. But a breakdown of the controlling mechanism is not confined to adolescence; it is also frequent during the climacteric period. The primitive instinctive impulses may then get the upper hand, resulting in petty pilfering, shop-lifting and sexual misconduct. It is by no means rare for a hitherto chaste spinster, or a formerly faithful wife, to become sexually immoral during this stage of life.

Injury and organic disease of the brain may also cause a breakdown of inhibition. During the two world wars a large number of soldiers received brain wounds. While many of these recovered, there was a marked alteration of character in a small proportion. Young men who had previously been steady, honest, sober, industrious and well behaved in every way became exactly the reverse. They were careless and indifferent to the customary routine and conventions, disrespectful and defiant to those in authority, lazy, drunken, and addicted to theft, lying, and other offences. There was, in fact, such a complete change in their whole disposition and conduct that it was remarked upon by all who had known them before the injury.

Decay of Inhibitory Mechanism.—Lastly, misconduct may be the result of a progressive degeneration and decay of the controlling mechanism. This occurs principally in patients suffering from encephalitis, dementia præcox, dementia paralytica, senile dementia, and dementia due to arterio-sclerosis. The type of misconduct varies somewhat in these different conditions, also in different patients, but, in general, it may be said that the gradual decay of control first manifests itself in a blunting of the social and moral

sentiments, next in a deterioration of the higher intellectual functions, then in an impairment of the more elementary perceptions, and finally in a decay of the instinctive impulses. In short, the process is one of regression in the reverse order of normal evolution. With the reaching of the final stage misconduct—indeed all conduct—comes to an end; but until this stage is reached overaction of instinctive tendencies is likely to occur, with resulting misconduct.

I have dealt with this question of the mental factors concerned in conduct and misconduct at some length, although still very incompletely, for two main reasons: first, because it is of importance to a right understanding of the part played by mental defect, and, secondly, because such knowledge is essential for differential diagnosis, particularly in regard to the condition now recognized by the law under the term moral deficiency. The only aspect of the matter which rightly falls within the scope of this book, however, is that of mental deficiency and misconduct, and this we shall now consider.

Misconduct is a feature of two varieties of mental deficiency which differ from one another very considerably. In one there is a tolerably obvious defect of intelligence; the person is, in fact, an ordinary ament such as I have already described; but an ament prone to misconduct, and the most suitable designation under which to describe the class is that of *Vicious and Criminal Aments*. In the other type there is no obvious intellectual defect; the individual may indeed possess an amount of knowledge and learning beyond the normal, and the outstanding characteristic is persistent vicious and criminal misconduct. Nevertheless, as we shall see, although the nature of the defect is somewhat different to that in the first group, there is a real defect of mind. It is to this group that the term *moral defective* is applied.

MORAL DEFECTIVES.

Moral defectives are one of the four classes defined by the Mental Deficiency Act, and it may be said without hesitation that no one of the others has given rise to so much discussion, or has caused so much diagnostic and administrative difficulty, as this one. On the one hand, some persons regard almost every child or adult who is guilty of frequent lapses of conduct as a moral defective. On the

other hand, there are those who say that no such condition exists. Both these views are wrong. I have not the slightest doubt that a very considerable proportion of the cases which are so lightly designated moral defectives are not so in reality, and that their misconduct is due to one or other of the causes which have been described in the preceding pages. This is proved by the fact that they are curable. But I have equally no doubt that moral defect, although comparatively rare, does occur, and that it is due to a real defect of mind which is permanent and incurable.

Definition.

It must be pointed out that the original term for this class was *moral imbeciles*, and in the Mental Deficiency Act of 1913 they were defined as "Persons who, from an early age, display some permanent mental defect, coupled with strong vicious or criminal propensities on which punishment has had little or no deterrent effect." In actual fact the definition, rightly understood, was by no means an inaccurate one; but in practice it was found that the word "imbecile" gave rise to considerable difficulty for the reason that this word has long been applied to persons characterized by an obvious defect of understanding, and this the moral imbeciles are not. Moral imbeciles, therefore, are now termed *Moral Defectives*, and in the Mental Deficiency Act of 1927 they are defined as "*persons in whose case there exists mental defectiveness coupled with strongly vicious or criminal propensities, and who require care, supervision, and control for the protection of others.*"

It is apparent that, although the term imbecile is no longer used, the definition would allow of imbeciles, or indeed of any grade of defectives who were possessed of strongly vicious or criminal propensities, being certified as moral defectives, and as a matter of fact many such are so certified. This, however, is not the real concept of a moral defective. As I need hardly point out, vicious or criminal persons suffering from mental defect as this term is ordinarily understood could readily be certified under one of the other three categories—that is, as idiots, imbeciles, or feeble-minded—and the fact that it was considered necessary to make a separate class clearly shows that it was intended to legislate for a type of mental defective who would not ordinarily be regarded as defective. That this actually was the intention has been clearly pointed out by the late

Dr. Mercier,* who drafted the original definition. The question which arises, therefore, is, What is the kind of mental defect which is present in moral defectives, and in what way does it differ from the mental defect of the other three classes defined in the Act ?

Psychological Concept.

In my opinion, the mental defect characteristic of this class is a twofold one—namely, a defect of that complex quality which has been designated common sense or wisdom, plus a defect of moral sense. Now, as I have already stated, a person may be lacking in both wisdom and moral sense, and yet suffer from no scholastic ineducability, and no obvious incapacity to adapt himself in a seemingly intelligent manner to the requirements of the present moment. Far from being illiterate, he may have a good range of educational acquirements; he may be nimble-witted, a good conversationalist, plausible in argument, and able to give a good account of himself. In short, in his response to many tests, in appearance, manner, and conversation, he may be quite normal and totally different from the ordinary ament. And yet, in spite of all this, his lack of wisdom will cause him to be incapable of adapting himself in a satisfactory manner to his social environment; he will be unable to see actions in their true values, to form sound judgments, to take long views, to make prudent plans, to forgo an immediate but transient gain for the sake of a greater and permanent advantage. In addition, his lack of moral sense will cause him to be incapable of experiencing any emotion regarding the rightness or wrongness of his acts; although he may be conceited, he will have no real feeling of self-respect and no sense of personal responsibility or social obligation; he will be incapable of experiencing any urge to moral endeavour, and he will almost certainly be unable to control any selfish and anti-social impulses.

Although defects of this kind are different from those which many people regard as constituting mental deficiency, and although the range of scholastic and general knowledge which such persons possess places them on a very different level to that occupied by the majority of mental defectives, it is nevertheless plain that these defects of wisdom and moral sense are true defects of mind. If they are of

* C. Mercier, " Moral Imbecility," *Practitioner*, October, 1917.

such a degree as to prevent satisfactory independent social adaptation and to necessitate care, supervision, and control, they unquestionably constitute mental defectiveness within the meaning of the Act.

It is clear, however, that if these were the only mental abnormalities present, the individual, although a mental defective, would not necessarily be a moral defective according to the definition. Although his lack of moral sense would be a bar to any altruistic behaviour and an impediment to the inhibition of his primitive instincts, unless these instincts were strongly anti-social or vicious he would not necessarily be addicted to vice or crime. He would, in fact, merely come within the category of high-grade feeble-mindedness which I have described in a previous chapter. But if it should happen that strong anti-social instincts were also present, then the want of wisdom and moral sense would constitute an insuperable obstacle to their inhibition, and he would not only be a mental defective, but also a persistent criminal and wrong-doer. He would, in short, be a moral defective within the terms of the definition.

The psychological concept of moral deficiency, therefore, is that of an individual who differs from the ordinary type of defectives in that he is neither illiterate, deficient in his range of general knowledge, nor lacking in ordinary understanding; but is defective in common sense or wisdom and in moral sense, and is at the same time possessed of strongly marked anti-social instinctive impulses. It is necessary to emphasize, however, that such a person is *mentally* defective. He is, in fact, feeble-minded according to the definition; and if magistrates were more enlightened than many of them at present are, moral defectives could be certified as feeble-minded and the term " moral deficiency " discarded. As things are, however, most magistrates, and many medical men, appear to be so convinced that mental defect cannot exist without scholastic backwardness and an obvious want of common understanding that certification under this designation is practically impossible. It was the recognition of this fact by those responsible for framing the Act which caused them to draft a separate definition.

The mental defect of these persons, therefore, is a want of common sense and of moral sense. This, however, must be accompanied by strongly vicious or criminal propensities, and it is necessary to consider what is meant by this. We know nothing about

propensities until they become manifest as conduct, so that to establish the presence of strong propensities we must have evidence of the repeated commission of vicious and criminal acts. What are these acts? Broadly speaking, I think we may say that a criminal act is one which violates the law, whilst a vicious act is one which is inimical to the well-being of society, although not necessarily illegal. This view of what constitutes a crime is in agreement with the definition of Sir Fitz James Stephen, as being an act or omission punishable by law; but in English legal practice the term crime is usually much more restricted, and applied only to the more serious offences which are triable at assizes and quarter sessions. Doubtless it was the recognition of this ambiguity which led the framer of the definition to add the word "vicious," and in my opinion the effect is to bring any person who repeatedly commits acts which are to the detriment of society (whether such acts are or are not punishable by law) within this term of the definition, provided, of course, that such acts are coupled with the mental defect I have already described.

In many, probably in most, instances there will not be any practical difficulty in deciding whether a particular form of conduct constitutes misconduct in this sense; but some acts present considerable difficulty, and as an example I may refer to prostitution. Can the amateur or professional prostitute be said to evince strong vicious propensities within the meaning of the definition? It is obvious that the question is one of no little practical importance.

There is no doubt that a proportion of prostitutes are definitely feeble-minded, and are certifiable as such. On the other hand, there is no doubt that a considerable number of women who are not certifiable as feeble-minded are either driven to the calling by circumstances, or deliberately embark upon it as a livelihood. Their moral sense may be lax, and their conduct generally viewed to be highly immoral, but can we consider it vicious in the sense in which I have defined this word? My own view is that the question of viciousness or otherwise must be determined in each particular case by the attendant circumstances. In the case of a woman pursuing this calling in a decent respectable manner, I should say that her offence would not amount to such "viciousness"; but in the case of one openly and persistently flaunting herself in a manner calculated to offend and outrage the public eye, or of one guilty of the indiscriminate spreading of disease to all and sundry, I should

say that it did amount to vicious conduct. It must be remarked, however, that such vicious conduct must be coupled with mental defect to bring the individual within the statutory definition of a moral defective, and, as a matter of fact, we usually find that it is only where there is such mental defect, in the form of a lack of moral sense and wisdom, that viciousness, as above described, occurs. The woman who is not so lacking can pursue her calling with success. She has the wit to realize that she cannot do this if she flagrantly violates the law and openly outrages public decency, and it is a well-known fact that many professional prostitutes subsequently marry and settle down to a life of respectability.

It should be noted that the definition no longer states that the vicious or criminal propensities must be undeterred by punishment. I do not know that this omission is attended with any disadvantage, although in my opinion the fact of being deterred or undeterred by punishment is a criterion of considerable diagnostic value. Thus, there are many children and young persons who persistently kick over the traces, but, provided they are not lacking in intelligence, the infliction of adequate punishment sooner or later convinces them that their misconduct does not pay. Even if they have not any highly developed altruistic feeling, their reason is sufficient to inhibit their anti-social propensities. But where there is a defect of both wisdom and moral feeling, as in the moral defective, punishment will of necessity fail to have any deterrent effect.

It may also be pointed out that the definition no longer states that the mental defect must be *permanent*. There is no doubt that this word was a source of difficulty in certification, since many practitioners who were not experts on the subject not unnaturally felt some reluctance to undertake the rôle of a prophet and certify that a particular defect was " permanent." At the same time the word had certain advantages, inasmuch as it served to distinguish between misconduct due to a real and incurable defect of mind and that due to the delayed evolution or temporary disorder of its inhibitory functions. Here, again, I do not know that there is any serious disadvantage in the omission, unless it should lead to the certification as moral defectives of children and young adolescents without due care being taken to ascertain that the condition is really one of mental deficiency, and is not a temporary and curable disorder or a retardation of mental development.

Number.

While the number of aments who commit vicious and criminal acts is not inconsiderable, the proportion who belong to the special category of moral defectives is relatively small. It is difficult to state their precise number, but some idea may be gathered from figures supplied by Dr. W. Norwood East, who ascertained that of 283 aments examined in Brixton Prison six were moral defectives.

Causation.

The relatively small number of true moral defectives makes it difficult to investigate the causation of this condition, so our knowledge of this is very meagre. In some instances there is a family history of psychopathic conditions similar to that occurring in ordinary primary amentia; but in others there does not appear to be any hereditary abnormality and the defective occurs in a family characterized by sanity, good mental development and moral behaviour. They would then appear to resemble the abnormal variations, the sports and freaks, which are common in many animals and plants. I have not had an opportunity of examining any of the offspring of these persons; such are generally illegitimate and untraceable, so I cannot say to what extent the defect tends to be transmitted.

Description.

In their physical development and general appearance moral defectives, as a class, do not differ from the normal. A few may be sly, furtive, or surly in expression; this, however, is not common, and many are quite attractive and prepossessing. Similarly with regard to their educational attainments, as a class they compare favourably with their normal social compeers. Owing to irregular attendance, changes of school, and waywardness, some of them are backward; but many are quite up to the average, and in certain subjects the moral defective may even be brilliant. Most of them can converse rationally and well upon any of the ordinary topics of the day; sometimes even upon abstruse subjects. They are quick and apt at repartee, and many of them evince a degree of mental agility and wit sufficient to cause the discomfiture of their normal opponent in a battle of words. But they are utterly selfish; they

show not the slightest concern for the rights or feelings of other people; they are devoid of affection, gratitude, shame or remorse; they have no sense of personal responsibility; they are vain and conceited, but devoid of any real self-respect; they show a marked inability to profit by experience; they are intolerant of all discipline and authority, and are persistent and incorrigible wrong-doers.

Inquiry will usually show that even as children they have been intractable, impulsive, irresponsible, and unreliable—except that they can generally be relied upon to be a cause of some kind of trouble. In many cases they have been persistent liars, even when the truth would have served their purpose just as well; they have stolen, used disgusting language to their parents, been guilty of acts of senseless destruction, and may have tortured dumb animals or made violent attacks upon their relations and companions. One child of eight years whom I saw, in addition to many other offences, had dug a hole in the garden and had then battered in the head of a young kitten and buried it. He was quite unconcerned when confronted with the exhumed body. Many have repeatedly played truant from school or have sworn at and openly defied their teachers. Some have indecently assaulted little girls. I think it may be said that in practically every case the conduct of the moral defective, even as a child, has been such as to cause at the least grave anxiety to his parents, whilst in some it has amounted to a virtual reign of terror. Their misconduct has persisted in spite of tears, entreaties, and punishment, of being expelled from school after school, and of every effort at reform which could be brought to bear. And this for the simple reason that the child is possessed of strong vicious and anti-social propensities which he is incapable of controlling, the heinousness of which indeed he is incapable of appreciating, because of his defect of wisdom and moral sense.

By the time adolescence is reached, if not before, the misconduct usually brings the individual into conflict with the law, and from this time onwards his career is one of incessant crimes. The nature of these varies considerably; the moral defective is by no means a specialist, and there are few crimes he will not commit if given the opportunity. The commonest, however, are some form of theft, fraud, swindling, or false pretences. I think it may be said that, whatever other offences he may commit, every moral defective is an incorrigible liar and thief. His crimes, however, are characterized by several features which distinguish him from the ordinary

criminal. While he is intelligent enough to scheme and plot and plan, and while he is full of dodges and shifts, his plans or his execution of them are almost invariably marked by some serious error of judgment, or by the neglect of some obvious precaution which renders detection inevitable and speedy. Further, his stratagems, his lies and shifts are either directed towards achieving something which is of no value to him, or if it is he makes no real use of it when it has been attained. He may, and at times does, succeed in his immediate object, but it carries him no further; he is unable to use it to any real advantage, and his detection and punishment inevitably follow. The futility of his projects, the incompetence of their execution, and the certainty of their detection would have been obvious to any ordinarily sensible person, and, as Dr. Mercier says, we wonder how a man so superficially clever should be beneath the surface such a fool. But the moral defective is lacking in the wisdom to see either the futility of his plans or their disastrous consequences to himself; he is incapable of looking ahead and of taking long views, and he is quite unable to learn from his past experiences. Hence, although perhaps successful for a short time, his life in the long run is always a complete failure.

I have already remarked upon the tendency to lying shown by these persons. In a certain number this is extremely marked, and is accompanied by a capacity for romancing and a gift of imagination which is really extraordinary. To this condition the name of *pseudologia phantastica*, or *pathological lying*, is given. The tale is told so plausibly, each event is narrated with such full detail, and the person is so prompt with his answers when cross-questioned, that the unwary may easily be taken in. Indeed, there is no doubt that a large number of persons are thus taken in, and that, for a time at any rate, the lying attracts not only considerable interest, but is often attended with profit to the performer. Persons of this kind not only have great imagination, but also possess the power of weaving into their story on the spur of the moment any facts which may be purposely or accidentally suggested to them in conversation. The details and separate incidents they describe are not by themselves improbable, and if they could only be a little less ambitious detection would be difficult; but they cannot refrain from overdoing it, and suspicion is generally aroused by the most extraordinary *series* of wonderful happenings which has befallen them.

I have seen several cases of this kind. One young soldier, a

youth of nineteen years of age, was transferred to my ward by a colleague for a functional nervous disorder. He had been in the hospital for some weeks, and had attracted great interest and acquired a vast reputation in the eyes of the sisters and nurses by his war experiences. Although so young, he had been twice torpedoed, he had been through some wonderful adventures in Gallipoli and Egypt, and subsequently others no less wonderful in France. I happened to have been in Gallipoli myself, and as his account of the fighting there did not tally with my own experience, I was led to sift the whole story. It proved to be pure imagination, and the lad had never left England.

Differential Diagnosis.

We have now seen what are the characteristics of moral defectives. As has been pointed out, however, misconduct is a more or less pronounced feature of a number of other conditions which may be mistaken for moral deficiency; it may therefore be helpful if I state the chief of these and mention the points which have to be considered in their differential diagnosis.

Mental Disorder.—Probably the commonest error is that of diagnosing as moral defectives persons suffering from some form of mental disorder. The differentiation is of importance, for disorder may be, and often is, curable; whilst moral deficiency, being due to a defect which cannot be supplied, is incurable. The form of mental disorder which most frequently gives rise to difficulty and mistake is that occurring during adolescence from one or other of the causes which have already been mentioned, and, so far as the misconduct is concerned, it must be admitted that this often presents a likeness to moral deficiency. The youth or girl suffering from a marked degree of adolescent instability may lie, deceive, commit theft, and be sexually immoral; he, or she, shows the same want of consideration for the rights and feelings of others, commits similar crimes, and often evinces the same lack of wisdom in carrying out those crimes as does the moral defective; there is the same lack of sense of social and moral obligation, of responsibility, and of power to control emotions and instinctive promptings. Usually, however, careful inquiry will reveal two important differences. First, in the moral defective abnormality of conduct will generally have existed from childhood, either in the form of definite misconduct

or of a marked precocity, intractability, and defiance of authority, while in cases of adolescent instability there has usually been a previous period during which conduct has been correct and well regulated. It is true that in some cases of moral deficiency marked delinquency may not occur until the second decade; this, however, is exceptional, and if careful inquiry shows that there was a time when the individual acted with wisdom and in response to social and moral ideals, his present condition cannot be due to an innate deficiency, but to a disorder of these inhibitory functions. Secondly, whilst the misconduct of the moral defective, once it has appeared, is more or less continuous, and marked by complete lack of consideration, shame, and sense of responsibility, that in mental instability and disorder is more apt to take the form of a series of criminal or vicious acts in between which behaviour is without offence, and the acts themselves may be followed by shame and contrition. The moral defective seems to act with plan and deliberation, and often to take a fiendish glee in the commission of his crimes, while the behaviour of the mentally disordered person tends to be more impulsive and erratic, and to alternate with some evidence of affection for those about him. I would emphasize the frequency of even serious breaches of conduct in unstable persons during the period of adolescence, for I have seen many cases where a youth or girl, whose conduct has hitherto been perfectly normal, has taken to lying, thieving, and sexual offences during this time. No doubt this is due to an augmentation of the innate instability of these persons by the physiological strain incident to this period of development, but the condition is usually only temporary, and the physician should be careful not to certify such cases as moral deficiency.

In a previous chapter I have referred to the change of character and serious misconduct which frequently follow an attack of encephalitis, especially *Encephalitis lethargica*. It is therefore unnecessary in this place to say more than that, in my opinion, many of these cases do not merely resemble, but actually are, cases of moral deficiency. There is the same lack of wisdom and moral sense, the same overaction of primitive instincts, and the same senseless vicious and criminal conduct. Where these changes have been induced before the age of eighteen years, as they have in a considerable number of cases, they render the person certifiable under the Act. It is true that the behaviour of the post-encephalitic patient

ends to be more impulsive and less purposive and premeditated than that of the moral defective; but the essential difference is that in the ordinary moral defective the condition is innate, whereas in those following encephalitis it has been induced by the disease. In other words, the one is primary and the other secondary, and the two conditions respectively correspond to the primary and secondary forms of ordinary amentia.

Another condition which must be borne in mind is *adolescent general paralysis*. The association of a change of personality and acts of misconduct with slight tremors of the hands, tongue and lips, exaggerated reflexes, and abnormalities of the pupils, is highly suggestive of this disease, and confirmation may be obtained by a Wassermann reaction of the blood, or better, by a complete examination of the cerebro-spinal fluid. It must be remembered, however, that in general paralysis changes of personality and misconduct may be present for a considerable time before the usual neurological signs appear. *Schizophrenia* and *dementia præcox* are also conditions in which the senseless and aggressive behaviour of the patient might suggest moral defect; but careful examination of the patient and inquiry into the history should suffice to make the nature of these cases clear.

Faulty upbringing and *unsatisfactory surroundings* in the early years of life are responsible for a very large amount of the misconduct which occurs in children and young people, and this behaviour is sometimes so persistent and serious that the individual is thought to be a moral defective. In most cases of this kind, however, the acts, though often showing a callous disregard of the rights and feelings of others, are not senseless and to the disadvantage of the perpetrator, but are such as to bring him some gain; this fact, together with the life-history and evidence of unsatisfactory upbringing, will usually prevent a mistake in diagnosis.

Difficulty may arise with regard to cases in which there is no real inability to acquire common sense and conscience, but where the development of these is abnormally late, and this in spite of the home surroundings and early upbringing having been all that could be desired. Cases of this kind are not very common, but they do occur, and their true nature may only be revealed by time. Usually, however, the individual shows some evidence of affection, some glimmering of shame, some appreciation of public opinion, and some response to precept and admonition.

Criminal acts due to *imperative ideas* and *irresistible impulses* may be thought to be the result of moral deficiency. There is no doubt that such impulses do occur, and that they may result in the repeated commission of acts which the individual is unable to control and for which he should not be held responsible. Some examples of these have already been given in the earlier pages of this chapter; a good instance is that mentioned by Dr. W. Norwood East* of an elderly man of the labouring class, who, after reaching adolescence, had on very numerous occasions snatched a bottle of scent off a chemist's counter and run away with it. He was unable to say why he did it, he had no use for the scent, and he had been repeatedly punished for the offence without effect. It is probable also that some cases of *Kleptomania* are of this nature. I think the impulse to steal and hoard things of which the individual makes no use, and which, indeed, can be of no use to him, must certainly be regarded as due to mental disorder; but I should not regard these persons as coming within the category of moral defectives. Not only is the impulse a specific one, but there is no general defect of moral sense nor of wisdom, and none of the utter callousness and general irresponsibility which characterizes the real moral defective. At the same time, it must be remembered that the existence of irresistible impulse is often alleged in order to shield a person from the legal consequences of an act for which he is rightly responsible. " Kleptomania " is only too often a euphemistic term for common shop-lifting. The physician will therefore be well advised to investigate cases of this kind with the utmost care before giving an opinion. It has previously been remarked that the mental instability which is often associated with the climacteric may result in the commission of thefts and other offences for which the persons require treatment and not punishment.

This brings us, lastly, to the question of ordinary *delinquency*. It is undeniable that very many persons exist whose moral sense is weak, but who nevertheless are fully aware that certain acts are wrong and that if they commit those acts and are found out they will suffer. They can abstain from their commission if they wish, but when the chance of detection seems small, and the offence offers considerable gain, they deliberately take the risk. This is ordinary delinquency, and it differs from moral deficiency in the facts that

* W. N. East, " Delinquency and Mental Defect," *British Journal of Medical Psychology*, vol. iii., part 3, 1923.

the crime is not senseless, but one which will profit the perpetrator should he escape detection; that it is often planned and executed with an amount of intelligence of which the moral defective is incapable; and that, should detection and adequate punishment follow, the individual usually has sufficient common sense to profit by his experience and to be very chary about repeating his offence. As against this it may be repeated that the misconduct of the moral defective is not occasional, but continuous and persistent in spite of punishment and of all reforming influences which can be brought to bear; its planning and execution are often accompanied by some stupid oversight which inevitably leads to discovery, and which in itself is suggestive of some mental defect, while the offence is very often such as to bring no advantage whatever to the individual. Whilst there should thus rarely be any real difficulty in differentiating between the moral defective and the occasional delinquent, it is far otherwise with that class known as " instinctive " or " habitual " criminals. These stand in much closer relationship to moral defectives, but the condition is one of such importance that it will be better to defer consideration of it to a separate section.

To sum up, we may say that whilst moral deficiency is undoubtedly a real condition, it is a relatively rare one. The facts that the individual is well educated, alert, has a high intelligence quotient, is a good conversationalist, and is attractive and plausible, by no means negative this condition. For every true case of moral deficiency, however, there are many cases of delinquency which are not due to this, but which are the result of other causes such as I have mentioned. Many of these latter are curable, and it is of the greatest importance that the one should be distinguished from the others. This can only be done by careful consideration of the case in all its bearings. True moral deficiency is incurable, just as is the ordinary form of amentia, and the safety of the public requires that the individual should be placed under care as soon as the condition is definitely diagnosed, and that he should be kept under care, It must be admitted that in actual practice this is at present a matter of no little difficulty. These persons are totally unfitted for the training institutions and colonies for ordinary defectives, and, although a grave social menace, relatively few of them are characterized by a degree of violence which would entitle them to be admitted to the State Institutions. In fact, they form a class for which hitherto few local authorities have made any proper

administrative provision, and, as things are, prison is usually the only suitable place for their detention.

It may be useful if I describe a few cases of moral deficiency, as well as some which resemble this condition and present diagnostic difficulty.

Illustrative Cases.

A. B., female, age eighteen years. The father's aunt was in a mental hospital for many years, and died there. The father's sister was never under care, but was always regarded as decidedly queer. The patient was hasty-tempered, obstinate, and very difficult to control as a child, but she did not commit any serious offences until the age of fourteen years. She attended a Council school, and though the mistress found her difficult to manage and intolerant of discipline, she did fairly well at her lessons and left in the seventh standard. Upon leaving school she was put into service, but was discharged from place after place in consequence of her temper and unsatisfactory conduct. She lost one situation through being insolent and spitting in the baby's face, another because she stole stamps, another because she stole her mistress' handbag, another because she pilfered food, and several because she was insolent and lazy. At the age of sixteen she was in service with a dairyman. It was at a time when the rationing order was in force, and there was a considerable scarcity of butter. She stole various quantities amounting to at least eight pounds in all, and sold it to different acquaintances, giving the excuse that her mother could not afford to pay for it, or had some to spare. For this offence she was charged before the court, and placed on probation for a year. She was sent to a Church Army Home, but was returned after eight months, as they found it impossible to keep her. The secretary said: "She has such an unruly tongue and bad temper that she is always upsetting the other girls. She has stolen food, and in one of her dreadful fits of temper has struck the sister-in-charge. She was sent to another home, but she behaved so badly there that she had to be sent away." Her father succeeded in getting several other situations for her, but the same thing happened. From each she was discharged after a few weeks for theft, impudence, and refusing to do her work. One of her mistresses stated that she got into such a violent temper when spoken to that she became quite alarmed, and had to call in her next-door neighbour.

I examined her at the age of eighteen. She was surly in appearance and answered impudently, but she could give a good account of herself, could talk quite rationally on ordinary subjects, and in her general scholastic attainments was equal to the average of her class. It could not be said that she was lacking in intelligence, as this is commonly understood. At first she denied ever having stolen or committed any offence, but as each was retailed to her she admitted it in a grudging, surly manner; but she could not, or would not, give any explanation of her misdeeds. The most she would say in explanation of her thefts was that she took the things because she supposed she wanted them. She had no plans for her future. She said that if she were turned out of the home she would get a place like she had done before. She had got places before without a character, and supposed she could do it again. She seemed quite incapable of realizing that her acts had been wrong, or even of appreciating that the continuance of such conduct was greatly to her disadvantage. She admitted that she had been repeatedly chastised by her father for her various faults, but she didn't see why he should do it; indeed, she seemed on the whole rather indignant that anyone should find fault with her and resent her behaviour. Her father had been so affected by the disgrace she had brought upon him that he had given up his situation and left the town, but she was not in the slightest concerned at this.

I came to the conclusion that, although on the surface she did not seem unintelligent, she was decidedly lacking in the wisdom necessary to manage herself successfully, as well as in moral sense. Further, that although serious manifestations had not occurred until after leaving school, her behaviour even as a child was indicative of defective control. I therefore certified her as a moral defective, although I think she was equally certifiable as feeble-minded.

Another case which came under my observation was that of an exceedingly handsome young woman of good family who had been brought up amid every refinement and who lacked nothing—but moral sense and wisdom. From the age of ten years she would pilfer money from her mother and the maids in the house. She was removed from school after school because she robbed the other girls, persistently lied, and spread stories without the slightest foundation. She invented and circulated stories regarding herself and young men which caused grave family scandals. She obtained

large sums of money by false pretences from her relatives and friends, and on several occasions went out in the middle of the night to meet young men of notoriously bad character. At the age of twenty-two her reputation was such that it was impossible for her to remain at home, and she was boarded out under strict supervision. But she absented herself, committed misconduct with at least two men, and developed a bad attack of gonorrhœa. Every effort was made to appeal to her sense of honour and her love for her family; but she seemed not only incapable of reforming, but to be quite insensible of the shame and disgrace she had brought upon herself and her name. She admitted to me that she saw no harm in what she had done, and affirmed she would do the same again if she got the chance. The girl was of good birth, most prepossessing appearance, and might undoubtedly have made a good match and enjoyed a high social position, and the sacrifice of these can only be looked upon as indicative of a pronounced deficiency of wisdom. And yet, judged by the ordinary standards of intelligence, she was by no means defective.

A case which affords excellent illustration of the characteristics of this class was published by Dr. W. Norwood East,* Senior Medical Officer of Brixton Prison. The original account will well repay reading, and I am indebted to Dr. East for permission to give the following summary.

The subject was a woman, " Jane," who, at the time the account was written, was approaching middle age, and had been under Dr. East's observation for a prolonged time. She was the eldest child of humble and honest parents, and there is no family history of criminality or nervous disorder; the remaining members of the family are normal.

She attended various schools and is described as possessing an intellectual capacity considerably above the average, a singer and pianist of more than ordinary merit, and with attractive conversational powers. She was dismissed from her last school for pilfering. When about fifteen years of age she became intimate with her mother's lodger, a man considerably her senior, who married her when she was seventeen. The next few years were spent in reckless extravagance, theft, and repeated immorality on the part of Jane. The couple were constantly moving from one lodging to another,

* W. Norwood East, " A Case of Moral Imbecility," *Lancet*, 1921, ii, 1052.

and in five different houses in which they stayed money saved by the landladies for rent was stolen and mysterious fires broke out. The husband saved up money to obtain medical treatment for their crippled child, but this was stolen by Jane and spent on dress. She eventually left her husband, and for a short time found employment, but she was turned out of her lodgings on account of the number of men she brought home. Soon after this she was convicted for stealing from her lodgings, and on her promise to go into a home she was bound over, but she absconded. She next obtained a situation as book-keeper in an hotel, but was convicted and imprisoned for obtaining goods from tradesmen, saying they were for the proprietor's wife. She was then taken in hand by a social worker and went to a rescue home, but left after a series of thefts and impositions. She went to a seaport and put up at an hotel; a few days later a fire broke out in one of the bedrooms and the place was gutted, a cash-box and sum of money being missed. There is little doubt that Jane was responsible for both the arson and theft. On release from prison she put up at a leading hotel and posed as a rich ward in chancery, and as a result of ingenious and unscrupulous scheming succeeded in marrying a merchant. Her husband subsequently left her on discovering that she had already had children, but not before she had involved him in considerable debt by her reckless extravagance. This was followed by more deception, theft, and arson of the most callous description, and led to arrest and another term of imprisonment. On discharge, after further lies, deceits, and adventures, Jane, calling herself a nurse, was engaged by a gentleman to take care of his wife who was dying of cancer. She was given money to obtain comforts for the patient, but no comforts were provided and the money was not seen again. She frequently left the patient during the night and was discovered bringing men into the house. A few days later a maid, entering the sick-room, found a rubber tube connected to the gas burner lying with its open end on the invalid's pillow, and the following day Jane was discovered bending over the patient with a bottle of chloroform in her hand. She said that in the matter of the gas and chloroform she was obeying the doctor's instructions, which he, of course, at once repudiated. It was also noticed that the patient seemed worse after her medicine, and on the day of her death Jane had neglected to give her hot-water bottles as directed, saying the doctor had told her not to do so as the patient would die that day. After

the funeral much of the deceased's clothing was missed, and some was found in Jane's box.

After further thefts of money and jewellery, arson, and other adventures, including marriage to a student by whom she had a child, Jane obtained another post as nurse to an aged and infirm lady by the expedient of recommending herself for the post by telephone. Whilst here large sums of money and jewellery belonging to the patient disappeared, and a bed in the servant's room mysteriously caught fire. She was summarily dismissed and much of the property of her late patient was subsequently found in her box; but as the patient was now dead, and Jane said the articles had been given to her, she was not proceeded against.

Shortly after this she was convicted and sentenced for bigamy, and on her release from prison was discovered disguised as a hospital nurse collecting subscriptions for an imaginary nurse supposed to be in trouble. This episode was followed by further fraud and impersonations, one of her adventures being to pose as a ward in chancery coming into a large sum of money in a few months. As a result of this she succeeded in marrying a young man and went to live with his parents, but she was soon arrested for bigamy and again sentenced. Her release from prison was immediately followed by further impersonation, false pretences, theft of the most ingenious and unscrupulous character, and by another marriage. These crimes were brought home to her, and she served several terms of imprisonment. She was also convicted of unlawfully wearing a military decoration. She also obtained a situation as matron in an institution, and when dismissed for dishonesty a considerable quantity of the institution's property was found in her boxes.

I have given this somewhat lengthy abstract of Dr. East's interesting account because the case well exemplifies the persistent criminality in spite of all punishment and reforming influence, the utter want of scruple and gratitude, and the serious danger to the public, which characterize the moral defective. Dr. East had opportunities for studying her very carefully whilst she was in prison, and states that she was an attractive and engaging woman of considerable artistic ability; an excellent needlewoman, and able to do anything with her hands, but with affected airs of refinement and exaggerated modesty; a confirmed and plausible liar, but lying for no adequate purpose; possessing a tendency to create mischief

by playing off one official against another, merely for the purpose of creating discord, and always considering herself the injured party in every dispute. She made no friends, showed no trace of genuine affection, not even for her children, and no gratitude, repaying kindness with deceit, and she was always unreliable.

The two following cases illustrate certain difficulties in diagnosis. The first is a girl who, although a Poor Law medical officer was unable to certify her under the Act, could, in my opinion, be certified either as a moral defective or a feeble-minded person. The second is one who could either be certified as a moral defective or as insane, although I think she is probably the former.

C. M., female. Her father, who is a respectable working man, states that she has always been troublesome and a worry to them since she was a child. She went to the Council school at the age of five years and left at the age of thirteen in the fifth standard. It is of interest to note that the girl herself says that she reached the seventh standard, and went straight up from Standard I., with the exception of two years spent in one class because she was " bad in arithmetic." But her former schoolmistress, to whom application was made for further particulars, states that " she spent some time in a special class, which contained dull and backward and mentally deficient children. She left in Standard V., to which she was promoted on account of her age, and because her influence was not considered good with the other children. Her mental capacity was decidedly poor. She was very untruthful, most unreliable, and very troublesome at times. We did not consider her responsible for her actions."

After leaving school she was put to domestic service, but her mistresses would not keep her on account of her unreliability, and after trying three places she was kept at home for a short time. Her parents found that she was quite unamenable to discipline, that she would go out at night and come back at all hours, and at the age of fifteen she was put into a training home, where she remained for two years. The matron of this home subsequently said that she was a thoroughly bad girl, and she now wondered how they managed to keep her so long as they did. Upon leaving the home she was sent into domestic service. She was supplied with a good outfit of clothing, and told that if she behaved herself and kept her place for six months this would be her own property. After two months she said she did not care for it, and would not stay any

longer. She came home, where she remained for a month, and then went as ward-maid to a hospital. At the end of three months she was dismissed for petty theft and general unsuitability. Her parents managed to get her into several other places, but she was always dismissed after a short time. She next tried work in a munition factory, but was discharged after a few weeks. She then disappeared for a short time, and was discovered by a philanthropic lady and sent home. She was in a filthy condition, with hardly any clothing, and her boots in holes. After much difficulty she was again got into a situation, but she was again dismissed for staying out late at night. She then got into a refuge for fallen girls, but was found to have venereal disease and was sent to the Lock Hospital. Four months after her discharge from the hospital she gave birth to a child in the workhouse, and six weeks after this she married a soldier whom she had known for a few weeks, and who was not the father of her child. The soldier returned to his unit and the woman returned to the workhouse. She stayed only a short time, and three months after her marriage she was prosecuted by the police for wilfully neglecting her child. For this she was sentenced to six weeks' hard labour. Very shortly after serving this sentence she was found on the streets, and was charged with sleeping out in company with a well-known prostitute. She was remanded, and her husband written to and begged to come to court and take her under his protection; but he never replied, and she was sentenced to a month's hard labour. On her discharge she was received into a Mission Home. The matron described her as " slovenly, uncertain temper, very conceited, low habits, lazy, untruthful, pilfers (and always denies it)." Owing to her rudeness to the matron and bad influence generally she was sent from the home to the workhouse, the matron suggesting that the case should be inquired into by the Mental Deficiency Committee. This was done, and the medical officer of the workhouse was asked to examine the girl and give a report. After a month's observation he wrote that he had repeatedly examined the girl, but was not himself prepared to certify that she was mentally defective or a moral defective, but he thought she should be examined by an expert.

It was at this stage that she was brought to me. She was then a woman of twenty-one years, of average growth and development, presenting no obvious stigmata or peculiarity of expression. She retailed all her past history correctly, and spoke sensibly and with

a fair amount of knowledge about everyday topics. Her memory, attention, and observation were good. She could correct sentences of which the words were transposed. She gave correctly the gist of a story I related to her. She could make a sentence containing three given words, and she could give a very fair description of an object shown to her. She could not say what the time would be when told to imagine the hour and minute hands transposed. She was also uncertain on matters of change; for instance, she said that if she spent 1s. 10d. out of 2s. 6d. she would expect 7d. change. But she admitted to and related all her past misdeeds without any sign of shame or remorse. She showed not the slightest affection for her parents: she was not at all troubled by the pain and suffering her conduct had caused them, and it was clear that she was decidedly defective in moral sense. Further, in spite of her varied experiences, she was quite incapable of making any plans for the future. She had no idea of what she would do when she left the workhouse, and she could not give a satisfactory account of how she would lay out £5 to provide for herself. In short, she was clearly lacking in the wisdom necessary to manage herself and her affairs.

My examination, taken in conjunction with her history, showed that she was unstable, impulsive, lacking in control and in a sense of responsibility, defective in moral sense and wisdom, and incapable of adapting her conduct to the moral and legal standards of the community. By reason of these defects she was in need of control for her own protection and for that of others. Further, these defects had existed since childhood, and were accompanied by strong vicious and criminal propensities. I therefore considered that she conformed to the statutory definition of a feeble-minded person as well as a moral defective, and that she was certifiable under either of these headings. The inability of the medical officer to certify seemed to me to be due to a faulty conception of what was meant by " mental defect."

F. E. L., female. Father's sister was insane for many years, and died in a mental hospital, aged fifty. Mother's uncle described as " very queer," but never certified insane. Father and mother are steady, respectable, working-class people, and the home is a good one.

The girl was somewhat obstinate and difficult to manage, but did not give any serious trouble while at school; she was bright and intelligent, and left at the age of fourteen in Standard ex-VII. Shortly after leaving, a good situation was found for her in a doctor's

house. After a few weeks she suddenly disappeared, and three days afterwards was found in London by an officer of the Travellers' Aid Society. She was brought home and placed in another situation, but again ran away after a fortnight. Another situation was obtained for her in a confectioner's shop, but as she was found behaving very freely with soldiers in the tea-rooms and walking out with them late at night, her mother took her away, fearing she would get into trouble. For the next two months she stayed at home, very difficult to manage, disinclined to do any work, and addicted to being cheeky to her parents. On more than one occasion she was found walking out with men, and on two occasions she disappeared entirely for short periods. It was subsequently found that on one of these she had gone to London with a soldier, and on the other had spent the night with some soldiers in a stable at a large military camp. She was then sent to a training home in the country. After being here two months she suddenly absconded, taking with her some clothing and several articles of jewellery belonging to one of the sisters in charge. She walked a distance of eleven miles to her uncle's, telling him she was in service in a town near, that she had lost her purse, and asked him to lend her some money. While in her uncle's house the police appeared on the scene and arrested her; but the matron of the home, out of kindness for the girl, declined to prosecute, and she was returned to her mother. After a short time she was sent to another training home. Here she remained for a month, and then escaped by letting herself down from a bedroom window. She took with her several articles of clothing and jewellery which she had obtained by breaking open a box. She walked to the railway station, where she prevailed upon a soldier to pay her fare to a large town thirty miles away. She stayed here a night, and then went up to London, where she lived on the streets for three weeks. She then returned to her home, arriving in the middle of the night, hopelessly drunk. Her parents took her in and entreated her to mend her ways, but in less than a week she again ran away, having stolen her sister's clothing. A few days later her mother received the following letter from her:

"I am never coming home again. I have married the boy I first left home for, and we are going to live at Liverpool with his mother. I am quite happy, so you need not ever think about me

any more; just forget I am your daughter, and I shall forget I ever had a mother. The stage life is just what I have always longed for, and now my longing has at last come to pass. I have been to a special doctor, and my husband paid £5 for my examination, and I am quite all right, and am now seeing my period. We go down by the first train in the morning, so no one will ever catch me, as I am well disguised as a LADY. I knew I was never meant to lead such a poor life: I wanted to look higher and be a lady, and now I shall be one. The marriage was arranged before I came home, and he brought me to the door that Saturday. But I was not drunk; I was just making out I was; he told me just what to do, you see. He being an actor, you see, I shall also have my name in the paper with him (what swank !). Good-bye for ever.

" MRS. WILLIAM MONTAGUE."

Of course, none of these statements was believed, and they were subsequently proved to be entirely false. Acting upon advice, her sister took out a warrant for her arrest on a charge of stealing her clothing. She was apprehended, brought before the magistrate, and remanded. On examination by the prison doctor, she was found to be suffering from gonorrhœa. It was then considered that she could be dealt with under the Mental Deficiency Act, and she was remanded to the Lock Hospital as a " place of safety " pending the presentation of a petition. Before she had been here a fortnight she escaped by letting herself down from an upper window. She had dressed herself in the clothes of another patient, and she took another girl who was also undergoing treatment with her. For the next ten days she lived in London on the streets; she then returned home. Her father handed her over to the police, and she was sentenced to two months' imprisonment. Whilst here the local authority obtained a vacancy in an institution for defectives, and the prison medical officer was asked to certify her. He felt himself unable to do so. He considered that " as regards her intellectual capacities there was not sufficient evidence of defect to bring her under the Act. She answered questions quickly and intelligently, and her educational standard was up to the average of her class, and her knowledge of current events by no means lacking." He considered that the only section in which she could possibly be included was that of a moral defective, but that the certificate under this section should be signed by someone con-

versant with her previous history, as he could not say that there had been sufficient evidence while she was in prison to justify him in completing the certificate. Fortunately, a medical certificate was obtained from someone who had had previous dealings with her, and she was certified as a moral defective and transferred to an institution for defectives.

In this case there was no doubt about the presence of vicious and criminal propensities. Although she had had a good home and careful upbringing, she had been guilty of persistent lying, thieving, and criminal conduct in spite of entreaty, admonition, and punishment. There was also no doubt that she was lacking in wisdom, for she had persisted in this course when it was manifestly to her disadvantage, and simply entailed trouble and discomfort to her. The only question which arose was whether the condition was one of defect or of disorder. It is possible that it may turn out to be the latter, and the absence of any marked misconduct until the age of fourteen years is somewhat in favour of this. On the other hand, although there was no serious misbehaviour, she had always been obstinate and difficult, and on the whole I am inclined to think that there was a real defect of moral sense and wisdom, which, however, did not become manifest until she had been put to the test of life by being thrown upon her own resources. She was, therefore, rightly certified as a moral defective.

The following is an example of delayed development due to intrinsic causes. It presents many of the features of moral deficiency and might well be thought to be such; it was, in fact, sent to me with that diagnosis.

W. M., female, was brought up in good surroundings and her home was in every way satisfactory. She had excellent educational opportunities, but failed to profit by them. From the age of eight years she was quite unmanageable, she would lie and steal so that nothing was safe, and on two occasions she ran away from home. In her early teens she was sexually immoral and on one occasion she stayed out all night. She obtained a situation as nurse-probationer, but was dismissed for stealing money from a cupboard. She was lazy, improvident, neglectful of her clothing and appearance, a persistent liar, and utterly unreliable. When she was brought to me at the age of eighteen years I found her a well-developed, pleasant-looking girl, able to talk sensibly and with understanding upon current topics, of fair scholastic acquirements,

and not presenting any obvious defect of intelligence. She admitted all her previous misdeeds without concealment or appearance of shame, and she showed a lack of moral feeling, of self-respect, of sense of obligation and responsibility. But in view of the fact that she was still passing through the unstable period of adolescence, I thought there was a possibility of improvement and advised that she should be placed for a year in a home where she would be under firm discipline and good moral influence, and that her condition should then be reconsidered. This was done, and after a year the sister superior of the home reported as follows: " She has developed far beyond our expectations. She is still with us, happy and hard-working, doing responsible work, and a good influence among the others. We feel it to be quite a triumph and her parents are so relieved. Your opinion that she might develop with care was a great help to us. She has done so."

Finally, I may mention the following case as an illustration of the serious harm which may be inflicted by moral defectives when at large, and of the financial loss which may be incurred by medical officers who fail to appreciate this. It was reported at some length in the newspapers of 1937 and attracted much public attention.

The defective, *J. L.*, was twenty-eight years old. He was stated to have a mental age of ten or eleven years and to have been a dangerous criminal since he was nine. He had been convicted for a number of offences, and was finally ordered to be detained during His Majesty's pleasure and was sent to the State institution for defectives. Here he remained until the age of twenty-seven, when he was transferred to a certified institution. After being here for a year, on the application of his brother, he was allowed out on licence; but he appears to have been under no proper supervision and to have done odd labouring jobs. One day be came to the door of a house in which a woman was alone. He asked for a cup of tea, which was given to him. He next asked for food and was given a piece of cake. He then asked the woman to mend his trousers for him, which she did. Suddenly, when her back was turned, he committed a savage assault upon her with a heavy piece of wood, fracturing her skull, wrist and hand. The woman and her husband sued the medical officers of the institution for damages, on the ground that they had been negligent in their duty in allowing such a dangerous person to be at large. The woman was awarded £3,500 and her husband £700.

OTHER DELINQUENT DEFECTIVES.

In the preceding section we have considered a particular type of defectives who, although in my opinion really coming within the category of feeble-mindedness, yet differ so considerably from the general concept of this condition that there would be considerable practical difficulty in certifying them as such. It is now necessary to consider misconduct in relation to a different class; that is, as it occurs in individuals whose mental deficiency is so obvious that no difficulty arises in certifying them as either feeble-minded or imbeciles under the M.D. Act.

As we have previously seen, many persons belonging to these grades of defect are harmless, inoffensive, tractable, and well-conducted members of the community. They differ from their normal fellows in their want of common sense and full understanding, and consequently need care and supervision for their own protection. The persons whom it is now proposed to consider are very different. They are not merely defective, they are also markedly prone to misconduct, and this is often so vicious or criminal as to cause them to be a serious social danger; consequently they need care and control for the protection of others. I have no doubt that these persons could be certified as moral defectives—in fact, many of them are so certified; but, as has already been explained, the term moral defective was intended to apply to a special type of case, and it should, I think, be restricted to that type. For this reason I shall consider these ordinary defectives who are prone to misconduct, vice, and crime separately from moral defectives, alluding at the same time to certain other aments who, whilst not persistently vicious or criminal, are nevertheless guilty of occasional crimes.

The psychological cause of the delinquency in these defectives varies in different cases; in general I think they may be divided into the following groups: (1) Those in whom the misconduct is due to want of perception or understanding that their acts are wrong. Although a few of these persons are high-grade defectives, the majority are imbeciles. (2) Those in whom it is due to abnormal impulses. (3) Those in whom it is due to a marked defect of moral sense. (4) Those in whom it is due to a superadded instability, which in some cases may amount to an actual psychosis. It must be pointed out, however, that whilst it is convenient to make these

divisions for purposes of description, they must not be regarded as watertight compartments and mutually exclusive. In aments, as in the non-defective, the springs of misconduct are numerous and deep-seated, and in most defectives crime is probably the consequence of the action and inter-action of many factors. Their mental defect in itself must necessarily often tend to make them react to their surroundings in an abnormal manner, and this abnormality may well take the form of what we call crime. Thus, their intellectual defect is such that few of them can be expected to have the same understanding of the wrongness of crime as has the normal person. Their lessened capacity for experiencing the higher emotions is such that most of them have a limited moral and social sense. Their irregularity of mental development results in a want of balance which may readily tend to overaction of primitive instincts. It is more than likely, therefore, that the acts of misconduct which occur in the class of delinquent aments we are here considering are the resultant not of one, but of several psychological factors; since, however, it often happens that one of these factors is particularly in evidence, they form suitable standpoints from which to describe these persons.

1. **Offences due to Defective Perception.**—It is obvious that ignorance of the legal code may readily lead to its infraction, and there is no doubt that many aments infringe the law simply because they do not know what the law is; they would do so much more often were they not to some extent or other restrained and supervised. A classical example not only of ignorance that the act was wrong, but of defective perception of its real nature, is afforded by the imbecile who cut off a man's head as he was asleep, saying in explanation that he thought it would be fun to see what his victim would say when he woke up and found his head was missing. There are, however, many aments who commit crimes which they know to be wrong, in that they know they will be disapproved of by their fellows, and also of which they understand the nature; but their defective minds prevent their understanding *how* wrong they are and what is their real quality; in other words, they understand the *nature* but not the *quality* of their acts. The murderous attack by Pullen, the genius of Earlswood Asylum, which has been described in the chapter on Idiots Savants, is a case in point, and it is probable that many instances of stack-firing, arson, homicidal assaults, and the like, committed by aments, come into the same

category. Unquestionably there are degrees of knowledge regarding right and wrong, and relative ignorance is a very potent factor in the misdeeds of these persons.

Thus, a feeble-minded young man of nineteen years attempted to wreck a train by placing a large coil of electric wire on the line. No motive whatever could be assigned for his act. A feeble-minded girl, aged seventeen, living in a small village, was frequently jeered at by the boys of the place. One day she called one of them to her, telling him to shut his eyes and open his mouth and see what the king would send him. He did so, and the girl promptly drew a razor across his throat, partially severing his windpipe. Another feeble-minded boy of sixteen years drowned a child of three by pushing him into a dyke. Such examples might be multiplied almost indefinitely, and they serve to show that the want of full comprehension which is such a characteristic of aments may readily cause them to commit serious crimes even in the absence of persistent vicious propensities.

2. **Offences due to Abnormal Impulses.**—Some impulses must be regarded as exaggerated manifestations of tendencies which are present, but inhibited, in most normal people; many cases of theft, sexual offences, and even homicide come within this category. In others, however, the impulse serves no useful purpose, and it would then appear to be a perversion and primarily abnormal; examples of these are seen in impulses to commit suicide, to set things on fire, to mutilate horses and cattle, and the like.

It is likely that in many cases where abnormal impulses are present there is also a defect of inhibition and there is frequently a lack of social and moral sense. In some cases the impulse occurs periodically, like the convulsions of an epileptic; in others, the opportunity will itself arouse the impulse to commit the offence. Impulses of this kind are usually of a specific nature—the kleptomaniac has no desire to commit arson, or the homicidomaniac to steal; indeed, one might say that in the most pronounced cases this is invariably so. There are, however, certain aments in whom the impulse seems to be less specific and more varied, and should the opportunity present itself, these will set fire to a hayrick, pilfer, or mutilate cattle indifferently; but they will not go out of their way to do these things.

The following case is taken from a daily paper. I have no

personal knowledge of it, but as it is a good example of a specific morbid impulse of an extraordinary nature it is worth quoting:*

"Six murders at the age of thirteen is the remarkable record claimed by Ida Schnell, whose case is at present being investigated at Munich. The girl had been in service with a number of different families as nursemaid, and no suspicion seems to have arisen against her till after the sixth infant entrusted to her care had died a sudden and mysterious death. Even then it was only after the baby had been buried that it appears to have struck anyone that there was something sinister in the circumstance that her nursing had been associated with mortality of so remarkable a character. It was finally decided to exhume the body of the last of her charges, the fourteen-day-old son of a peasant proprietor of Ampermoching, near Munich. The corpse was taken from the coffin yesterday afternoon, and examination showed that death had been caused by perforation of the yet soft infantile skull with some sharp instrument. Schnell was at once arrested and closely questioned. At first she strenuously denied having caused the child's death and protested that she had much too gentle a nature to harm the infant in any way. Under cross-examination, however, she broke down, and admitted that she had killed not only the baby whose body had been exhumed, but four others for whom she had been engaged as nurse. She confessed further that she had taken the lives of these infants by plunging a hairpin into the lower part of the back of their heads till they ceased to cry. Asked as to her motive, the girl said that the crying of infants aroused in her unconquerable revulsion, and excited her to such a degree that she lost all control over herself, and would do anything to make them quiet. This morning she confessed to the sixth murder. The parents of one of her victims reside in Munich itself, the others in small places in the vicinity. Schnell, who will be fourteen next month, is physically well developed for her age, but rather dull-witted. Her father is dead, but she has a stepfather, who is a day labourer at Schleissheim, to the north of Munich. Her series of murders was only rendered possible by the fact, which will be a revelation to many, that in Bavaria death certificates are frequently, and in the country districts always, granted by laymen. It is said that a doctor would at once have noticed the wounds caused by the hairpin."

* Verbatim from the *Daily Telegraph*, October 18, 1907.

Guy and Ferrier* record the case of a man aged twenty-eight, "notoriously an imbecile from his childhood," who was addicted to wandering about from place to place. He would sow seeds one day and dig them up the next to see whether they were growing. One evening, after walking twenty miles, he gave himself up to the police as "having killed a human being." He said he had been tempted to kill two or three persons on the road but had abstained, but at length he killed "a poor little boy in a field." He conducted the parish constable to the spot where the victim lay, the head beaten to a pulp and the throat cut from ear to ear, severing the head nearly from the trunk. He said the thought of committing a murder had been in his mind for a week, "that he was compelled to do it, that he did not wish to kill the boy but could not resist it, that he knew he was doing wrong but had no power to resist."

3. **Defect of Moral Sense.**—In a certain proportion of ordinary aments there is a marked defect of this sense and serious misconduct is the characteristic of their lives. Its nature is often determined by chance or opportunity; but many of them seem almost to be possessed of a devil goading them to commit crimes. This begins when they are quite young children and persists in spite of entreaty, admonition, corporal punishment, and imprisonment. Even as children such aments will commit acts of diabolical cruelty, torturing animals and those younger than themselves; they will lie when telling the truth would answer their purpose just as well or better; they will purloin anything within their reach only to destroy or throw it away; they will break or burn anything they can, and take malicious delight in harming other children; in short, they are a persistent menace to their relations and the whole neighbourhood. I know one boy under eight years old who has already been expelled from school because nothing was safe within his reach. His vocabulary is equal to that of any bargee; he steals eggs, fruit, money, and whatever he can lay his hands on; he has already burnt two hayricks to the ground. In an elementary school of a provincial town I came across three children of this type belonging to one family. The two boys were only eight and five and the girl seven years old; but the schoolmaster told me they had a propensity for lying, thieving, and causing trouble generally, the like of which he had never met, and that nothing seemed to deter them. They were all mentally defective, and I

* "Forensic Medicine," 5th edition.

learned that the father was of the same type, and more often in than out of prison.

Dr. Shuttleworth* mentions "three nice-looking defective children, sisters and brother, formerly under his care, who at times would appear models of propriety, while at others they had all the characteristics of little demons. With innocent expression they would furtively accomplish the most abominable mischief, and after meekly acknowledging the error of their ways, would emphasize their apology by a missile flung at the head of the person who had attempted to bring them to repentance."

In later years such persons as these, if not placed under control, may commit serious crimes such as incendiarism, train-wrecking, criminal assaults upon little girls, and homicide; although these acts at times appear to be sudden and unpremeditated, they often show evidence of previous deliberation and plan, and sometimes of considerable cunning to avoid detection. Their whole lives consist of an almost unbroken series of offences. A certain proportion of aments of this type are markedly insensitive to pain and will suffer severe injuries from cuts, burns, etc., and even undergo grave surgical operations without any appearance of the slightest discomfort.

The following cases are examples of the type:

W. M., female. Her paternal grandfather, two of her father's brothers, and her father's first cousin died insane in mental hospitals; another of her father's cousins was insane. The girl's elder sister had an illegitimate child, and her younger sister, aged fourteen, is said to "look and behave in the most foolish way." The patient attended the Council school until she was fourteen years old. She was considered backward, and only reached Standard IV. On leaving school she was placed in service; but she would never keep her situations more than a few months, and between the ages of fourteen and eighteen she had many occupations, including two in munition factories. When nineteen the police arrested her on a charge of stealing jewellery; she was convicted, and served twenty-eight days' imprisonment. She had been out only a few weeks when she was charged with sexual misconduct, and for this she served another twenty-eight days. Then she was sent to a training home, but was returned after a few weeks as they found her so unreliable and untruthful that they could do nothing with her.

* Shuttleworth and Potts, "Mentally Deficient Children," 1910.

She then went to farm work. After five months she was dismissed, and returned home. A few weeks later she was missing, and shortly afterwards she was charged before the magistrate with making a false declaration on a lodgers' registration form at a house where she spent the night with a soldier, whom she had met only the day before. It now occurred to the police to wonder whether she were not mentally defective, and instead of sentencing her she was placed on probation, and I was asked to examine her.

I found her to be a well-developed, well-nourished, pleasant-looking young woman of twenty-one years. She described her past life fairly accurately, although her dates were unreliable. She admitted her misdeeds without any shame, and could give no explanation of her behaviour. She showed no affection for her parents, and no sorrow or remorse for the pain she had caused them. I found her incapable of sustained attention, inaccurate in observation, of defective reasoning capacity, and lacking in common sense. She did not know the multiplication tables; she was unable to correct the words of a simple transposed sentence, or to form a word out of six letters given to her. She could give me no explanation as to why it was dark at night and light by day. She was generally childish in her ideas. The matron of the home where she had been placed on probation told me that she was most untruthful and undependable, addicted to pilfering, and subject to violent outbursts of temper in which she raved, stamped about, threw the glasses on the floor, broke furniture, and was only controlled with the greatest difficulty. I considered her to be certifiable under the Act, and she was accordingly certified and sent to an institution for defectives.

George P——, a mentally defective boy aged thirteen and a half years, attending school in Standard I. Very poor ability to reason, but alert and cunning, and always getting into trouble. He is said to be incorrigibly lazy at school, and a frequent truant, and the schoolmaster says that he will steal and lie without the least compunction, and punishment has not the slightest effect. He is always ready with a plausible excuse, and shows a precocious cunning in covering up his misdeeds. A short time ago he stole the schoolmistress' gold watch from its usual place on her desk. It was not missed until the children had left, and then there was an instant hue and cry. George, finding himself pursued, secreted the watch in a tree, and then submitted himself to be searched

with an air of complete innocence. Unluckily for him, however, the manœuvre had been seen. It is interesting to note that this boy's father is just the same. He too is plausible and cunning, and, although he occasionally does odd jobs, I was told by the police that he never did any regular work, and that the greater part of his life had been spent in prison for such offences as stealing, poaching, and drunkenness. When I saw him he had just returned from serving a term of imprisonment for poaching.

I have described these cases under the heading of defect of moral sense because that seems to be their main characteristic; it is plain, however, that other mental defects also play a contributory part in their misdeeds. Doubtless they could be certified as moral defectives, but, since they are persons who are obviously defective in intelligence and scholastic educability, I have included them here rather than with the moral defectives.

4. **Mental Instability.**—In many aments who are guilty of misconduct, often amounting to crime, the cause lies in a superadded mental instability. This is generally constitutional and part and parcel of their mental make-up; it usually becomes markedly accentuated during adolescence, and in a few cases makes its first appearance during that period. Not infrequently the instability is so great that the balance of mind is overthrown and the individual becomes insane. I have given an account of mental instability, and the acts to which it gives rise, in the section dealing with the unstable feeble-minded, and insane aments will be dealt with in a subsequent chapter; only a short description will therefore be given here.

Most of these aments are females, and their misconduct ranges from senseless impulsive acts which harm no one but themselves to sudden outbreaks of temper in which they will smash anything within their reach and violently attack anyone in their path. When the attack has passed they often show a certain amount of shame and contrition, but this does not prevent a repetition of the offence. In my experience it is rare for persons of this type to embark upon a career of dishonesty and fraud, as in the case of moral defectives, although some of them may do so at the instigation of others; their misconduct generally consists in vehement outbursts of bad language, senseless destructiveness, and assaults upon other persons.

Under this heading we may also include those cases of misconduct occurring in defectives, usually of fairly high grade, which seem to

be chiefly due to excessive facility or suggestibility. Persons of this type are easy-going, good-natured individuals, who do not appear to have any particular impulses towards either good or bad conduct, but who are what is called "lacking in character." They are so amenable to suggestion, either from within or without, that they can rarely be depended upon for any length of time. Within an institution and under judicious management they may lead tolerably well-conducted lives. But in the world outside and exposed to evil influence, they are as clay in the hands of the potter; they prove easy dupes and tools, and are readily led into a career of crime. I have seen many young women of this type in rescue homes, and their chief offences have been drunkenness, petty stealing, and sexual immorality. So long as they have been in the home they have been fairly industrious and well-behaved, although needing considerable supervision in their work; but the moment they are put into service and supervision is relaxed, their facility proves their undoing and many of them drift on to the streets. I am disposed to think that a large number of prostitutes belong to this class of facile mild aments. Doubtless in former days they were frequently used as cat's-paws by professional criminals of stronger character, and, although this happens less frequently now, the police courts reveal that even to-day such feeble-minded dupes are not unknown.

The following is an illustrative case:

Rose T——, a well-grown, pleasant-featured girl of twenty years. She left school at the age of fifteen, but was only in the second standard, and was always regarded as "not exactly." On the whole her conduct at school was good, but the schoolmistress said she seemed very weak-willed and was readily persuaded to do silly things by children much younger than herself. At the age of seventeen she was admitted into a rescue home in a pregnant condition, and it appeared that for months past she had been walking out at night with most of the boys in the village in turn. After her confinement she was placed in a training home, and proved herself such a cheerful, willing worker that a place in service was found for her. Unfortunately she got into bad company during her evenings out, and was discharged from her situation in consequence of returning intoxicated very late one night. On leaving she was persuaded by her companions to take lodgings with them, and she was soon fully embarked on a career of prostitution and crime.

She was repeatedly in the hands of the police for drunkenness and using obscene language, and served several short terms of imprisonment for petty larceny. The police were of the opinion that she was simply a tool in the hands of the woman with whom she lodged, and that the latter lived on her pickings and stealings and immoral earnings; but this woman was too astute to be caught. When I examined this girl she was obviously very weak-willed, irresponsible, and amenable to almost any suggestion; her judgment was faulty, and her ideas, speech, and general appearance childish; but it is quite likely that many magistrates would doubt whether there was sufficient evidence of mental defect to justify her certification under the Mental Deficiency Act.

Cases of this kind used to be met with frequently in workhouses or in prisons serving a short sentence, and the following is an illustration:

George A——, a feeble-minded, undersized youth with a slouching walk, furtive demeanour, and physiognomy typical of mental defect. He answers questions in a simple, childish manner, and gives information regarding his past life willingly and without any appearance of shame or concern; his memory, however, is a little defective, and his account is at times confused and incoherent. He cannot read, write, or sum; but he is capable of useful work under supervision, and his conduct in prison (where I saw him) is good. The youth knows nothing about his parents, and little about his early life beyond the fact that he was brought up in an industrial school, and thence put to work on a farm. He ran away because he wanted a change, and, after tramping about for a time, eventually got employment on another farm. He ran away from here because he was discovered committing acts of indecency with the cattle. He then tramped about, and was frequently in and out of workhouses. He was convicted with several others of stealing lead and served a term of imprisonment. After this he again tramped the country, spending most of his time between the prison and the workhouse. He is now in for setting fire to a rick, for which act he is unable to give any reason beyond that he was told to do it by some tramps he met on the road.

Finally, as further examples of delinquent aments, I may refer to the following three cases culled from newspapers, all of which were reported to be mentally defective:

"*W. K.*, a ten-year-old boy, was charged at Bow Street with

attempted pocket-picking in a railway-train. The boy excused himself by saying that his mother had pushed him into the train with orders to rob the lady. The police found that there was not a tittle of evidence to support the lad's statement, and an officer from the board-school reported that he was mentally defective."

"*T. P.*—Owing to the extraordinary series of grave outrages committed in Nottinghamshire and the immediate district during the past month, much importance was attached to a case which occupied the attention of the Mansfield Bench. The man in custody, a labourer named *T. P.*, aged twenty-three, a *deaf-mute of weak intellect*, was charged with feloniously placing a wooden gate on the Great Central line at Kirkby-in-Ashfield. *P.* has been in the habit of sleeping out, although his reputed place of abode is at Sutton-in-Ashfield, within which area there have been a number of abortive attempts at train-wrecking. In addition, the neighbouring parish churches of Kirkby and Annesley have been destroyed by fire upon successive nights, both disasters being the work of an incendiary. Prisoner was apprehended in a shed at some brickworks. He showed the police-officers a spot on the railway where he said he placed a wooden gate on the rails. Dr. Gray, who had examined prisoner, gave evidence that *P.* was a lunatic and a proper person to be taken charge of. Deputy-Chief-Constable Harrop said, as accused was certified insane, no evidence would be offered. The man was first arrested in connexion with a robbery at Ulfreton railway-station, and the proceeds were found in his possession; other robberies on the railway had also been traced to him. Prisoner took witness and Police-Constable Fryer to Sutton-in-Ashfield, and across some fields to the Great Central Railway at Kirkby, where he pointed out the exact spot at which an obstruction had been placed on the line. He exhibited great satisfaction when a train approached, and showed where he had obtained the gate and had hidden himself until a train dashed into the obstruction. Afterwards prisoner showed exactly where two pairs of trolly-wheels and a wheelbarrow attached had been placed on the line. Accused was ordered to be sent to a lunatic asylum."

"An extraordinary story was told at Waltham Abbey Police Court yesterday morning, when *F. C. R.*, a boy ten years old, was charged with being beyond the control of his parents. The boy's mother said that he had torn tiles from the roof of the house, smashed most of the windows, and wrecked the greenhouse with bricks. He

had drenched his invalid father with water as he sat helpless in his chair, and had thrown bricks at him. The boy had threatened to stab the witness, and a woman who worked for her, with a knife. He had climbed to the roofs of outhouses, wrenched off tiles, and thrown them at her. He had stolen money from her purse, and his language was so dreadful that neighbours had to close doors and windows to avoid hearing it. Police-Sergeant Maher said that the boy had made Chingford Road horrible by his language. Witness had seen the parents' house, which was a perfect wreck on account of the boy's depredations. He produced two half-bricks which the boy had thrown at his father. The Bench remanded the lad to the workhouse with a view to his committal to an industrial school."

Nature of Offences.

In addition to many acts of misconduct which do not amount to legal offences, the actual crimes committed by aments range over a wide field. As one would naturally expect, however, there is a preponderance of crimes of wantonness, brutality, and stealing, over such as embezzlement and forgery, which necessitate a higher degree of intelligence than is possessed by most defectives. This is shown by the late Dr. Goring's* statistics relating to 984 convicts, which may here be quoted. The various offences are given in order of frequency, and the figures in brackets give the percentage of those offences which were committed by mental defectives.

Stack-firing (52·9); wilful damage (22·2); arson (16·7); rape, child (15·8); robbery with violence (15·6); unnatural sexual offences (14·3); blackmail (14·3); fraud (12·8); stealing (11·2); burglary (10·0); murder and attempted murder (9·5); rape, adult (6·7); receiving (5·1); manslaughter (5·0); coining (3·3); wounding, etc. (2·9); embezzlement, forgery, etc. (0·0).

Dr. Goring remarked that the percentage of mentally defective murderers was nearly twice as great as the percentage of persons convicted of other forms of personal violence; that stack-firing was associated more highly than any other crime with imbecility; and that indecent assaults upon children and unnatural sexual offences were related to weak-mindedness much more than were crimes of rape upon adults.

More recently Dr. Norwood East has investigated the nature of

* C. Goring, "The English Convict," 1919.

the crimes committed by 283 convicted defectives, and finds the numbers of the various offences to be as follows: Theft, etc., 71; sex offences, 64; vagrancy, 63; violence, 22 (including 4 murders); housebreaking, 21; suspected on enclosed premises, 16; various, 26 (including 5 arson). With regard to the grade of defect, Dr. East states that these 283 persons were made up as follows: Idiots, 0; imbeciles, 33; feeble-minded, 244; moral imbeciles, 6. It is also interesting to note that of 150 males charged with indecent exposure, 14 were insane and 24 certified as mentally defective.

The Number of Criminal Aments.

Under this heading there are two questions to be considered: (1) The percentage of the total number of aments who commit crimes, and (2) the percentage of the total number of criminals who are mentally defective.

(1) With regard to the first question, the investigations of the Royal Commission on the Feeble-minded showed that approximately 10 per cent. of all aments were criminals. This corresponded to a total of about 13,000 criminal defectives in England and Wales in the year 1906. The great majority of these were of the feeble-minded grade of defect. I think there is no doubt, however, that the operation of the Mental Deficiency Acts has brought about a reduction in the number of crimes committed by defectives.

(2) With regard to the proportion of criminals who are aments, there are several sources of information. The investigations of the Royal Commission showed that this proportion was at least 10 per cent., and there were reasons to think that this was an under-estimate. The evidence of Dr. Parker Wilson* with regard to Pentonville Prison was that "there are not less than 20 per cent. of the prisoners who show signs of mental inefficiency." Dr. Wilson considered that in the case of juvenile prisoners the incidence of mental defect was much greater. He found that of 389 admitted in the course of a year, 26 could neither read nor write, 328 only averaged the second standard, and 35 only could read and write well. He came to the conclusion that as many as 40 per cent. of them were feeble-minded. Sir Bryan Donkin, who was a member

* Parker Wilson, in the Report of Royal Commission on the Feeble-minded, 1908, vol. viii., p. 123.

of the Royal Commission and one of the Directors of Convict Prisons, in an address before the Birmingham Education Committee gave it as his opinion that 20 per cent. of criminals were demonstrably mentally defective. Dr. C. Goring quoted some statistics relating to Parkhurst. Since 1904 this prison has been utilized for the segregation of officially weak-minded convicts, and in the four years 1904-1908 official figures showed that the average proportion of mentally defective criminals was 9 per cent. As Goring pointed out, however, the number of prisoners officially designated defective was considerably less than the real total, for the reason that prisoners were often only thus classified when they proved unmanageable by the ordinary prison discipline and required special treatment under the regulations for the feeble-minded. There is no doubt that a considerable proportion of defectives are quite amenable to ordinary prison routine, and many of these, especially if they are not markedly illiterate, would consequently be regarded as normal. Goring came to the conclusion that the proportion of criminals who were mentally deficient ranged from a minimum of 10 per cent. to a maximum of 20 per cent. Miss Grace Pailthorpe,* who made a special investigation of female prisoners in Birmingham and Holloway Prisons, found the proportion of defectives to be 15 per cent.

On the other hand, it must be stated that some authorities regard the above figures as greatly overestimating the proportion of defectives among criminals. Dr. Norwood East supplied me with figures of the number of persons certified as defectives in prisons in England and Wales during the ten-year period ending December, 1931.† They amounted to a total of 2,626, and this only corresponded to 0·42 per cent. of the total receptions. I think it is unquestionable that the Mental Deficiency Act has been the means of placing many defectives under care in institutions who would formerly have been sentenced to prison, but this fact alone can hardly account for the great discrepancy. My own feeling is that these later estimates are based too exclusively upon the response to intelligence tests, and that they do not take sufficient account of the whole mental status of the individual or of his general adaptiveness, as shown by his life-history; also that they are chiefly

* G. Pailthorpe, "Studies in the Psychology of Delinquency," H.M. Stationery Office, 1932.

† See also "The Adolescent Criminal," by East, Stocks and Young, London, 1942.

based upon cases which prove unamenable to prison discipline or which present abnormality obvious enough to call for a special report. On the whole, I am not convinced that there is sufficient evidence to discredit the earlier figures, and in the absence of this I am of the opinion that the proportion of criminals who are mentally defective is probably not much less than 10 per cent.

THE RELATIONSHIP OF MENTAL DEFICIENCY TO RECIDIVISM.

There are certain persons whose lives are records of continuous crime. They serve sentence after sentence in prison, where they are usually fairly well behaved and amenable to discipline; but the moment they are released they are devising and committing fresh offences, and these continue until they are again apprehended and sentenced. These are known as *incorrigible, instinctive, habitual criminals,* or *recidivists,* and it is here proposed briefly to consider the relationship of this class to moral defectives and to aments in general.

Although recidivists are spoken of as a group *sui generis,* I am of the opinion that they are in reality far from being a homogeneous one. Every normal child is a mosaic of both good and bad tendencies; on the one hand, of potentialities which, if realized, will make for selfishness, anti-social conduct, and it may be vice and crime; on the other hand, of potentialities the realization of which will make for social rectitude, altruistic behaviour, and moral endeavour. Perhaps in many individuals these two sets of impulses are to some extent in conflict throughout life, so that at one time the good, and at another the bad, preponderates; but in most persons one gradually attains domination, with the result that the general character of the individual becomes either what we call "good" or "bad." This result is very largely dependent upon the influences brought to bear upon the child whilst character is still plastic; upon the standards and ideals of those by whom he is surrounded; upon the degree of discipline and the extent to which selfish and vicious acts are reproved and unselfish and social ones encouraged. No doubt the strength of these respective tendencies varies very greatly in different children; it is very much easier for some children to develop good habits than it is for others; but taking the child of average normal mental constitution, I think there is

little doubt that his character will be very largely dependent upon the nature of his early environment and experience.

I think, therefore, that a considerable proportion of recidivists owe their predilection for crime to the circumstances of their early life. Altruism has never been encouraged, selfish and vicious tendencies have never been discountenanced. The individual has gradually developed a habit of crime which is too strong to be overcome, and his ever-increasing record of misdeeds makes honest employment more and more impossible to obtain and drags him deeper and deeper into the morass. In recent years our treatment of offenders has undergone a very great change. There is an ever-increasing recognition of the fact that the underlying principle should no longer be based upon the old Jewish law of "an eye for an eye, and a tooth for a tooth," but that it should be the reform of the offender. It is undeniable that this has already been productive of much good; Juvenile Courts, Probation, the Borstal System, and facilities for the education and training of prisoners, have been the salvation of many persons who would otherwise have drifted into a life of crime, who would, in fact, have become habitual criminals. "There, but for the grace of God, goes John Bradford" is a remark which could rightly be made by very many people.

But when reform and cure have done their utmost there is good reason to believe that a residue of individuals will remain who are alike incapable of being deterred from crime by any punishment, or of being reformed by any influence which may be brought to bear upon them. These constitute the class to which I think we may rightly apply the term incorrigible, instinctive, or inherent criminals, and it is the relationship of this class to mental defectives that I propose to consider.

This relationship may be regarded from several aspects. In the first place, we may consider the antecedents of the two classes. I have had the opportunity of investigating the family histories of a number of criminals of this type, and have found that a considerable proportion of them come of psychopathic stocks, many having brothers and sisters who are mentally defective. Conversely, in examining aments, I have often found that their brothers or sisters were criminals. In dealing with the inmates of prisons it is generally difficult to obtain a family history, but it was ascertained that, of 233 prisoners at Auburn, New York, at least 23 per cent. were of neurotic (insane and epileptic) origin. Rossi found that in 71

criminals there were 5 insane parents, 6 insane brothers and sisters, and 14 cases of insanity amongst more distant relatives. Kolk found a morbid inheritance in 46 per cent. of criminals, and Marro in 77 per cent. Sichard, as a result of his examination of nearly 4,000 German criminals, found that there was an insane, epileptic, suicidal, or alcoholic heredity in 36·8 per cent. of incendiaries, 32 per cent. of thieves, 28·7 per cent. of sexual offenders, and 23·6 per cent. of sharpers.

An interesting study regarding the presence of innate tendencies to crime has been made by Gruhle.* It was based upon the observation of 105 youths in the reformatory of Flehingen, in Baden, and the history of each case is given in detail. From a searching analysis into all the causal factors, Gruhle came to the conclusion that bad environment was the sole or chief factor in 18 per cent. of cases, while in 82 per cent. inborn disposition was solely or chiefly responsible. In 46 per cent. of cases both these factors were considered to have been in operation.

Again, the interesting record of the Juke family which was compiled by R. L. Dugdale† well shows the close relationship existing between the criminal and the psychopath. This observer traced the descendants of one morbid couple through five generations to the number of 709 individuals, and found that, whilst a small proportion were honest workers, the great majority were vagabonds, paupers, criminals, and prostitutes.

We may next consider the physical characteristics of the two classes. It may at once be said that the old view, largely based upon the work of Lombroso and his disciples, that criminals in general constitute a distinct and peculiar anthropological type, cannot be maintained. It was shown by Dr. Goring that, in the mass, criminals did not differ in their type of brain, or in their physical features generally, with one exception, from the non-criminal section of the population. In one particular, however, they did show a decided difference—they were smaller in stature and less in body weight than the average population, and in this respect they resembled mental defectives. This, however, applied to criminals in general. If we consider the recidivist class by themselves, there is a considerable amount of evidence that they con-

* H. W. Gruhle, "Die Ursachen der jugendlichen Verwahrlosung und Kriminalität," *Heidelberger Abhandlungen*, 1912, Heft 1.

† R. L. Dugdale, Putnams, New York, 1910.

stitute a type which, in their general physical make-up, in the presence of defects of anatomical development and signs of abnormal nervous action, approximate much more closely to the mentally defective than to the normal population.

Lastly, we may compare the mental characteristics of the two classes. Doubtless the intelligence of many criminals is equal to that of the average members of the community, the intelligence of some is even decidedly superior; but, taking criminals as a whole, their intellectual capacity is subnormal. On this point Goring was emphatic; he says: "Our evidence conclusively shows that, on the average, the criminal of English prisons is markedly differentiated by defective physique—as measured by stature and body weight; by defective mental capacity—as measured by general intelligence; and by an increased possession of wilful anti-social proclivities." He came to the conclusion that in regard to criminals in general the influence of the surroundings was relatively slight, that the main factor was constitutional, and that "defective intelligence is one of the primal sources of crime in this country."

Now if this is the case with criminals in general, it must obviously be much more so with the class of habitual criminals we are here considering. Their essential characteristic is persistent criminality undeterred by punishment or by any reforming influence. This implies a defect of moral sense, and although the lack may not be so great as in the moral defectives, it is evident that some defect is present. Further, their persistent wrong-doing, usually from an early age and in spite of repeated punishment and all attempts at reform, implies a lack of wisdom. It is true that the crimes of the habitual criminal differ in some respects from those of the moral defective or ordinary ament. They are often particular and selective rather than indiscriminate; they are usually such as conduce to some apparent advantage to the individual instead of being senseless, as is often the case with the defective; they are often accompanied by more skill in avoiding detection. Nevertheless, in spite of all this, in the long run they bring him no real or permanent advantage. Like the moral defective, his life is a failure. We thus see that, although the habitual criminal may not be so transcendentally foolish as the moral defective, he nevertheless shows a very real incapacity to adapt himself in a satisfactory manner to the requirements of his social existence. In short, his life-history

demonstrates that he is defective in both moral feeling and wisdom. I am disposed to think, therefore, that most instinctive criminals should really be classed with the moral defectives.

"Psychopathic Personality."

To conclude this chapter, I may refer to a term which has become very fashionable during recent years, but which is so variously applied that no one seems to be certain as to its precise connotation —namely, "psychopathic personality."

If words have any meaning, this term should mean a personality disposed to disorder of the psyche; it would then include most patients coming within the domain of psychological medicine. Some writers, however, restrict it to cases of warped personality in which there is no definite mental disorder; others apply it to cases of mental instability; others to persons characterized by episodic, or more or less persistent, anti-social conduct. It is even becoming a euphemism for the ordinary criminal, and I have known several such individuals glibly and unctuously excuse their misdeeds on the ground that they were "psychopathic personalities." No doubt defending barristers will make increasing use of the term in this psychologically-minded age.

On the whole, the general tendency appears to be to apply it to inadequate and unstable personalities prone to persistent wrong-doing. In an article on the subject, D. Curran and P. Mallinson* quote the views of four authors who have attempted to formulate a precise definition. They state that these agree in outlining a psychopathic personality as "an unreliable type of individual of defective judgment, liable to impulsive acts which are often both imprudent and inconsiderate, and who is moreover unable to profit by experience." It will be apparent that these are precisely the characteristics of most moral, and many unstable, defectives, and I think that if the real nature of mental defect were more generally appreciated many, although not all, of those who are called psychopathic personalities would be found to be certifiable under the M.D. Acts. Others would fall into the category of sexual perverts or emotionally unstable but non-defective individuals, while some are probably cases of progressive mental deterioration.

While this book was going through the press the trial of one Neville G. C. Heath, on a charge of murder, took place. Since the case bears upon the subjects of psychopathic personality and moral defect I have thought it advisable to give a short account of it, and this will be found on page 514.

* *Journ. Mental Science*, January, 1944, page 266.

CHAPTER XVII

AMENTIA WITH OTHER FORMS OF MENTAL DISEASE

WHILE it is necessary for the purposes of description, administration and treatment to make a distinction between amentia and other forms of mental abnormality and disease, there is nevertheless a close relationship between them. Thus, as we have seen in treating of ætiology, family history inquiries show that defectives, persons suffering from pre-senile forms of dementia, and others suffering from psychoses and psychoneuroses often come from the same stocks. There is, in fact, reason to think that in many instances these various conditions may be merely different clinical manifestations of one and the same germ abnormality. Again, pathological examinations show that defect, disorder and decay of mind are often accompanied by changes involving the same cortical layers and regions of the brain; indeed, J. Shaw Bolton found that in certain cases of disorder and early decay there was an inadequacy of neuronic development, and he considers that from the neuropathological, although not the clinical, aspect they may actually be regarded as falling within the category of amentia. Further, the clinical resemblances between these various conditions are at times so close as to render their differential diagnosis a matter of great difficulty. I do not think it is any exaggeration to say that one of the most perplexing problems which confronts the psychiatrist, when called upon to examine a case of mental abnormality during adolescence, may be that of deciding whether the patient is a high-grade defective, a psychoneurotic, or an early dement. Lastly, a considerable proportion of individuals who are definitely mentally defective acquire psychoneuroses, psychoses, or pass into a state of dementia. I mention these points because it seems desirable to emphasize the close relationship which exists between the various forms of mental abnormality. It is, however, with the different types of this occurring in aments that we are particularly concerned, and these I shall now consider.

Causation.

The liability to some form or other of mental disturbance or decay is very much greater in defectives than in non-defectives, and it is necessary to consider the reason for this. Whilst mental disorder in non-defectives is generally the resultant of two factors—namely, an innate predisposition and an external excitant—it seems probable that the former plays the most important part in the majority of cases, and that, in the absence of an inherent tendency to break down, the various environmental and exciting factors would be attended with comparatively little ill-effect. With regard to aments, although many, of all grades, are of stable mental constitution, nevertheless a large proportion are characterized by marked mental and emotional instability, while the majority lack the neuronic resistance and durability possessed by the normal individual. We may say, indeed, that an instability of mental equilibrium, whether due to irregularity and unevenness of development, to abnormality of physiological function, or to lessened neuronic durability, is one of the most common accompaniments of amentia. I think there is no doubt that this innate instability is responsible for the increased liability of defectives to suffer from epilepsy, mental disorder, and early mental decay. In many instances the breakdown occurs in the absence of any exciting factor whatever; the mind appears to topple over simply in consequence of its own unstable equilibrium.

In most aments who become insane this instability has been apparent from childhood. From the early years of life they have been subject to fits of irritability, moroseness, or temper tantrums, often accompanied by acts of violence, and their general conduct has been a cause of much anxiety to their parents and relatives. Although such attacks can hardly be termed insanity, they are only too often shadows of the coming event, being evidence of that predisposition which, sooner or later, will almost inevitably result in insanity. In most cases, the first real overthrow of mind takes place in the early years of adolescence; but it may occur during the first decade of life.

Nevertheless, although this innate predisposition is the chief cause of the mental breakdown, exciting or contributory factors are found in a proportion of cases; these may be of the most varied kind. During the two great wars many high-grade defectives were

enlisted in ignorance of their condition. The majority quickly broke down under the strain of military training and service, as, it may be remarked, did also a large proportion of the non-defective psychopaths. But in most cases in which mental disorder supervenes in aments the determining factor is much less definite, and comparatively trivial happenings, such as the small excitements, disappointments, difficulties and worries which are inseparable from life in the general community, suffice to upset their balance. There are many quite high-grade, unstable defectives, who have sufficient intelligence to perform remunerative work, but who are quite incapable of preserving their mental equilibrium outside the routine and supervision of an institution; and even there they are exceedingly difficult to manage.

Mental defectives and psychopaths generally are peculiarly susceptible to the effect of alcohol. Some years ago I knew a feeble-minded youth living in a village whom the yokels of the place were in the habit of plying with cider so that they might be amused by his furious excitement. In this instance the attacks were transitory, but I have known other cases in which alcohol has produced an attack of insanity of months' duration. A severe fright may likewise precipitate a psychosis in an unstable defective. I remember a mentally defective child who, for some breach of school discipline, was shut up by the teacher in a small dark room, little better than a cupboard. When taken out he was silent, and apparently dazed. The teacher said he was sulky, but he continued moody and depressed, and a few days afterwards passed into a state of profound melancholia which necessitated his removal to a mental hospital. Religious or other forms of excitement may also act as determining causes. One boy of twelve years became acutely maniacal as the result of the popular excitement at the relief of Mafeking. Another mentally defective youth in the employ of an Evangelical parson was so worried about his soul by this zealous but indiscreet gentleman that he attempted suicide. Another feeble-minded young man became insane in consequence of the repeated theatre-going and sight-seeing provided by his relations with the idea of amusing him. In fact, almost any trifling occurrence, which would have no effect upon the mind of a healthy person, is enough to upset the equilibrium of these mentally unstable defectives, and often the physiological changes attending puberty and adolescence are sufficient.

In many instances the mental disturbance which occurs in aments is mild and transitory, passing after a few days' rest and sedative treatment. Such cases need not be removed from their own homes or the institution. In others, however, it is much more severe and prolonged, and it may then become necessary to transfer the patient to a mental hospital. Some inquiries which I have made show that probably between 10 and 15 per cent. of the inmates of the public mental hospitals of the country are certifiable mental defectives. They have not been admitted because of their defect, however, but certified under the Lunacy Acts as "persons of unsound mind" in consequence of an acute psychosis. Most of them are of the feeble-minded grade of defect, but a small proportion are imbeciles.

I shall describe the various forms of mental disease occurring in aments under the three headings (1) Psychoneuroses, (2) Psychoses, and (3) Dementia.

PSYCHONEUROSES.

Whilst there is no sharp line of demarcation between the psychoneuroses and psychoses, yet there are clear differences between well-marked examples of them. Broadly, a psychoneurosis is a disorder of mind which is not accompanied by a complete overthrow of the self, as is the case in a psychosis. The individual consequently does not entirely lose his appreciation of reality, he usually has some insight into his condition, and his abnormality of reaction is partial and does not concern his whole personality.

The chief clinical forms of the psychoneuroses occurring in aments are hysteria, anxiety, and obsessive-compulsion states. On the whole, I think *hysterical manifestations* are the most frequent, and they generally take the form of localized pains or paralyses. As in the non-defective, such manifestations are usually a consequence of some difficulty or situation with which the individual is unable to cope and they are most common in the milder grades of defect, although they also occur in imbeciles. A female mongol imbecile, aged twenty-two years, was brought to me because she had suddenly begun to crouch in her walk. Her back was bent almost to a right angle from the hips and she could not be induced to straighten it. A little later she said she had lost one of her legs and she could not be prevailed upon to walk or even to stand. Her doctor thought

that she had some disease of the vertebræ or hip joints; but X-ray photographs revealed no abnormality. After much difficulty I managed to persuade her to lie down, when her back resumed its normal position and she was able to move both legs freely. On distracting her attention, she stood and walked normally for a few minutes; but she then relapsed into her crouching attitude. I was told that she had also changed in her behaviour, having become apprehensive, difficult to manage, at one time silent and at others aggressive or talking to herself. It was clear that the condition was a mental one, and on inquiry I found the patient was home for a holiday from a residential school for mental defectives where one of the other inmates was constantly bullying her, and she was afraid to go back. I think this is a fairly characteristic example of hysteria as it occurs in defectives.

Next to hysteria, an *anxiety state* is the most common psychoneurosis. This may be caused by some trivial shock or painful experience, such as witnessing an accident or undergoing a minor surgical operation. Whilst most stable defectives are quite unmoved by such happenings, the unstable may readily pass into a state of general apprehensiveness, with loss of appetite, disturbed sleep and occasional night terrors. Sometimes a specific phobia develops. It is often difficult to draw the line between such cases of restless apprehensiveness and those of agitated melancholia; the chief difference is that in the latter there is a preponderance of depression. *Obsessive-compulsion states*, of the types seen in non-defectives, are, I think, relatively rare. But many aments develop the habit of constantly repeating certain stereotyped words and useless acts, and it is possible that these, as well as the propensity to certain forms of misconduct (described in the chapter on Moral Defectives) are essentially of this nature.

PSYCHOSES.

While it is usual to divide the psychoses into a number of different types, yet with regard to their clinical features many of these divisions are more academic than real. From the ætiological aspect, for instance, cases are classified as due respectively to psychic trauma, physical injury, infection, intoxication, or organic disease of the brain, etc.; but there is no constant and definite correlation between these respective causal factors and the mental state of the

patient; indeed, many of these conditions may exist without any mental disorder whatever. For our present purpose it is of more practical use to classify the psychoses according to the predominant clinical features present, such as mania, depression, confusion, stupor, delusions and so on; but even in regard to these various combinations occur, and cases seen in real life are rarely so clear-cut as in textbooks. Indeed, there is a tendency nowadays to consider that there are really only two forms of psychosis, namely, manic-depressive and schizophrenic, and there is much to be said for this view. When a person's mind becomes disordered the type of disorder is chiefly dependent upon his mental constitution, upon his personality, rather than upon any particular "cause" which may have precipitated the attack. In other words, the disorder is essentially the particular mode by which the individual reacts to his inimical circumstances.

This is even more so in defectives who become mentally deranged. Determining factors, as we have seen, play a relatively small part and most aments break down because of their own inherent instability and poor resistance. With regard to their clinical symptoms, some cases are mainly characterized by maniacal excitement, others by anxiety, depression, or delusions; in yet others the disorder is a phase of a progressive mental deterioration; it will therefore be convenient to describe cases under these headings. But the particular type of reaction is mainly dependent upon the make-up of the individual, and is very much influenced by his peculiar mental limitations. In many cases, indeed, it is impossible to place it in a definite textbook category; one can only say that the patient is "mad," and as to what madness is, why, as said Polonius,

"What is't but to be nothing else but mad?"

On the whole, emotional disturbance is the commonest type of change, and in some instances this appears to be a purely affective alteration similar to that in cyclothymia or ordinary manic-depressive psychosis. But in many cases the individual has become excited or anxious because of some disturbance of thought; sometimes, in high-grade aments, because of the realization of their own incapacity; whilst many also become hallucinated and deluded.

Maniacal States.—As we have previously seen, many aments of the unstable type are subject to sudden storms of violent excitement

in which they rush about, use disgusting language, and smash everything within their reach, so that confinement to a padded room or mechanical restraint may become necessary. Usually, such attacks occur in defectives of high grade; but many imbeciles and even some idiots are liable to sudden and apparently causeless outbursts of excitement of the same nature. One girl of fourteen years attacked her brothers and sister with a poker and table knife; another, aged sixteen, stabbed her grandmother and then attempted to set fire to the room. One youth, after recovery from such a storm, accounted for his actions by telling me that he "got some thought on his mind which he tried to get off and couldn't; this made the blood run to his head and sent it rushing down his arms and legs." Many of these attacks are of comparatively short duration, and it is probable that some of them are psychic epilepsy or epileptic equivalents; but for the time being the patient is insane.

In other instances this state of maniacal excitement lasts for several days without cessation and may be accompanied by aural or visual hallucinations, or by delusions relating to the identity of other persons. The attack then gradually subsides, and after a few weeks the patient returns to his normal condition and his usual occupation in the institution. After the lapse of a few months, however, another attack usually occurs, and recurrences tend to follow with increasing frequency until the patient passes into a state of chronic noisiness and excitement, which only ends with the onset of dementia. Such attacks of maniacal excitement with, or without, hallucinations or delusions are the commonest form of psychosis in aments.

Anxiety, Depression, Melancholia.—Next to maniacal excitement, the commonest type of psychosis is extreme anxiousness. Usually, this is of the restless, agitated type; but it occasionally takes the form of silent passive gloom. In many cases it is accompanied by hallucinations or delusions, and refusal of food is not uncommon. Thus, a feeble-minded girl was frightened by seeing a fight in the street; she became timid and anxious, and in a few days developed delusions that people were trying to kill and burn her. She heard voices threatening her, thought that her food was poisoned and refused to eat it, and, in fact, became apprehensive of harm from every imaginable quarter. She was in a state of tearful agitation, constantly wringing her hands, and muttering, "What are they going to do to me?" Another anxious boy had the curious

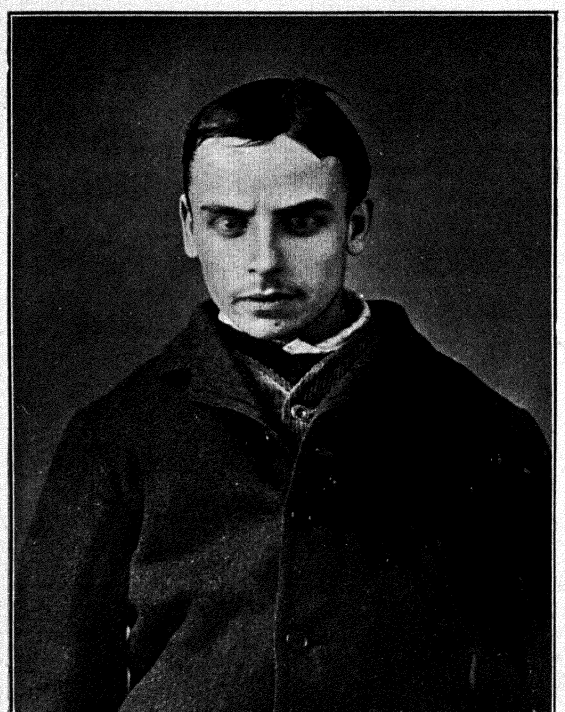
ISOLATION AMENTIA.



Amentia due to congenital blindness.

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EPILEPTIC AMENTIA.



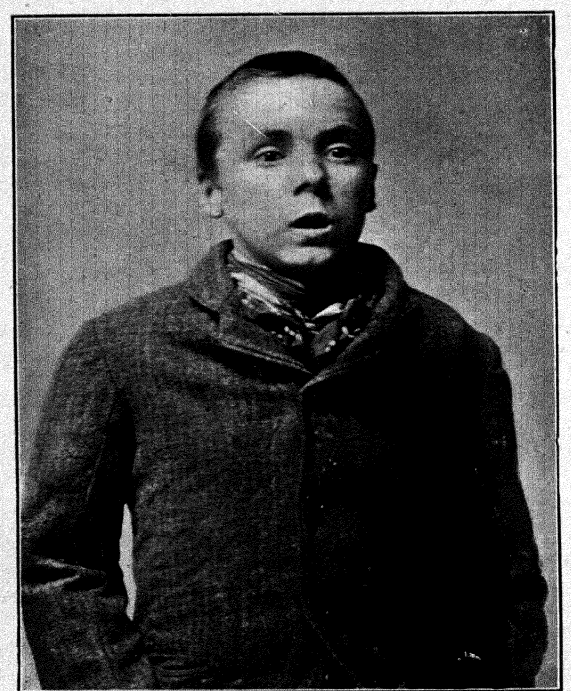
Epileptic ament with mania.

AMENTIA WITH INSTABILITY.



Feeble-mindedness with marked mental instability.

AMENTIA WITH STUPOR.



Stupor in a feeble-minded youth, age 15½ years.

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delusion that he had fallen to pieces and lost some of his parts. In some cases the depression of these persons seems to be the outcome of a consciousness that they are different from other people. They feel neglected, or, as they sometimes say, " of no use." The rebuke or sharp word of employer or parent is keenly felt, and they acquire a habit of brooding over their fancied wrongs. It is common to hear feeble-minded persons in this frame of mind complain that they have " not had fair play." Delusions of persecution follow, and these may result in a state of gloomy melancholia. If they can be got to converse at all, their remarks are often to the effect that they are " tired of life and want to die," and, indeed, attempts at suicide are by no means uncommon. These attempts are often real and definite efforts to put an end to existence, and drowning seems to be the method which most appeals to them. Many of these patients become utterly careless of personal cleanliness, refuse to work, dress, or take food, and sometimes resist any attempt on the part of their attendants to aid them.

Occasionally, depression passes into a state of complete stupor, indeed almost catalepsy. One patient of this type whom I saw was a defective youth of fifteen years whose mental disturbance had begun with visual hallucinations. He had then gradually become silent and depressed and finally stuporose. For weeks he sat in one place, staring vacantly in front of him, dribbling from the mouth, requiring to be fed with a spoon, and quite indifferent to the calls of nature. After nine months this condition had entirely passed and he was discharged from the mental hospital. Six months later he was readmitted with a precisely similar attack, which again slowly passed after a few months. A state of fatuity next appeared in which he was liable to sudden outbursts of laughter or crying without any discoverable cause. He gradually became demented and after some years died of dementia præcox.

Recurrent and Alternating Psychoses.—In many of the cases described above the attacks of excitement, anxiety, or depression pass after a few weeks or months and the patient returns to his normal condition. Sooner or later, however, there are likely to be recurrences, and in many instances the normal intervals become progressively shorter until the patient passes into a state of chronic insanity. In many respects such cases resemble those of manic-depressive psychosis as seen in the non-defective, except that I think the frequency of the recurrences and the tendency to dementia

are considerably greater. As a rule the subsequent attacks are of the same type as the first one, but occasionally maniacal excitement and depression alternate. The following are illustrative cases of mania and depression in aments.

Charles H. C——, a feeble-minded youth with several well-marked physical anomalies; said to have always been very excitable; no regular employment. Admitted to the mental hospital, aged sixteen, with acute mania of three weeks' duration. He had suddenly become noisy and sleepless, throwing himself into strange attitudes, utterly irrational in his conversation, shouting out "God save the Queen," and asking to be allowed to fight the Boers. Alternating with this he was tearful and anxious, with delusions of being constantly followed by policemen, and by boys who called "Thief!" after him. He was acutely apprehensive, begging for the door to be kept locked. For a week after admission to the hospital he remained in this excited condition day and night, and it was quite impossible to control him. He was terrified of the other patients, thinking all were trying to strangle him. After a week he gradually became quieter, and at the end of two months had become so quiet and well behaved that he was discharged.

A. C., male, aged twenty-five years. Has always been backward, and never learnt to read or write. After leaving school earned a few shillings weekly by doing odd jobs, but had no regular employment. Apt to behave queerly at times from early boyhood, and on several occasions disappeared from home for two or three days. At the age of twenty-four began to attend music-halls frequently, and shortly afterwards became exceedingly strange in his manner; he refused to do any work, and spent most of his time standing at the open window talking to people he imagined he saw Much of his conversation was about one "Flo Arnold," whom he wished to marry, for which purpose he said he had taken £2 out of the bank. He gradually became quarrelsome, and finally violent and acutely maniacal, and had to be sent to a mental hospital. This condition of mania, with delusions and aural hallucinations, lasted for two months, after which he became quieter. He has now been in the hospital for nearly two years. He is subject from time to time to sudden outbursts of maniacal excitement, lasting from a few hours to several days; these are probably due to delusions, although none can be ascertained. He shows indications of the onset of dementia.

A. F., female. "Always simple from quite a child." Left school aged twelve, being only in second standard; afterwards in a training home; very bad-tempered and addicted to smashing windows; sent home after three years, as they could do nothing with her. At the age of sixteen she became so violent that she had to be removed to a mental hospital, having hurled a cooper's hammer at a man and thrown a heavy padlock at a woman. She remained in a condition of maniacal excitement for three months, with an occasional short interval of comparative calm. During one of these I asked her why she behaved so violently; she said something came over her and she felt she "must do it." In the next three months she became much quieter, and for the following five months remained silent and gloomy, refusing to have anything to do with the other patients; then she relapsed into a state of restless excitement lasting for a month, followed by another period of depression. She is now nineteen years of age, having been in the hospital three years. At times she is fairly quiet and does a little ward work, but is very untrustworthy and liable to sudden outbursts of maniacal excitement with destructiveness; she is highly emotional and unstable, bursting into fits of tears or laughter without any apparent cause. There are no indications of dementia.

R. D., female. Very backward at school; left aged thirteen and went to service, but was so liable to what her mother calls "fits of temper" that she did not keep any place more than a few months; altogether she had fourteen situations in less than three years. At the age of sixteen she became so violent that she was sent to a mental hospital. On admission she was in a state of acute mania, screaming, shouting, singing, and resisting all attempts to keep her in bed; she also threatened to cut her throat. This condition lasted for a few days after admission; she then became quieter, and by the end of a fortnight was doing some work in the wards. Within a month she had a relapse exactly similar to the first attack. She is now twenty years of age, and has been in the hospital four years. At times she is quiet, well-behaved, and answers questions readily and pleasantly; it is, however, impossible to depend upon her, and she is subject from time to time to sudden outbreaks of excitement, in which she becomes abusive, uses foul language, and violently attacks anyone who may be in her way. These outbursts last for three or four days and nights; as a rule, they seem to be purely emotional storms, but in some

delusions are present, generally to the effect that the medical officers and the nurses are trying to cut off her head or torture her in various ways.

E. S., female. Simple-minded from birth; did not get on at school; subsequently kept at home to help mother, "as she did not seem to have enough sense to go out to work." Was at times very troublesome, and caused much annoyance by suddenly rushing into neighbours' houses. At the age of sixteen became so restless and excitable that they could no nothing with her, and sent her to a mental hospital. The medical certificate states "she exhibits undue mental excitement, talks, sings, shouts, and laughs immoderately, and behaves in an insane manner; very restless, imagines the attendants to be her former school-teachers, and seems altogether too excited to control herself and talk sensibly." This acute condition gradually abated, and by the end of three months she had become quiet and able to work; two months later she relapsed, again becoming excited, noisy, and destructive day and night, in which state she remained for three weeks, then becoming quiet and industrious again. She has now been in the hospital seven years, has ceased to do any work, and is subject to frequent acute outbreaks of noisy aggressiveness. In some of these attacks delusions are present; thus, a short time ago she stated that she had given birth to a child, which had been stolen from her in the night. She is very impulsive, and on one occasion, seeing a pail of water standing in the ward, suddenly plunged her head into it. She is becoming very untidy in her dress and personal appearance, though there are as yet no other indications of dementia.

C. R., female imbecile. Never passed first standard at school; subsequently kept at home; could never be depended upon; and from nine years of age has at times been very violent and addicted to using disgusting language. She had to be sent to a mental hospital at the age of fourteen. On admission was in a state of mania, chattering to herself and singing or shouting day and night; at times destructive and aggressive. She has now been in the hospital for six months, and on the whole there is very little improvement. She is occasionally fairly quiet and rational, but as a rule she is raging up and down the wards singing, shouting, and swearing at the other patients. The charge-nurse says she is her most troublesome patient.

C. D., male. He could never learn arithmetic at school, as the

master said his "brain was too weak." Used to behave very oddly at times. After leaving school was employed in a bootshop. At the age of sixteen he was frightened by a large black dog, and shortly afterwards became much depressed, gradually passing into a condition of melancholia. On admission to hospital he was found to have aural and visual hallucinations with delusions. He thought he was surrounded and threatened by black men; he said that he was afraid he was going to be killed in the China War, and that God told him to kill himself. For several days he was restless and anxious; afterwards becoming dull, listless, lethargic, and a confirmed masturbator; this stuporose condition would occasionally pass and he would become aggressive and violent. Four years after admission he had so much improved that he was discharged to his friends, only to be readmitted six weeks later, as they found it impossible to manage him. He is now twenty-two years of age, and is still in the hospital, being idle and as a rule dull, depressed and constantly muttering to himself; occasionally destructive and aggressive; signs of dementia are present.

T. K., male. Mental deficiency noticed from early childhood; incapable of learning at school; no work subsequently; never earned any money. Gave much trouble to his parents, being "very bad-tempered," and frequently wandering away from home. At sixteen years of age became much depressed, and attempted suicide by taking carbolic acid. On admission to hospital was wretched and tearful, saying that he wanted to die, and there was no reason why he should live. He gradually became brighter and even cheerful, and a month after admission was able to work out of doors; the improvement continued, and he was discharged in four months. Eight months later he was readmitted, having been found by a policeman battering his head against some iron railings. On the way to the station he said that he would kill either himself or his father; the latter stated that he had been violent and had attempted to cut his (the father's) throat. He was profoundly depressed, thought he heard voices and that people had conspired to kill him. He has now been in the hospital four months; he is still depressed and solitary, but on the whole decidedly brighter, doing a little work, and he appears to have lost his delusions.

Delusions.—Although delusions are fairly common in mentally disordered aments, their intellectual limitations seldom allow of the chronic systematized delusions which characterize ordinary

paranoia. Nevertheless, the mental attitude of aments is sometimes of a distinctly paranoid nature. Thus, it is not uncommon to find feeble-minded persons very self-satisfied and even conceited with regard to what they conceive to be their cleverness and intellectual endowments. Such persons attribute their want of success to the spite or machinations of others, or to the fact that they have not had a proper chance like other people, and from this there gradually develops a suspicious aloofness, hostility to society in general, and sometimes definite delusions of persecution.

It is important for those who have dealings with the feeble-minded to remember that many of them make untruthful statements with a persistence and an amount of detail which may cause a ready credence in the unwary. Whether such statements should be classed as delusions it is difficult to say. Sometimes I think the person does actually believe them to be true, that he is, in fact, deluded; but in other instances they are simply make-believe flights of fancy; whilst in a few they appear to be due to a desire to be in the limelight or to make trouble. But if these possibilities are not borne in mind, the consequences may be serious. I have known feeble-minded children accuse their companions and teachers of all sorts of offences without any foundation. I have known a feeble-minded girl accuse a medical examiner of rape without the slightest justification. I have examined a feeble-minded girl of sixteen who swore most positively that her own father had been constantly in the habit of having sexual intercourse with her. It was subsequently proved that the charge was absolutely false. Another girl of this type caused grave scandal in the village in which she lived by asserting, completely untruthfully, that she was in the habit of constantly going for long solitary walks with the vicar. Occurrences like this are common, but a pure delusional insanity, in which the delusions remain fixed for a long period and do seem to be actually believed in, is not so common. The following is an example of this:

H. M., a feeble-minded woman, thirty-three years of age, but small, ill-developed, and not looking more than twenty-three. Her parents say that she never seemed bright intellectually, and since she left boarding-school at the age of nineteen she has been at home helping a little in the house and garden, but taking no responsibility. During the last five years she has become enamoured of several men she has chanced to meet, continually talking about and trying to meet them, though they have apparently been quite

ignorant of her feelings and certainly have given her no encouragement. Twelve months ago she became infatuated with a professional man (*Mr. C.*), whom she met by chance at a friend's house, and since then he has occupied all her thoughts. She writes letters to him, is perpetually talking about him, and on several occasions her father has met her slipping out of the house at night to go and see him, she said. Her behaviour caused such trouble to her parents that she was placed in the house of a medical man in the hope that change of scene would lead to change of thought. But she insisted that Mr. C. had followed her; she said he was walking in the garden waiting to give her an engagement ring, and on several occasions she said he had been in her room talking to her, although he was in reality a hundred miles away. When brought to me six months later she still had the same delusion; she insisted that Mr. C. had come up in the same train with her, that she saw him get out at the station, and that at the present moment he was waiting for her in the street. As her father told me that on several nights she had got out of bed and had been found walking in the garden, that she was constantly slipping out of the house, and that they were finding it exceedingly difficult to keep her under observation, I advised that she should be certified and placed in a private mental home. This was done, but at the present time, six months later, her condition is unchanged; she insists that Mr. C. is in the grounds or the next room asking to see her, and she is very angry that she is not allowed to go to him. So far as can be ascertained, she has neither spoken to nor even seen the object of her affections since their first meeting.

Epilepsy and Epileptic Insanity.—As has been stated, epilepsy is one of the commonest complications of amentia. Although in many cases persons so suffering tend to be somewhat impulsive, undependable, and difficult to manage, there is not, as a rule, a sufficient degree of mental disturbance to necessitate special control. In some cases, however, the condition is associated with a degree of violence and irresponsibility which amounts to actual insanity. These patients may be subject to homicidal attacks, and are too unmanageable to be kept at home or in a training institution for defectives, and have to be sent to a mental hospital. In such cases dementia is usually only a question of time. It should be remembered that *psychic epilepsy* and *epileptic equivalents* also occur in aments. These have been described in a previous chapter.

DEMENTIA.

A gradual failure of mind, as of body, is the natural consequence of old age. Although normal persons differ greatly with regard to their neuronic durability, so that many die at an advanced age showing little sign of mental decay, yet it is true to say that the mental manifestations of everyone who lives long enough will undergo deterioration. As would be expected, in most cases of primary amentia, this physiological, or senile, form of dementia sets in at an earlier age than in the normal. It often begins to show itself in the fourth decade, sometimes earlier, and the majority of aments who live much after this usually show definite and progressive mental degeneration. Those aments who have possessed unusual abilities in particular directions, as described in the chapter on Idiots Savants, usually begin to lose them after middle age.

In defectives who have been subject to repeated attacks of insanity, dementia sets in still earlier; in fact such is the almost invariable termination of these cases. The tendency to deterioration is not so great in the unstable aments who have been subject to sudden, short-lived, emotional storms without any definite pyschosis, and these may show no signs of dementia after many years.

In addition to the above senile and secondary forms of dementia, there are some aments who undergo an early and progressive mental deterioration without any apparent exciting cause. The onset of this may occur even in childhood, and I have seen cases in which it began as early as the sixth year: in others, it is first noticed shortly after puberty. It is sometimes foreshadowed for several years by oddities of speech, manner, and behaviour. Then the affected patients become apathetic and idle; they cease to take any interest in their surroundings and gradually become more and more detached. Mental progress comes to a standstill; the patients then lose their acquirements and become slovenly and dirty in their habits. In some cases stereotyped mannerisms, echolalia, echopraxia, and flexibilitas cerea are present. There may be marked negativism with resistance on attempts to examine or do anything for them; or there may be occasional outbreaks of aggressiveness and violence. Their condition becomes such as to render them unmanageable and no longer suitable for the school or training institution, and admission to a mental hospital becomes necessary After a few years most of them become completely demented, and

thence lead only a vegetative life until death ends the scene. The symptoms and course are those of dementia præcox, and it would appear that the impairment of neuronic potentiality is so great that mind begins to break down before it has even reached the incomplete stage of development of a mental defective.

Dementia præcox originating during childhood or early adolescence in mentally normal individuals necessarily produces an arrest of mental development and secondary amentia. This has already been described under schizophrenic amentia.

CHAPTER XVIII

CLINICAL EXAMINATION.

BEFORE considering the diagnosis of amentia it is desirable to give an account of the data required for this purpose, the chief mental tests which may be used, and the methods of examination and case-taking. This will be done in the present chapter.

I. DIAGNOSTIC DATA.

The data required for diagnosis fall under four headings—namely, (1) Family History, (2) Personal History, (3) Physical Examination, and (4) Mental Examination.

1. **Family History.**—While this, of course, does not afford any direct evidence of defect, it may nevertheless furnish data of considerable significance, especially in forming an opinion concerning a retarded child. It should include the fullest information that can be obtained regarding the mental and physical health of as many members of the family as possible. Such an inquiry may take much time and need great tact if the true facts are to be elicited; but the time will be well spent and it should never be omitted.

2. **Personal History.**—In this investigation it is desirable to obtain particulars of all the main happenings in the life history of the patient, from the time of conception up to the present. The following questions may be put:

Did the mother suffer from any impairment of health during pregnancy? What is the place of the child in the family? Was he born at term? Was he of normal size? Were there any abnormal conditions attaching to the birth? After birth, was there any delay in teething, sitting up, walking, talking, or becoming clean in his habits? Has he had any convulsions, accidents, or serious illnesses? Has he attended school? If so, was he regular or irregular, and what progress did he make? If he has left school, has

he followed any occupation ? How many jobs has he had and of what kind ? What wages has he earned, and have these increased or decreased with change of place ? What has been the general nature of his environment, especially with regard to its influence upon the development of character ? What has been his general disposition and conduct, and have any offences been committed ? What sort of companions has he had, and are they older or younger than himself ? To what extent, if any, has supervision been necessary in the managing of himself and his affairs ? Is the mental retardation or abnormality of conduct of recent standing, or has it existed since childhood ? If the former, did it follow any serious illness, accident, or emotional disturbance ?

3. **Physical Examination.**—A careful routine examination is of great importance, and should always be made. Its objects are to ascertain the existence of any malnutrition, disease, deformity or special sense defect, which might be responsible for mental retardation; and to detect the presence of developmental anomalies and stigmata which might suggest, or indicate, mental defect. Amongst the former, care should be taken to ascertain the state of vision and hearing, the existence of enlarged tonsils and adenoids, anæmia, rickets, tuberculosis, heart disease, epilepsy, chorea, and any form of paralysis. Attention should also be paid to the character and co-ordination of movements, the presence of any special tricks or habits, and to defects of speech. The chief developmental anomalies have already been described. The height, weight, general physique, and cranial circumference should also be noted.

4. **Mental Examination.**—While the above-mentioned data may be of considerable significance in diagnosis, it is upon the results of an examination as to the degree of development, mode of functioning, and abilities of mind, that the decision whether an individual is, or is not, mentally defective must ultimately be based. Where gross defect exists there will be no difficulty in coming to this decision. In idiots and most imbeciles, the lack of understanding, of reason, and the very limited range of knowledge, are so obvious, that little in the way of a special mental examination is needed to establish the diagnosis. In the milder grades of defect, however, this is not so, and a careful mental examination is necessary. This is made by the application of "mental tests," and in view of its importance it is advisable to deal with this subject under a separate heading.

II. MENTAL TESTS.

During recent years very great advances have been made in the methods of testing the attainments, abilities, proclivities, and "intelligence" of mind. Indeed, the number of mental tests is now so great, and the literature on the subject so extensive, that it is practically impossible even to mention all of it, and those who wish to pursue the subject further, or who desire detailed instructions as to the methods of use, are referred to special works.* In this place I shall only describe the chief tests which are suitable for the diagnosis of mental defect. These may be divided into the following four groups:

1. Tests of scholastic attainments.
2. Tests of range of general, or common sense, knowledge.
3. Serial "intelligence" tests, standardized to age.
4. Tests of special mental factors and specific abilities.

* The chief general books are the following (references to others dealing with more special aspects will be given in subsequent pages):

G. M. Whipple, "Manual of Mental and Physical Tests," Baltimore, 1910.

A. Binet and Th. Simon, *Bulletin de la Société Libre pour l'Étude Psychologique de l'Enfant*, April, 1911; also an English translation, "Mentally Defective Children," by W. B. Drummond, London, 1914.

H. Goddard, *The Training School*, June, 1911.

R. Pintner and D. Paterson, "A Scale of Performance Tests," New York, 1917.

L. M. Terman, "The Measurement of Intelligence," London, 1919.

P. B. Ballard, "Mental Tests," London, 1920.

C. Burt, "Handbook of Tests," London, 1923.

F. Gaw, "Performance Tests of Intelligence," H.M. Stationery Office, 1925.

A. Gesell, "The Mental Growth of the Pre-School Child," New York, 1925.

Bronner, Healy, Low, and Shimberg, "A Manual of Individual Mental Tests and Testing," Boston, 1927.

J. Drever and M. Collins, "Performance Tests of Intelligence," Edinburgh, 1936.

G. Arthur, "A Point Scale of Performance Tests," New York, 1930.

R. Stutsman, "'Merrill-Palmer' Scale." A mixed verbal and performance scale for children between 18 months and 6 years and for low-grade defectives. New York, 1931.

R. B. Cattell, "Guide to Mental Testing," London, 1936.

H. R. Hamley, "The Testing of Intelligence," London, 1935.

L. M. Terman and M. A. Merrill, "Measuring Intelligence," London, 1937.

E. A. Doll, "A Scale of Social Maturity," *Amer. Journ. of Orthopsychiatry*, April, 1935, also *Journ. of Heredity*, Washington, May, 1937.

1. TESTS OF SCHOLASTIC ATTAINMENTS.

In these days there are very few persons who have not had educational opportunities, so that every normal individual should possess some scholastic knowledge. It is true, as we have previously seen, that scholastic ability and social ability are not identical. They are, however, so frequently associated that a marked defect of one in most cases means a defect of the other. Any considerable lack of scholastic attainments is therefore of diagnostic significance.

In the case of children attending school, information as to their attainments, rate of progress, and educability will usually be supplied by the teacher. If it is desirable to check this the handbooks of Burt or Ballard will be found useful; some of the special tests which I shall describe later are also tests of scholastic educability. In the case of adolescents and adults where no school report is available, the individual should be required to read selected passages from a book or newspaper and to explain their meaning, to write sentences from dictation, to do mentally and on paper simple sums in arithmetic and problems in change, to answer simple questions of history, geography and nature subjects. The point to ascertain is whether the subject has a sufficient range of scholastic knowledge, particularly of the three R's, to manage his affairs in a reasonably efficient manner.

2. TESTS OF "COMMON SENSE" KNOWLEDGE.

The range of general, or common sense, knowledge possessed by the subject under examination is in many ways of more significance in the diagnosis of mental defect than his scholastic attainments; for the latter are largely dependent upon the educational opportunities he has had and his scholastic capacity, whilst the former is a result of his native intelligence and inherent powers of observation.

Every mentally normal child has an innate ability which causes him to notice, handle, speculate upon, discriminate between, and so acquire knowledge regarding, the objects present in his surroundings. He does this in his play without any formal instruction, and unless his environment has been very unusually adverse he soon becomes acquainted with the names, uses, and many other details regarding the things around him. With the mentally deficient child it is different. His intrinsic weakness of initiative,

observation, attention, memory, discrimination, and reason results in a defective range of information which contrasts to a very marked degree with that of the normal child; a little judicious questioning will bring out the difference in the clearest possible way.

The best means of estimating the subject's range of general knowledge, therefore, is by a questionnaire suitably directed to test his knowledge and understanding of the things and events which are part of his ordinary life. It must obviously be limited to these, and the examiner must remember that the environments of children may differ greatly. I have known a town-bred child who had migrated to a country school to be stigmatized by his teacher as mentally defective because he did not know what a blackbird was like; he had never seen nor heard of one. It is not practicable to lay down any set questions, the examiner must use his own common sense; but it may be stated that a normal child of six years, even if he has never been to school, should be able to name the town and street in which he lives; to give the names of his brothers and sisters and of neighbouring children; to give the names, uses and a short description of such common objects as a cat, chair, table, spoon; to tell the difference between a motor-car or tramcar and a horse and cart; and the like. Those a few years older should be able to give the King's name, to tell the time, the names of common coins, what postage stamps are for, the route from their homes to some near-by place, the difference between Sunday and a week-day, or between day and night, and so on. Girls may be asked how they would make a cup of tea, boil an egg, and do similar little domestic duties. A simple talk with the subject on these lines will not only serve to put him at his ease with the examiner, and so prepare the way for more definite tests, but will yield information of considerable diagnostic value.

3. GRADED SERIAL TESTS.

These tests are standardized to age and are mainly linguistic. They owe their inception to the painstaking work of MM. Binet and Simon of Paris. As the result of a careful study of the abilities of a large number of school children, these observers drew up a series of tests for each year of life from three to ten, and for the years twelve, fourteen, and sixteen, which the normal average child of these ages should just be able to pass. This series was first

published in 1908, and a revised one in 1911. Its original primary purpose was not to diagnose mental defect, but rather to elucidate the rate and manner of normal mental development; it was, however, soon found to have diagnostic value in the case of mentally defective children, and it has since been used extensively for this purpose.

The original tests of Binet and Simon are still the basis of all the tests of this kind in use. Experience has shown, however, that certain modifications are necessary when used for English and American children, and such have been made by Terman, Goddard, Burt and others. Probably the scale of Terman, known as the "Stanford Revision," is in most general use at the present time. In addition to alterations in the ages of some of the tests, this revision introduces a few new ones, and it gives tests for average and superior adults. Further slight modifications are, however, advisable when this scale is applied to English children. The series which I shall give is suitable for this purpose. It is that used by Dr. Lewis (after consultation with Professor Burt) in his investigations for the Joint Mental Deficiency Committee.

It is desirable to explain the methods of use and scoring. The usual procedure is to begin with the series of tests about two years below the chronological age of the child and then to work upwards until no further response is obtained. If the child fails at the beginning, a start must be made still lower in the scale. The final result is stated in years and months according to the tests passed, and this represents the child's "mental age" (M.A.). Formerly, it was considered sufficient to state the difference between this age and the actual, or chronological, age as so many years' retardation. It is obvious, however, that two years' retardation at the age of seven is a very different thing from two years' retardation at the age of fourteen; hence it is usual to express the mental age as a percentage of the real age, the result being known as the "mental ratio" (M.R.), or intelligence quotient (I.Q.). Thus a child whose mental age as shown by tests is 9 and whose chronological age is 12 has an I.Q. of $\frac{9 \times 100}{12} = 75$. Since it has been found that mental development, as measured by tests of this kind, does not progress beyond the early years of adolescence, the denominator in the case of adults must not be their actual age, but a figure corresponding to the end of mental development. Terman places this at sixteen;

but more recent studies (Burt) have shown that in England this figure is too high, and the denominator usually adopted here is fourteen. It may be remarked that whilst in the normal population the I.Q. remains fairly constant at all ages in the same individual, in many defectives, probably owing to the fact that mental development ceases at an earlier age, the I.Q. tends to fall towards the end of their school career. It may be added that the "educational quotient" (E.Q.) is similarly obtained by using the ordinary educational tests of the schools.

Before describing these various tests, it may not be out of place to make a few general remarks regarding their application. Those who are entirely unacquainted with the methods will find full details in the special manuals. It is necessary to bear in mind that time and patience are essential, that all hurry must be avoided, that the subject must be put at his ease, and that the purpose is not to trip him up, but to gain his confidence and co-operation and encourage him to do his best, without, however, giving any actual help in the tests. Due account must be taken of nervousness, while fatigue may have a very important influence upon the result. If this is present it is advisable to postpone the examination or to take it in two parts. It is also essential to remember that valuable information as to the person's capacity will be gained by observing the way in which he attacks the problems set him, especially in the performance tests. For this reason, the physician should not entrust them to someone else and be content with a mere statement of the result, but should apply the tests himself.

LIST OF SERIAL TESTS.

(JOINT MENTAL DEFICIENCY COMMITTEE.)

Age 3.

1. Points to nose, eyes, and mouth.

2. Knows own sex. ("*Are you a boy or a girl?*" *The sex of the child examined should be put first, as many defectives merely repeat the last word.*)

3. Names familiar objects (A and B*) (e.g., *knife, key, penny*).

* In testing blind children, tests marked A are transposed to a higher age, those marked B are modified, and those marked O are omitted. (See below, "Tests for the Blind.")

4. Gives name and surname.

5. Picture enumeration (O). (*Do not point to objects. Say, "Tell me what you see in this picture." To pass must name three objects in two out of three pictures.*)

Alternatives.—(*a*) Replaces nest of boxes* (O). (*b*) Matches colours† (O). (*c*) Repeats two digits.

Age 4.

1. Repeats a sentence of six to eight syllables. (*Three sentences should be given*—e.g., "*The cat runs after the mouse.*" "*It is wet and very cold.*" "*The boy will be late for his school.*" *To pass, one should be repeated accurately, or two repeated with only one mistake in each.*)

2. Repeats three digits. ("*Say after me,* 3, 6, 1; 7, 5, 2; 4, 8, 3." *To pass must repeat two series accurately.*)

3. Counts four objects (A and B). ("*Count these*"—*beads or pennies.*)

4. Says which is the longer of two lines (B).

5. Compares faces (O). (*Three pairs of ugly and pretty faces shown.* "*Tell me which is the nice one.*" *All correct to pass.*)

Alternatives.—(*a*) Compares forms (O). (*Eight pairs of different geometrical forms are given; the examiner points to one and the child points to its similar. To pass six must be correct.*)

Age 5.

1. Copies square (O). (*Drawing of square is shown and child required to copy with pencil; three trials may be given. Two correct to pass.*)

2. Repeats four digits (9, 7, 2, 5; 8, 3, 1, 7; 6, 4, 9, 5. *Two series correct to pass.*)

* The nest of boxes can be bought at most toy shops; the set used consists of five boxes. The child is first shown the boxes set one inside the other. The five boxes are then placed on the table in an indiscriminate order. The child is asked to put them back one inside the other as they were at first. A time limit of three minutes is set.

† For this test twelve coloured counters, each 1 inch in diameter, are used. The set consists of three counters of each of the primary colours—red, green, blue, and yellow. The twelve counters are placed in an indiscriminate order on the table. The investigator picks up one of them and the child is asked to choose a counter of the same colour from amongst those on the table.

3. Carries out a triple order (B). (*" Put this pencil on chair, open door, and then give me that book." No error to pass.*)

4. Compares weights. (*Three pairs of small boxes of same size given containing weights of 7 and 20, 5 and 15, 3 and 12 grammes respectively. When it is clear that child appreciates what is required, all should be compared correctly to pass.*)

5. Names four primary colours when shown to him—(i.e., *red, green, blue, yellow* (O). *All correct to pass.*)

Alternatives.—(*a*) Answers comprehension questions. (*" What is the thing to do when you are hungry—cold—sleepy ?" To pass, sensible answers must be given to two out of three.*) (*b*) Tells age. (*c*) Tells whether it is morning or afternoon.

Age 6.

1. Counts thirteen pennies or beads (A and B). (*They must not be in a row.*)

2. Copies outline of a diamond (O). (*Two correct out of three to pass.*)

3. Names four coins (A and B) (½*d.*, 1*d.*, 6*d.*, 1*s.*).

4. Repeats five digits (9, 5, 4, 7, 1; 2, 8, 3, 5, 7; 6, 1, 9, 2, 5).

5. Distinguishes right and left. (*" Show me left hand, right eye, left ear." All correct to pass.*)

Alternatives.—(*a*) Defines by use. (*" What is a cat, chair, spoon, table, cup, mother, etc., for ?"*) (*b*) Names days of week. (*c*) Knows number of fingers on both hands. (*d*) Repeats sentence of sixteen to eighteen syllables. (*" We will go out for a long walk ; please give me my pretty new hat."*)

Age 7.

1. Tells missing features in outline drawings of face from which some point has been omitted (O).

2. Repeats three digits backwards. (*" Say these numbers backwards after me :* 6, 3, 1; 9, 3, 5; 2, 7, 4.")

3. Answers comprehension questions. (*" What is the thing to do if you miss your train ? If your home is on fire ? If it is raining when you start to school ?"*)

4. Tells the total value of three pennies and three halfpennies placed before him (A and B).

5. States differences between objects (B) (i.e., *fly and butterfly, wood and glass, egg and stone. Two out of three to pass.*)

Alternatives.—(*a*) Ties bow-knot, imitating a model (O). (*b*) Names days of week in order and tells the day before yesterday and the day after to-morrow.

Age 8.

1. Counts backwards 20 to 1. (*May be shown what is needed by saying* 20, 19, 18.)

2. Gives meanings of twenty words. (*A list of words is supplied and the child is required to give a satisfactory meaning of twenty of them*—e.g., *orange, bonfire, roar, ramble, priceless, milksop, etc.*)

3. States similarities of two things (i.e., *wood and coal, apple and orange, iron and silver, ship and motor-car. Two out of four to pass.*)

4. Gives change out of a shilling (A) (*actual coins used*).

5. Comprehension questions. ("*What's the thing to do if you have broken something which belongs to someone else? If you are on your way to school and find you are likely to be late? If a schoolfellow hits you without meaning to do it?*" *Two out of three to pass.*)

Alternatives.—(*a*) Gives definitions superior to use (i.e., *balloon, tiger, football, soldier. A brief explanation is required. Two out of four to pass*). (*b*) Gives date. (*c*) Repeats six digits.

Age 9.

1. Ball and field test (O). (*A circle about* 2 *inches across is drawn to represent a round field, with a small gap for the gateway. Say, "Suppose you had lost a ball in a big field like that, mark with this pencil the way you would walk so as to be sure of finding it." Any indication of definite plan is accepted at this age.*)

2. Repeats four digits backwards.

3. Makes a sentence containing three simple specified words (e.g., *boy, ball, river*).

4. Names six coins (½*d.*, 1*d.*, 6*d.*, 1*s.*, 2*s.*, 2*s.* 6*d.*).

5. Gives rhymes to specified words (e.g., *day, mill, spring. Three rhymes required for each word*).

Alternatives.—(*a*) Rearranges a mixed sentence (e.g., "*The cat saw the dog on the wall.*" *Each word is supplied on a separate card*). (*b*) Healy A. (*c*) Names months in order. (*d*) Tells time from watch or clock.

Age 10.

1. Names months in order, with checks (e.g., "*Which month comes after May? Before January?*").

2. Arranges five weights in order. (*Equal-sized boxes weighing respectively* 3, 6, 9, 12, 15 *grammes. To pass, two correct out of three trials.*)

3. Copies drawings (O). (*Copies two simple line drawings from memory after ten seconds' exposure. To pass, one correct, the other half correct.*)

4. Gives meanings of thirty words.

5. Repeats six digits. (*To pass, one of two series correct.*)

Alternative.—Reading and report (B). (*Reads aloud a given passage and recalls eight items.*)

Age 11.

1. Detects absurdities. ("*A man said, 'If I commit suicide I shall not do it on a Friday, because Friday is an unlucky day and would bring me bad luck.'*"

"*A man said he heard of a good signpost which had on it, 'Turn to the left for Bedford. If you cannot read, ask the way at the post office.'*"

"*A station-master said, 'It is very often the last carriage of the train that is hit in an accident, so in future I shall take the last carriage off.'*")

2. Answers comprehension questions. ("*If you are asked for the character of a person you do not know, what should you say?*"

"*Why should we judge a person more by his actions than by what he says?*"

"*What ought you to do before beginning something very important?*")

3. Gives sixty words in three minutes.

4. Repeats a sentence of twenty to twenty-three syllables after hearing it once (e.g., "*The apple trees make a cool, pleasant shade on the ground where the children are playing*).

5. Repeats five digits backwards. (*One out of three series to pass.*)

Alternative.—Gives right time from watch a quarter-hour fast.

Age 12.

1. States similarities of three things (e.g., *apple, pear, plum ; book, teacher, newspaper ; wool, cotton, leather ; knife-blade, penny, piece of wire ; rose, potato, tree. Three out of five correct to pass*).

2. Gives meanings of forty words.

3. Ball and field test (O). (*Superior plan to pass.*)

4. Rearranges mixed sentences (O) (i.e., "*Started the for morning early we this country.*" "*To paper my asked I my correct teacher.*" "*A defends dog good his bravely master.*" *Each sentence to be written on one piece of paper. To pass, two out of three correct in a minute each*).

5. Picture interpretation (O). (*Gives a description of the meanings of the pictures presented.*)

Age 13.

1. Repeats seven digits. (*To pass, one out of two series must be correct.*)

2. Defines abstract words (i.e., *pity, revenge, charity, envy, justice. Three out of five to pass*).

3. Solves problem questions. ("*A man walking in a wood near a city stopped suddenly very much frightened, and then ran to the nearest policeman, saying that he had just seen hanging from the branch of a tree a—what ?*"

"*My neighbour has had some queer visitors. First the doctor came, then a lawyer, then a clergyman. What do you think had happened ?*"

"*An Indian who had come to town for the first time in his life saw a white man riding along the street. The Indian said, 'The white man is lazy ; he walks sitting down.' What was he riding ?*")

4. Interprets fables. (*Simple fables are read and child required to say what is the lesson taught. To pass must interpret two correctly.*)

5. States what the time would be if the hands of clock were reversed (A).

Age 14.

1. States three differences between king and president (i.e., *Power, accession, tenure. Two out of three to pass*).

2. Arithmetical reasoning (O) (i.e., "*If a man earns* 20*s. a week and spends* 18*s. a week, how long will it take him to save £*1 *?*" "*I*

two pencils cost 5d., how many can you buy for 50 pence?" "At 15 pence a yard, how much will 7 feet of cloth cost?" Two out of three to pass).

3. Induction test; folded paper (O).

4. Gives meanings of fifty words.

5. Gives differences of abstract terms (i.e., *laziness and idleness, evolution and revolution, poverty and misery, character and reputation. Three out of four to pass*).

SCALE OF INTELLIGENCE TESTS FOR THE BLIND.*

With certain omissions and modifications blind children may be tested by the above series. Tests which it is necessary to omit, either because they require sight for their performance or because they are too difficult for blind children with a mental age of fourteen or less, are marked (O). Certain other tests, although applicable to blind children, present greater difficulty to them, and must therefore be transposed to a higher age group of tests; these are marked (A). In regard to these, experience shows that the following transpositions are necessary:

Age 3 test 3, to age 4	Age 8 test 4, to age 9
,, 4 ,, 3 ,, 5	,, 9 ,, 4 ,, 11
,, 6 ,, 1 ,, 7	,, 9 ,, 5*d* ,, 11
,, 6 ,, 3 ,, 8	,, 11 ,, 5*a* ,, 13
,, 7 ,, 5*a* ,, 8	,, 13 ,, 5 ,, 14
,, 7 ,, 4 ,, 9	

Certain other tests, marked (B), have to be modified in order that they may be applicable to blind persons. The necessary modifications are so obvious to those conversant with giving mental tests that they need not be described at length. One example of the modification needed is that in Test 5, age 7. Instead of being asked to describe the difference between a fly and a butterfly, the blind child is asked the difference between carpet and wood or oilcloth.

The Séguin form board may be used as a performance test. It has been suggested by some investigators, who have had considerable experience with blind persons, that children who fail to

* Most of these tests for the examination of the blind and deaf have been standardized by Dr. A. C. Williams (*Mental Welfare*, October 15, 1926).

earn Braille as a rule make poor records with this form board. The normal blind child, aged six, is able to place all the blocks correctly if given sufficient time.

SCALE OF INTELLIGENCE TESTS FOR THE DEAF.

Comparatively few of the tests in the scales of intelligence used by Binet-Simon and subsequent investigators can be applied to the deaf as compared with the number applicable to the blind; and this fact of itself indicates the verbalistic bias of these scales. The following series is that used in the investigation made for the Mental Deficiency Committee. Reference may also be made to a scale of non-linguistic tests suitable for deaf children drawn up by Drever and Collins.*

Ages 1 and 2.

(1) Eye follows the light. (2) Grasps and handles objects. (3) Chooses sweet and not block of wood. (4) Unwraps paper before eating sweet. (5) Imitates simple arm movements.

Age 3.

(1) Replaces nest of boxes. (2) Matches colours.

Age 4.

(1) Séguin form board.† (2) Discriminates forms.

Age 5.

(1) Frame patience. (2) Copies square. (3) Counts four objects.‡ (4) Reproduces two numbers.§

* Drever and Collins, "Performance Tests of Intelligence: A Series of Non-Linguistic Tests for Deaf and Normal Children," Oliver and Boyd, Edinburgh, 1936. Revised norms for these were later published in *The Teacher of the Deaf*, vol. xxvii., p. 162.

† The time standards with this test for deaf children are as follows:

Age	..	..	..	..	5	6	7	8	9	10
Time in seconds	..	..			50	46	37	32	29	23

‡ The number is indicated by holding up four fingers, and the child is directed to take out four from a box containing about forty beads.

§ The numbers are written plainly on a card and shown for five seconds.

Age 6.

(1) Copies diamond. (2) Counts thirteen objects.

Age 7.

(1) Reproduces three numbers. (2) Adaptation board. (3) Ties bow-knot. (4) Recognizes missing features.

Age 8.

(1) Reproduces truncated pyramid (Binet).

Age 9.

(1) Reproduces four digits. (2) Reproduces scroll (Binet). (3) Healy picture completion—Test 1.

Age 10.

(1) Healy construction—Test A. (2) Reproduces five digits. (3) Rearranges words in sentence order.

Age 12.

(1) Healy construction—Test B. (2) Healy picture completion Test 2.

4. TESTS OF SPECIAL MENTAL FACTORS AND SPECIFIC ABILITIES.

VERBAL AND NON-VERBAL PERFORMANCE TESTS.

These tests differ from the foregoing serial tests in being devised to gauge special mental factors and specific abilities rather than to ascertain the mental age and I.Q. of the subject. Indeed, many of them have not yet been satisfactorily standardized for age, although Pinter and Paterson, and more recently other workers, have done so with a number. Most are of the non-verbal, or " performance," type, but for convenience I have also included some verbal ones which are mainly tests of special abilities or mental

processes. On this point, however, a few words of explanation are needed. Although it is convenient to describe all these tests under the headings of the various mental abilities and processes which they are supposed to, and in the main do, test, it must be emphasized that mind is not a conglomeration of independent activities. No process functions independently, and it is probable that even in the simplest forms of mental activity many processes are concerned. Nevertheless, on the whole, these tests do afford satisfactory and useful information regarding the degree of development and the working of certain important activities which normally operate together, and on this account they are of value in the diagnosis of mental deficiency. Indeed, as we shall see in a later chapter, they may be of more value in the diagnosis of social mental defect than those of the Binet type.

Tests of Attention.—By the measure of attention is meant the quantitative capacity of the person for mental effort in one direction and upon a particular subject. As we have seen in preceding pages, this varies greatly in aments, and is undoubtedly an important factor in their ability for learning and useful employment. But the amount of attention which may be brought to bear is largely influenced by the interest of the subject; consequently, in order to measure attention, or concentration, alone, it is desirable to apply such tests as are not only devoid of interest, but which may even be distasteful. If these fail, recourse may then be had to others of a more interesting nature. In actual practice, however, it is rarely necessary to apply any special tests for attention, since a sufficiently accurate estimate of it can be made by observing the subject's performance with other tests. But where its special investigation is necessary, such tests as the following may be used:

Bourdon's Cancellation Test.—The subject is given a card containing several lines of capital letters printed at random from a pile of mixed type (" pied " material), and is required to cross out all those of a certain character. Perhaps the simplest letter to take is O. It is rendered more difficult by asking him to cross out C or B, which are liable to be mistaken for G or R, and the difficulty is further increased if several letters are required to be cancelled at the same time. The number of mistakes and the time taken are to be noted. If the " pied " material is not to hand, an ordinary piece of printed matter will serve the purpose.

Card Sorting.—The subject is given a shuffled pack of " Snap "

cards to sort into heaps according to the pictures. This test is more interesting than the former one, and is more suited to the severer grades of defect.

Tests of Memory.—Any marked defect of recent memory will be detected if the subject be asked to give an account of what he has been doing that day, what he had for breakfast, what he saw on his way, and so on. His remote memory may be similarly tested by getting him to describe some former happening, such as the holiday last year, a former school, etc. It is necessary to remember that a child may make up for lack of memory by invention, and his accounts should always be checked by inquiries of an independent source. More special tests for memory are the following: Arrange on a board twelve common articles (*e.g.*, knife, pen, cork, penny, match, etc.), let the subject look at them for sixty seconds, then remove the board and ask him to enumerate them. Instead of common objects, the subject may be shown a series of cards on which are printed varying numbers of nonsense syllables or figures. Each card is exposed for a definite time, and the exposures continued until he can repeat them correctly. The number of readings necessary for this gives the span of immediate visual memory. The span of auditory memory may be similarly tested by reading the cards to the subject without his seeing them. Retentiveness may be gauged if he be again asked to repeat the objects, syllables, or numbers on the following day or at the end of the interview.

Useful tests of memory of the performance type consist in showing the subject, for ten seconds each, geometrical designs of varying complexity printed on cards. He is supplied with paper and pencil and required to reproduce them from memory. This is one of Binet's tests for ten years of age.

Tests of Size and Form Perception.—Many years ago Séguin devised a "form board" for the purpose of training defective children. More recently, this board, and various modifications of it, have been used as tests, and these are of value in picking out low-grade defectives at a comparatively early age. Success is dependent upon perception of size and form, and since all normal children should have this by about the fourth, or even third, year, its lack in one a few years older is usually indicative of a severe grade of defect. Whilst mainly a test of perception, it also gives useful indications regarding the subject's attention, pertinacity, ability to learn, and motor co-ordination.

There are a considerable number of form board tests. That most applicable to low-grade defectives and early ages is probably the Goddard-Norsworthy modification of Séguin's. This consists of a board containing ten blank spaces of various geometrical shapes, such as square, circle, triangle, star, cross, rhomboid, etc.; with separate blocks to correspond. The subject is given the board and the blocks in an indiscriminate heap and told to put them back into their proper places. A useful variation of this may be obtained from shops supplying "kindergarten occupations"; it has the advantage of being in cardboard and lighter to carry, whilst the pieces being less markedly dissimilar make it suitable for defectives of somewhat higher grade.

Tests of Association.—Certain verbal tests may be mentioned under this heading which are regarded as mainly intellectual-associational tests. But many observers, whilst admitting their dependence upon the individual's vocabulary and linguistic ability, consider that they correlate highly with reasoning and general intellectual capacity, and that success in them is more dependent upon native endowments than scholastic acquirements. The chief of them are the following:

Part-Wholes Test.—The subject is given a card on which are printed ten words such as—door, letter, leaf, page, pillow, button, nose, cover, engine, glass. The examiner instructs him as follows: "I shall give you a paper on which are printed ten words. I want you, as rapidly as you can, to give for each word the name of the whole thing of which the word is a part. For instance, if the word 'fur' were given, you would name a thing that 'fur' is a part of, like 'cat'; for 'hand' you might say 'arm' or 'watch.'" The examiner writes down the answers as they are given, and if the time is taken, comparisons may be made between different subjects.

Genus-Species Test.—The principle is the same as in the preceding; but the words given are those of a general class, and the patient is required to name particular instances of that class. For example, correct answers for "animal" would be any kind of animal; for "man" any nationality; for "geography" such words as—river, cape, bay, etc.; for "money" any particular coins.

Opposites Test.—The subject is given a card containing a list of twenty words, and is required to give for each one a word having the opposite meaning. The lists vary in difficulty, those in List A being such as—bad, inside, slow, short, etc.; those in List C being

such as—proud, obscure, superior, sane, obnoxious, etc. The number of mistakes and the time taken are noted.

Tests of Perception, Comprehension, and Response.—These tests carry us a step further than those of attention, association, and memory just described, since, as Dr. Whipple very truly says, the activity they investigate is not only a more complex psychic process, but it " is more akin to that demanded in everyday life, and it is for this reason that these tests have been felt to possess a peculiar value, particularly in the study of individual differences in mental constitution and mental efficiency." The following tests come under this heading:

Description of an Object.—The subject is given some article, such as a cancelled postage stamp, a cigarette, a box of matches, etc., and instructed to write a description of it, so that one who had never seen it before would know all about it. Ten minutes or more are allowed for the task, according to how he progresses. For many cases a verbal description will suffice.

Fidelity of Report (*Aussage Test*).—One method of this consists in showing the subject, for a period of half to one minute, a series of six small objects like those used in testing memory; but instead of being merely required to enumerate them, he is closely interrogated about the minute features of each—*e.g.*, the value of the coin ? is it a head or tail ? whose head ? what date ? is it bright or dull ? how is it fastened to the board, etc.? Instead of a collection of objects a series of pictures may be shown, and the subject subsequently questioned about their details.

Tests of Capacity for Mental Imagery.—A capacity for mental imagery is the basis of thought, and is necessary for judgment and reasoning. It may be divided into three varieties—namely: (1) Simple imagery or thoughts regarding concrete objects; (2) abstract imagery or thoughts of abstract qualities; (3) symbolic imagery, or appreciation of the meanings of symbols, a quality which is necessary for learning arithmetic, music, etc., and to read and write.

Simple Imagery may be tested by requiring the subject to describe from memory some familiar object; to give a list of people seen in the street who wear uniform; to write sentences containing three given words; to make as many words as possible from a given word.

Abstract Imagery is tested by requiring the subject to define such qualities as pity, revenge, charity, envy, justice, etc.; to give the

differences between laziness and idleness, evolution and revolution, poverty and misery; character and reputation; to repeat the ideas contained in a selection read to him.

Symbolic Imagery is tested by capacity in reading, questions in sums and mental arithmetic, and the interpretation of pictures.

Comparison and Discrimination of Ideas and Capacity to Abstract Essentials are estimated by many of the Binet-Simon Tests. Those of most use in this respect are the following: Detection of logical fallacies and absurdities in statements; giving the differences and likenesses between objects—*e.g.*, apple and plum, iron and silver, ship and motor-car, king and president; rearranging a transposed sentence; answering a problem question—*e.g.*, "strange visitors."

Rorschach Ink-blot Test.—This consists of a series of twenty standard ink-blots which are given in turn to the subject, who is required to say what they suggest to him. It is probably mainly a test of creative imagination, but it is claimed to afford information of fundamental personality traits. It is more applicable to psychotics than defectives, but may be used for some unstable, high-grade defectives.

Tests of Relationship and Meaning.—Perception of relationship and meaning is a higher and later development than perception of size and form, and, since it is an essential component of common sense, its estimation is of importance. Both verbal and non-verbal tests are used for this purpose. Verbal tests consist in showing the subject various pictures and asking him to describe their actions and meanings. By using pictures of varying complexity different ages and grades of defect may be tested. The most useful non-verbal or "performance" tests are the following:

Picture Squares Test.—This consists of a series of pictures, each about 8 to 10 inches square, representing various rural and town scenes, mounted on thick cardboard. The pictures are similar to those used for the ordinary jig-saw puzzles, but instead of being cut into different shapes and sizes, each is cut into equal-sized squares (1½ to 2 inches). The squares of a picture are shuffled and the subject required to reconstruct the picture. I have used a series of such pictures of varying complexity for many years and have found they give valuable information. Unlike ordinary jig-saws, which are solved mainly by attention combined with perception of size, shape and colour, the main requisite for the

solution of these squares is ability to appreciate meanings and relationship; but they also test the subject's attention, pertinacity, comprehension, judgment, self-criticism, ability to learn from experience and correct mistakes, as well as his muscular co-ordination. Additional advantages of this test are that a suitable series can be made by the examiner himself and that they are of little bulk or weight.

*Word Completion Test (Ebbinghaus).**—This consists in the subject being required to restore the words, or at all events the meaning, to a passage from which certain syllables, words, or phrases have been deleted. The simplicity or difficulty of the test may be varied within a very wide range, according to the nature of the passage used and the number of words deleted, and Ebbinghaus and others attach great value to it; it is only applicable to mild grades of defect.

Heilbronner Test.—This test is an elaboration of one of the Binet series in which the subject is required to identify objects from drawings in which only a portion is shown. Each series consists of six cards; the first card depicts a few of the main features of such an object as a bicycle or a windmill, and each succeeding card contains more details until the complete object is depicted. The examiner shows the cards in order, and notes the stage at which the object is recognized. The complete set of cards consists of several such series.†

Pictorial Completion Test.—This test, which has been designed by Dr. W. Healy,‡ is a pictorial application of the method of Ebbinghaus, and undoubtedly has great value. Dr. Healy, indeed, says that he has never seen a feeble-minded person do it without mistake, but further experience shows it is by no means infallible. The test consists of the picture of an outdoor scene depicting various simple activities; for instance, a boy sawing a log of wood, a girl giving a saucer of milk to a cat, a horse and cart from which the wheel has come off, etc. These various objects are cut out of the picture in separate squares of the same size so as to be interchange-

* H. Ebbinghaus, "Ueber eine neue Methode zur Prüfung geistiger Fähigkeiten," etc., *Zeitsch. f. Psychologie und Physiologie der Sinnesorgane*, 1897.

† These cards and other American tests mentioned in the following pages may be obtained from C. H. Stoelting Company, 113, North Green Street, Chicago, U.S.A.

‡ W. Healy, *The Psychological Review*, vol. xxi., No. 3, May, 1914.

able, and the subject is given the picture and the squares and required to place them in the appropriate blank spaces.

The test is supplied with a number of additional squares on which are shown various objects not belonging to the picture, so that its correct solution necessitates discrimination and judgment in the choice of the squares.

Healy has also devised a No. II. Pictorial Completion Test which consists of a series of pictures representing the successive activities of a schoolboy. In each picture there is one space to be filled with a spare block; its correct solution involves a logical choice based upon the picture which has preceded it.

Tests of Prevision, Planning, Constructiveness.—There are a number of tests which, although requiring other mental processes for their solution, may in the main be regarded as tests of these abilities. The following are those most useful for defectives:

Construction Tests "A" and "B" (Healy).—Test A consists of a rectangular piece of wood from which an inner rectangle has been cut and divided into five rectilinear pieces of different size. The subject is required to replace these in the frame in their proper position. Test B consists of a rectangular piece of wood from which eleven pieces of varying shape and size have been removed, and the subject is required to replace them correctly. These tests are not applicable to children under the age of ten years, and it is important to note whether the subject goes to work by plan and foresight, or merely by trial and error. Most normal persons proceed by plan, many defectives by trial and error, and these latter will continue to repeat the most glaring errors, and will try to accomplish that which a normal child would, at the onset, realize to be impossible.

Lost Ball in Round Field Test (Terman).—A circle is drawn about 2 inches in diameter with a gap at one point to represent a round field with an open gate. The subject is told to imagine that his ball has been lost somewhere in this field, but that its whereabouts and the direction from which it came are unknown. He is then given a pencil and asked to mark out the path he would actually take in his hunt for the ball (beginning at the gate) so as to be sure of not missing it. Professor Terman finds that up to four years of age most children fail to comprehend the task; at six years the task is usually understood, but the search is conducted without plan; at eight years the result should show evidence of a

simple plan; and at eleven or twelve years the plan should be a logical one. I have found this test of considerable practical use, but it is by no means an infallible criterion of defect.

Cut-up Face.—This is also a useful test mainly of planning and constructiveness. As devised by Knox, it consists of one large board and seven small pieces; the whole when fitted together form the profile of a face. I have varied this by taking a coloured picture of a full face and cutting it up into eight pieces of approximately the same size and the same triangular shape. This should be readily accomplished by an intelligent child of eight or ten years.

Cube Designs.—This also is a useful test of constructive ability. It consists of a box of wooden cubes and half-cubes, each side being painted a different colour, and paper cards of different designs; it is obtainable from most toy shops. The subject is given each of the designs in turn and required to construct the cubes to match it.

" *Passalong* " *Test.*—A useful series of tests to which he has given this name has been devised by W. P. Alexander.* It consists of nine boxes, of increasing degrees of difficulty, each containing a number of blocks and one coloured one, which has to be moved to a required place.

Assembly Construction Tests.—Whilst these are tests of planning and constructiveness, their solution is also dependent upon a mechanical aptitude which may exceptionally be possessed by a defective and not by a non-defective; their diagnostic value is consequently limited. Examples of such are the following: *Motor-wagon Construction Test* (Hayes-Dewey). This consists of eleven separate wooden parts which have to be put together to form a motor-wagon. The *Wheelbarrow and Cradle Tests* (McFarlane) are similar tests of constructiveness for boys and girls respectively.

Puzzle Box (Healy).—This is a rather elaborate piece of mechanism consisting of a square wooden box with a window in the lid through which the inside can be seen. The lid is fastened by means of a clasp fitting over an eye, and an arrangement of cords and rings, and the subject is required to open the box by means of a button-hook which is supplied. Since each step in the opening of the box is visible through the window, success depends upon comprehension, judgment, and capacity for planning. But it also requires

* W. P. Alexander, " A New Performance Test of Intelligence," *Brit. Journ. of Psychology*, July, 1932, p. 52.

mechanical ability, and it may be accomplished by a high-grade defective, while many non-defectives fail in it.

Maze Tests (*Porteus*).—These tests form a series graduated according to age, and it is sometimes claimed that they are tests of " general intelligence " analogous to those of Binet, and capable of indicating the I.Q. of the subject. I do not think this is so. Apart from the fact that when used with English children the standardization is not altogether satisfactory, it seems to me that their application is limited to the testing of certain aptitudes of mind only. Perhaps the chief of these are prevision, planning, and prudence; but in addition they are useful tests of certain emotional or temperamental qualities, such as impulsiveness and indecision.

Tests of Emotionality.—While there is no doubt that the nature of the emotional response of the individual is an important factor in social adaptation, also that, as we have seen in previous pages, many defectives evince a lack of emotional control, we have not yet succeeded in devising any very satisfactory tests of this aspect of mind. To some extent it may be gauged by noting the subject's response to pictures designed to provoke sorrow, sympathy, anger, fear, mirth, etc. It has also been stated that the general mental attitude may be revealed by giving the subject a printed list of a hundred carefully selected words and requiring him to read each of them, and at once, without any consideration or delay, to write down the word which comes into his mind. This method, however, is rarely applicable to the mentally defective, and in actual practice the emotional disposition of these persons is best ascertained by careful observation of their manner and behaviour under examination and by inquiries as to their general conduct.

Tests of Suggestibility.—As we have previously seen, the conduct of some aments is antisocial or immoral by reason of their ready amenability to evil influences, and in some cases it may be desirable to give an actual demonstration of this facility. There are many tests designed to this end, false suggestions being made by size-weight illusions, by lines of varying length, and by articles of different temperature. Since, however, in everyday life the yielding is more often the result of personal influence or in response to a command, the most suitable tests are those which utilize this factor, and probably the " line test " as used by Binet is the best for the purpose.

Tests of Ethical Perception and Discrimination.—Tests for these have been suggested consisting of a short narrative involving ethical points upon which the subject is asked to give an opinion. For instance, one of Dr. Healy's* is the following: "In a Russian city last year there lived a man who could get no work. He had for a neighbour a sick widow, with two little children who were starving. The poor man took some bread that did not belong to him from a baker's shop, because he could get it by no other way, and gave it to the widow and her children. Did he do right or wrong?" Dr. G. G. Fernald† has suggested as a test the narration of a series of offences which the subject is required to arrange in order of their gravity.

With regard to such tests, however, it is to be remarked that there is a great difference between moral perception and moral sense—between knowing a thing to be wrong, and experiencing a feeling regarding its wrongness. Judged by their replies to questions, many mental and even moral defectives are not devoid of ethical perception and of verbal morality; but they may be totally lacking in social and moral *feeling*, and it is to the absence of this that their crimes are largely due. Such defect cannot be estimated in the psychological laboratory, and it can only be inferred from their utter want of affection, their callousness, lack of all shame, remorse, and sign of feeling, and by their general behaviour.

Tests of Reasoning.—Under this heading may be grouped a number of tests the solution of which requires a good capacity for imagery, as well as ability to compare, pick out essentials, and form a judgment. They are only applicable to the milder grades of defect; indeed some persons may fail in them who are not legally defective. A number of them are contained in the higher ages of the Binet series, and the following may be mentioned as examples: To fetch exactly 7 pints of water when given two cans holding 3 and 5 pints respectively. If a man earns twenty shillings weekly and saves fourteen shillings, how long will it take him to save 300 shillings? To tell the time when the hands of the clock are imagined to be interchanged. To write in a simple code. Terman's problem of the enclosed boxes and of the comprehension of the path of a cannon ball.

* W. Healy, "The Individual Delinquent."

† G. G. Fernald, "The Defective Delinquent Class," *American Journal of Insanity*, April, 1912.

Professor Burt has devised a series of " Reasoning Tests " graded for the ages 7 to 14 years. The problem is printed on a card and given to the subject, who is then left to puzzle out the answer and give it verbally to the examiner. The following examples may be quoted:

7 Years.—" Kate is cleverer than May: May is cleverer than Jane. Who is the cleverest—Jane, Kate or May ?"

14 Years.—" John said, ' I heard my clock strike yesterday, ten minutes before the first gun fired. I did not count the strokes, but I am sure it struck more than once, and I think it struck an odd number.' John was out all the morning from the earliest hours; and his clock stopped at five to five the same afternoon. When do you think the first gun fired ?"

Progressive Matrix Tests.—These were devised by J. C. Raven; their successful solution depends upon the integrity of the various factors concerned in logical thought, and, as they are non-verbal, they may be termed performance reasoning tests. They have been standardized for various ages and were extensively used in the mental examination of recruits during the recent war. I think they are undoubtedly a valuable addition to the available tests for the diagnosis of mental defect. It is impossible to give an adequate description of them here;* but, briefly, they consist of a number of designs or matrices from each of which a part has been removed; separate pieces are provided from which the subject is required to select the one appropriate to the missing part. The series progresses in difficulty and covers a range from the normal child of three years to the superior adult.

III. CASE-TAKING.

It will be seen from the foregoing that the examination of a person suspected of being mentally deficient may be a lengthy procedure. In cases of gross defect such a complete investigation is not necessary, indeed, it would be impossible to apply many of the tests described; but in milder cases, and in those in which examination is needed for admission to a special school under the Education Act,

* *Cf.* J. C. Raven, " The R.E.C.I. Research Series of Perceptual Tests," *Brit. Journ. Med. Psychol.*, vol. xviii. and xix., 1941; also *Mental Health*, January, 1940. The test material may be obtained from H. K. Lewis and Co., London, and the Research Department, R.E.C.I., Colchester.

or an institution under the M.D. Acts, or where legal proceedings are likely to arise, a full examination must be made and the results carefully recorded.

In carrying this out it is advisable to proceed upon a definite plan, since this will not only save time, but may prevent important details being overlooked. It is an advantage, if possible, for the examiner to be supplied with a written account of the relevant details of the family and personal history, as well as of the circumstances which render the examination necessary, before he sees the patient. But in many instances this is not possible, and even when supplied the account usually requires to be checked and augmented by a personal interview with the parents or other relatives. If the patient is capable of understanding what is being said he should not be present at this interview.

In practice, I find it more satisfactory to begin by obtaining particulars from the parents as to the patient's early upbringing and personal history. The chief questions to be put have already been mentioned. The advantage of this is that they acquire confidence in the physician, become appreciative of the interest he is taking in the case, and consequently less reluctant to supply information about the family history. If, on the other hand, the logical sequence is observed and the family history taken first, it is almost certain that important facts will be suppressed; such is the repugnance to admit the existence of abnormality of mind. I remember one quite intelligent mother of a defective child who had regularly attended my hospital clinic for over a year. She had repeatedly assured me that there was no mental abnormality in the family, and it was not until the end of this time that she told me, quite casually, that her mother had been in a mental hospital for several years, and that the child of a married brother was also a defective. It will often be found that information of this kind relating to the maternal side is more readily forthcoming from the father, and *vice versa*.

If the patient to be examined is a young child it is usually an advantage for him to be present during this interview with the parents. He should, however, be given something to play with and no apparent notice taken of him, though the physician may obtain useful information by unostentatiously observing his behaviour. By the time the interview with the parents is over, the child will have become accustomed to his strange surroundings, and his mental and physical examination will usually proceed without difficulty.

Some children, it is true, will refuse to be so passive. They will wander restlessly round the room, chattering without cessation, and interfering with everything. Others will resist any kind of examination and refuse to answer any questions or to co-operate in any way. But most children can be examined by the exercise of a little tact and patience, and by a suitable method of approach on the part of the physician. In dealing with older defectives—adolescents and adults—the ready acquiescence with which they will submit to be questioned about their daily life, and do tests which a normal person would regard as childish and insulting, is often quite surprising. In fact, this ready amenability is in itself suggestive of mental defect.

The mode of recording the results of examination will vary with the case. If the subject is a public elementary school child undergoing statutory examination they will be recorded on an official form.* In the case of children who are candidates for a home or institution under the M.D. Acts, the appropriate form will usually be supplied by the institution. For other cases some other form is needed, and I have found the one given at the end of this book convenient for ordinary consulting practice. Reference to it may serve to remind the physician of the chief points to be noted in the examination of a patient.

* Ministry of Education Form 2 H.P.

CHAPTER XIX

DIAGNOSIS AND PROGNOSIS

I. DIAGNOSIS.

In the previous chapter I have described the data needed, and tests of most use, for the diagnosis of mental defect. I shall here consider various conditions which may resemble defect and from which it has to be distinguished.

Whilst the family and personal history, and the physical condition of the patient, often furnish valuable information, particularly in the case of a retarded child, and their investigation should never be omitted, it is upon the mental state of the individual, upon the degree of development and general make-up of his mind, that diagnosis must ultimately be based. This will be ascertained by mental tests, but with regard to these some points must be emphasized. First, they are neither automatic nor infallible. Although some judges and magistrates are scornful of mental tests, there are many other persons, including medical men, who are equally ignorant and biased in the opposite direction. They appear to be under the impression that an individual need only be put through these tests for an answer as to his exact mental status to be delivered with the accuracy of a penny-in-the-slot machine. Some even seem to think it is superfluous to have any knowledge of mental deficiency—of what they propose to test—and that a " Handbook of Tests " is all that is necessary for diagnosis.

It must be stated emphatically that this is not so. Without doubt, mental tests have been greatly improved. Tests are now available which furnish valuable data as to the degree of development, range of knowledge and attainments, general make-up, and mode of functioning of mind. These are a great help in the diagnosis of mental defect, but they do not supply a diagnosis automatically. They merely yield information from which a diagnosis can be made

by the knowledge, experience, judgment and common sense of the examiner.

It must also be remembered that the response to these tests, including those which are non-verbal, is liable to be affected by various conditions of the patient, such as fatigue, emotion, lack of interest, defects of sight and hearing, and his scholastic opportunities. Lastly, I would reiterate that mental defect is no clear-cut clinical or pathological entity, and that there are a number of conditions closely resembling it from which it must be differentiated.

Whilst the diagnosis of low-grade defect may be comparatively easy, that of high-grade defect, on the other hand, may present considerable difficulty. It demands the careful consideration and evaluation of many facts. The person must not only be examined by mental tests, but his upbringing and environment, his life history and actual social performance, his personality as a whole, must be thoroughly investigated. Such an investigation can only be made satisfactorily by an examiner with a good knowledge of general and psychological medicine, an experience of mental deficiency and its allied conditions, combined with accuracy of observation, ability to draw correct inferences from the observed data, and a sound judgment. Given these qualifications, the physician will often be able to make a correct diagnosis without any very elaborate or expensive tests; without them, the most modern and elaborate psychological apparatus will avail him but little.

Diagnosis may be called for at several periods of life and in various circumstances. It may be required in the case of an infant or young child who is causing anxiety owing to retarded mental development. It may be needed regarding a child who is not progressing in school. It may be necessary in the case of an adolescent or adult who is unable to keep his situations, who evinces anti-social behaviour, or who is charged with a criminal offence. I shall consider it at these respective life periods.

Diagnosis in Infancy and Early Childhood.

The chief condition which arouses a suspicion of defect during this time is retarded mental development. This may be accompanied either by unusual placidity and inertness, or by extreme unquiet and fretfulness. The physician must ascertain the actual extent of the backwardness by observation of the child, questioning

the parents, and comparison with normal developmental data. Details of these have been given in the chapter on Psychology and are summarized in a table in the Appendix.

It is rarely possible to make a definite diagnosis before the age of 6 months, except in the case of idiots and low-grade imbeciles and special types of defect, such as mongolism, microcephalus and hydrocephalus. After 6 months diagnosis is less difficult, and if a child of this age (having no signs of disease or serious malnutrition) makes no response to the smiles and caresses of its mother, if it does not look about or show any interest in its surroundings, and if it makes no attempts to sit up and to grasp with its hands, it is clear that considerable retardation is present, and mental defect is probable. In such a case I think the probability is greatly increased if the cranial circumference is markedly below the normal, if epilepsy or developmental abnormalities are present, and if there is a psychopathic family history.

By twelve months, and with each further year of age, diagnosis becomes progressively easier. During the second and third years the mental development of the normal child increases greatly, so that marked backwardness becomes much more apparent. In general, it may be said that a child of 3 or 4 years old whose mental development is retarded to the extent of 30 per cent. of its age, provided this is not due to ill-health and unfavourable surroundings, will very probably prove to be mentally defective.

At four years of age lack of sphincter control and of speech are of particular significance; but it must be remembered that control over bladder and bowels is largely dependent upon training, and the physician must be satisfied that this has been satisfactory. Nocturnal enuresis, by itself, may indicate an unstable but not necessarily a defective child. Development of speech is of more importance since it is indicative of the activity of cortical neurones. It must not be judged by the time when the child says his first words, but by that at which he begins to make sentences. Many defective children say "dad," "mum," and a few other words at about the twelfth month, but make no further progress for many years. I have seen a few cases in which marked delay in speech occurred as an hereditary peculiarity in otherwise normal children; but these are exceptional and, in general, the child of four years old (provided he is not deaf) who is not saying little sentences expressive of his wants, feelings and thoughts will probably prove

to be mentally defective. The persistence of baby language, or "lalling," after the sixth year is also usually, but not invariably, indicative of mental defect or intellectual dulness.

Lastly, it is to be remembered that the essential psychological basis of amentia is a lack of social adaptiveness and common sense. This, of course, is not fully developed until very much later; but the normal child of even two or three years is beginning to show some understanding of its surroundings and of causal relationships, some ability to learn from experience, and some capacity to adapt itself in an intelligent manner to its relatively simple environment. The child of four or five years who is markedly lacking in these respects will almost certainly be subnormal, and it is very probable that he will be defective.

Diagnosis during School Age.

DUTIES OF SCHOOL MEDICAL OFFICERS.

Idiocy and low-grade imbecility will usually have been recognized before the fifth year, and in children of school age (for this purpose between five and fifteen) diagnosis is chiefly required to ascertain whether they are, or are not, capable of being educated in school, the kind of education they should receive, and if they are likely to need supervision after leaving school.

The Education Act, 1921, required the school medical officer to distinguish between children who were (1) merely *dull* or *backward* and capable of being educated in an ordinary school; (2) *mentally defective* and incapable of being instructed in an ordinary school but capable of benefiting from instruction in a special school; and (3) *imbeciles* incapable of being taught in a special school. The Education Act, 1944, abolishes these terms, and the medical officer is now required to determine whether children are educable or ineducable in a school provided by the Authority. If the latter, it is the duty of the Education Authority to report them to the Mental Deficiency Authority; if educable, it is the duty of the Authority to provide the type of education suited to their needs.

The criterion, therefore, is that of scholastic educability. It is the duty of the Authority to ascertain what children require special educational treatment above the age of two years; but most of those we are now considering will either have already entered or will be about to enter school. Some will be in the infants depart-

ment; others will have passed into the ordinary school and be referred for examination by the head teacher either because they are not making satisfactory progress, or because their behaviour is in some way abnormal. The decision of the medical officer as to whether any particular child is, or is not, educable must be based on the report of the head teacher regarding the child's progress, consideration of the personal history, a physical examination, and the child's response to tests. The tests mainly used for this purpose are serial ones of the Binet-Simon type and are directed towards ascertaining the child's I.Q., but performance tests are also used.*

Children Educable in an Ordinary School.

Children with an I.Q. of not less than 90 are within the normal range of variation and are educable in an ordinary school, provided their conduct is not detrimental to the interests of others. Children with an I.Q. between 80 and 90 come within the categories formerly termed "dull" or "backward"; these also are educable in an ordinary school, although they may need to be placed in a backward class. As previously pointed out, however, there is a difference between dulness and backwardness, in that the former is innate whilst the latter is acquired and the result of some possibly remediable cause. All children whose retardation exceeds that of the normal variation should therefore be medically examined in order that they may receive any needed treatment. The causes of backwardness have been described in the chapter on Educational Defect and Disability.

Special School Children.

In general, children with an I.Q. between 70 and 60 will be ineducable in an ordinary, but educable in a special school. The majority of these will be socially defective and on leaving school should be reported to the Local Mental Deficiency Authority. A minority of such children, although defective educationally, will not be so socially, and will not be certifiable under the M.D. Acts.

The chief difficulty in deciding whether a child should, or should not, be sent to a special school will be where the I.Q. is between

* See Ministry of Education Statutory Rules and Orders, 1946, No. 250: also Forms 2 H.P. and 3 H.P.

70 and 80. This decision must be based upon a consideration of the range of common knowledge, practical ability, response to performance tests, and general behaviour of the child. If these show that, in addition to being scholastically retarded, the child is lacking in common sense, it is unlikely that he will respond to instruction in an ordinary school, and he should be sent to a special school where he can receive more individual and practical training. If, on the other hand, the child shows no lack of common sense and practical ability, and his disability is merely educational, he should be retained in an ordinary school, if necessary in a backward or practical class. A small proportion of children, although not socially defective, labour under such a degree of educational defect as to be incapable of being instructed in an ordinary school; these will have to be sent to a special school.

Ineducable Children.

The Education Act, 1944, states that children may be incapable of receiving education in school by reason of either (*a*), the nature and extent of the disability of mind; or (*b*), because such disability makes it inexpedient that they should be educated in association with other children. The latter are those formerly termed " detrimental " owing to faulty habits or behaviour and need not be further considered; the former are those suffering from a degree of defect which amounts to imbecility or idiocy.

As a rule, a child with an I.Q. of 45 or less will be ineducable in any school; one with an I.Q. between 45 and 55 or 60 will probably be ineducable but may be given a trial in a special school. I think, however, that a child should not be excluded from a special school and declared ineducable solely on his I.Q., but that other facts should be taken into consideration. A child of about the age of seven years who knows his name, age, and sex, who can name common articles and state their use, who is able to recognize objects and actions in pictures, to understand and execute simple commands, who can assist in dressing and undressing himself, and who can copy simple geometrical figures, will almost certainly be capable of responding to the instruction of a special school. A child of the same age who cannot do these things will usually be ineducable. Such children may derive benefit from the practical training given in an " occupation centre."

Children to be Reported to M.D. Authority.

In addition to examining children as to their educability, the school medical officer has the duty of reporting to the Local M.D. Authority: (1) Any child above the age of two years who is found incapable of receiving education at school; and (2) any child in attendance at school who, by reason of a disability of mind, is likely to require supervision after leaving school. Those in the first group will be idiots or imbeciles, and their diagnosis should present no difficulty. Those in the second group will be feeble-minded and certifiable under the M.D. Acts. I wish to emphasize the great importance of this duty of reporting children who are ineducable, or in need of supervision, to the Local Authority. This is due to the fact that the M.D. Authority cannot deal with defectives as such, but only with those "subject to be dealt with."* One reason which renders them so subject is their having been reported by the school medical officer; if this is neglected the defective is under no official care or supervision and may get into serious trouble before he can be afforded the protection of the Act. With regard to those who should be reported I am strongly of the opinion that this should be done in the case of every school child who is socially defective and certifiable under the M.D. Acts. This will be so of the great majority of the children in attendance at a special school; but it will not be so of all, as some of these will be merely educationally defective. Further, there may be some children in the ordinary schools who are socially defective; these also should be reported to the M.D. Authority. It will be seen that the criterion here is different from that hitherto considered, and the diagnosis of social defect will be dealt with in the next section.

Diagnosis during Adolescence and Adult Life.

The jurisdiction of the Education Authority ceases at sixteen years, and, in persons above this age in whom the question of defect arises, the criterion is not scholastic educability but social incapacity, as defined in the Mental Deficiency Acts. It is from this standpoint that it has to be considered.

Persons suffering from the lower grades of defect—idiots and imbeciles—will usually have been recognized before adolescence; but if not their defect will now be so obvious that there should be

* See chapter on The Law relating to Mental Defectives.

no diagnostic difficulty. During adolescence and adult life diagnosis will be mainly called for in regard to the feeble-minded and moral defectives, and the chief conditions from which these have to be distinguished are: (1) Intellectual Dulness not amounting to certifiable defect; (2) Mental Instability and Disorder; and (3) Certain forms of Mental Deterioration. I shall deal with these separately.

Intellectual Dulness.—It is well recognized that, in spite of the time and money spent on their education, there are a large number of persons whose scholastic attainments are very meagre, whose understanding is limited, and whose reasoning ability is poor. Some of them are so little removed from the feebleminded that they are termed " borderlanders." The question of possible defect usually arises from their inability to keep employment or because of misconduct; not infrequently both these conditions are present.

These persons are on the lowest stratum of normality; but they are not certifiable defectives for the reason that they do possess sufficient common sense to maintain and manage themselves and their affairs in simple surroundings without any need of supervision. On inquiry, it will be found that failure is due to their having been tried too high and given work which was beyond their mental capacity. It will also often be found that their misbehaviour is due to bad associations or having been used as dupes and tools by more nimble-witted companions. It is totally unlike the senseless and incorrigible misconduct of the moral defective which has previously been described. I have known many of these dullards make good and become contented, industrious and useful members of the community when placed in suitable employment.

While the differentiation of these cases from defect may sometimes be difficult, it can usually be made by a careful investigation of the life history and by a mental examination. It will probably be found that the individual has a low I.Q. and has been backward at school, he may even have been to a special school; but these are not proof of certifiable mental defect. Diagnosis depends upon the answers to two questions, (1) Does the individual require care, supervision, and control either for his own protection or for the protection of others ? (2) Is such care needed by reason of mental defect existing from before the age of eighteen years ? If both answers are in the affirmative, then the person is a mental defective within the meaning of the Mental Deficiency Acts.

After full inquiry into the life history, particularly into the kind of employment he has had, the ability with which he has done his work and looked after himself and his affairs, the individual must be examined by appropriate tests. These tests are not directed to ascertain his educability, but his common sense. This, as previously pointed out, is not a single, but a composite quality of mind resulting from the combination of a number of factors, and in the preceding chapter I have described the various tests which may be used for their ascertainment. It may be useful to give here a selection which will afford the data necessary for a correct diagnosis in the majority of cases.

Diagnostic Tests.

A. RANGE OF GENERAL KNOWLEDGE.

Questions directed to ascertain observation and understanding of common things and events.

B. SCHOLASTIC ATTAINMENTS.

Ability to read and write easy sentences; to count; to do simple sums in mental arithmetic and problems in change. Genus-species Test; Opposites Test; Word Completion Test (Ebbinghaus).

C. SPECIAL MENTAL FACTORS AND SPECIFIC ABILITIES.

(*a*) *Relationship, Meaning, Discrimination and Judgment.*—(1) Completes picture squares and interprets. (2) Pictorial Completion Tests (Healy 1 and 2). (3) Corrects disarranged sentences.

(*b*) *Observation, Memory, Accuracy of Report.*—(4) Describes six different objects on card (Aussage test).

(*c*) *Prevision, Planning, Constructiveness.*—(5) Completes cut-up face. (6) Cube designs. (7) Construction Tests (Healy A and B). (8) Lost ball in round field (Terman). (9) Maze Tests (Porteus).

(*d*) *Reasoning.* — (10) Detects absurdities (Binet, age 11). (1) Solves problem questions (Binet, age 13). (12) Burt's Reasoning Tests. (13) Raven's matrix Tests.

Mental Instability and Disorder.—In most cases *mental instability* is a constitutional peculiarity which persists throughout life, but during the adolescent period it may become so aggravated as to be mistaken for defect. It occurs in both sexes but is more

common in females. The affected person is fickle, impulsive, unreasonable and undependable. She throws up place after place for no valid reason, or she is discharged from them on account of her waywardness, inefficiency and because she is "more bother than she is worth." Discrimination, judgment and control are in abeyance, and her actions are entirely dictated by the emotion of the moment. At one time she is dramatically affectionate, at another contradictory, spiteful, sulky, or in a raging temper. She talks and acts foolishly, she invents and relates utterly untrue happenings, and she makes unfounded allegations against people; she may lie, pilfer and be sexually immoral. In short, her demeanour and behaviour resemble in many ways those of a high-grade ament.

The differentiation from mental defect may be difficult, especially in cases in which there is some intellectual dulness and the person has not done well at school. The difficulty is increased by the fact that instability often accompanies defect. Diagnosis depends upon the response to tests and investigation of the life history. In persons who are unstable but not defective it will be found that although there have been emotional disturbances in childhood, there has been no marked lack of common sense. It will also be found that the present exacerbation is recent and tends to be episodic, with intervening phases of more normal behaviour; that, in fact, it is not really due to lack of knowledge and understanding, but to loss of emotional control. In adolescent girls there may also be indications of endocrine disturbance in an enlarged thyroid gland, tremors, palpitations, flushes and dysmenorrhœa.

There is no doubt that for a time many of these persons need care, supervision and some degree of control. They should not, however, be sent to an institution for defectives, but to a special training home or colony. At present there is a lamentable dearth of suitable accommodation, and, in consequence, many drift into a career of immorality or commit offences which cause them to be sent to prison.

Other forms of mental disturbance which occasionally cause difficulty in diagnosis are *psychoneuroses* and, more rarely, *psychoses*. Of the former the commonest are hysteria and anxiety states, and after the 1914 war many men suffering from these were discharged from the Services as "feebleminded." Schizophrenia arising during adolescence is usually accompanied by failure of interest and

efficiency, silly behaviour, and in some cases misconduct; this also may be mistaken for mental defect. Diagnosis will depend upon an examination of the mental state and careful consideration of the patient's history. It must be remembered, however, that the presence of a psychoneurosis or psychosis does not exclude mental defect; indeed, as I have previously stated, aments are more disposed to suffer from disorder of mind than are normal persons.

Mental Deterioration.—The forms of this most likely to be confused with defect are (1) Epileptic dementia, (2) General Paralysis, and (3) Dementia Præcox.

Epileptic dementia should readily be diagnosed by the history of progressive deterioration in a person subject to minor or major attacks whose mental development was previously normal. If, however, attacks have been present from childhood it is practically certain that some degree of mental defect will co-exist.

General Paralysis.—The juvenile form of this will necessarily induce amentia followed by progressive dementia, and should not present any diagnostic difficulty. Adolescent general paralysis may occur in persons of normal mental development; but the deterioration often results in a picture resembling defect, and, unless care is taken, the real condition may not be recognized and the patient may be sent to an institution for defectives. Diagnosis is made from neurological and serological examinations. If there are unequal or Argyll Robertson pupils, tremors of the tongue and lips, slurred speech, and abnormal reflexes there can be no question about the diagnosis. But it must be remembered that mental deterioration with abnormal conduct suggestive of defect may precede the onset of neurological signs for a considerable time; I have known them do so for two years. In any doubtful case a complete examination of the cerebro-spinal fluid should be made. The presence of an increased number of cells, excess of protein and globulin, positive Wassermann, and abnormal Lange's gold curve, is conclusive evidence of neuro-syphilis.

Dementia Præcox.—When this begins in childhood arrest of mental development necessarily occurs as an incidental phase of the degenerative process; this has already been described under the term schizophrenic amentia. When the disease first appears during adolescence it produces loss of feeling and interest, deterioration of judgment and ability, and general inefficiency; it may then be mistaken for defect. If attention is paid to the previous personal

history, and if a careful investigation is made of the symptoms and their manner of evolution, also of the mental state, there should seldom be great difficulty in making a correct diagnosis.

II. PROGNOSIS.

Prior to the nineteenth century, persons suffering from pronounced mental defect were considered to be absolutely and hopelessly beyond any possibility of amelioration, and no attempts were made to treat them. In 1801 Itard* published an account of some interesting observations he made on a boy found running wild in the forest of Aveyron, and this directed the attention of Voisin, Esquirol and others to the subject. About the same time Dr. Saegert of Berlin and Dr. Guggenbühl of Switzerland began the treatment and training of defectives. In 1842 Dr. Edouard Séguin, who had been a pupil of Itard and had already attempted to educate an idiot child, was appointed to carry out his methods on the idiot children of the Bicêtre. In 1846 Séguin published an important book† in which he showed the improvement possible in many of these persons as a result of patient and systematic training on physiological lines, and this may be said to mark the beginning of our modern methods of training. The training of mental defectives now occupies a more or less definite place in the social system of many civilized countries, and the general experience thus gained has demonstrated two points: *First*, relatively few persons are so defective that they cannot be improved to some extent, even if only in habits of cleanliness and the curtailing of destructive and dangerous propensities. *Secondly*, no case of primary amentia ever becomes *cured*. Some defect, however mild, will always remain, rendering competition on an equal footing with the normal population impossible.

Here I must enter a protest against the practice of some medical men who tell parents that the child will " grow out of it," or that he will be " all right when he is seven," or " fourteen," or " twenty-one," as the case may be. In some instances this is done from ignorance of what amentia really is, in others from a benevolent but mistaken idea of sparing the parents' feelings. Where the

* Itard, " De l'Education d'un Homme Sauvage," Paris, 1801.

† E. Séguin, " Traitement Moral, Hygiène et Éducation des Idiots," Paris, 1846.

physical condition of the patient is such that death cannot be long delayed, the disquieting knowledge that idiocy is present may perhaps be withheld; but in other cases the interests of the patient demand that the parents should be told the truth, or at all events as much of the truth as will ensure that the child receives special training suited to its needs. I have known many children who have been dragged about from doctor to doctor and from quack to quack in the vain hope of seeing that change which had been so confidently foretold, but which never came. I have also known not a few cases in which large sums of money have been spent in nostrums, electric appliances, gland injections, treatment by Abrams' " box," by " osteopaths," " chiropractics," and even psycho-analysts, whilst valuable time was being wasted and the child deteriorating for want of systematic and skilled training. It may therefore not be out of place to repeat that whilst every proper medical and surgical means should be utilized to put the child into the best possible physical condition, and whilst there are cases in which special forms of gland or other treatment may be indicated and beneficial, yet in the main the amount of mental development which will take place will be dependent upon early, systematic and special training. Can any forecast be given as to the degree of development which is likely to result? Whilst it is obviously impossible to make an accurate prediction in every case, nevertheless consideration of certain principles enables this to be done in a considerable number.

It may be said that as a general rule cases of primary amentia are more promising than are those of the secondary form. This dictum was enunciated many years ago by J. Langdon-Down in the words that the prognosis is favourable " inversely as the child is comely, fair to look upon, and winsome," and experience has confirmed its general truth. The explanation is that the " comely " cases are usually those of secondary amentia in which a portion of the brain has been seriously damaged or actually destroyed; whilst those presenting stigmata belong to the primary group in which there is often no actual destruction of tissue, but merely a lessened impetus to development. There are, however, exceptions to this general rule, and it is necessary to take several other factors into account. On the whole, I think that secondary cases due to purely vascular lesions occurring during birth are more hopeful than those which are the result of encephalitis or meningitis. In a number of

the former, although there may be a considerable amount of paralysis, the psychic involvement is comparatively slight, and if training is begun sufficiently early a good deal of improvement may take place. I have known many persons of this type who have been taught to read, write, sum, and do various kinds of manual work with surprising dexterity, and although they are apt to be impulsive, somewhat childish, and lacking in judgment, they are capable of following a remunerative employment. On the other hand, some purely vascular cases prove quite unresponsive to training and remain low-grade imbeciles. This is so, however, with the majority of cases of defect following encephalitis or meningitis, even where there is no paralysis or epilepsy. Paralysis in itself is a very uncertain guide as to the amount of mental impairment which will result, but epilepsy is of far more serious augury. Generally speaking, it may be said that if the fits are at all severe, or even if minor attacks are frequently repeated, the prospect of improvement is not good, and it is likely that sooner or later dementia will supervene.

Whilst, therefore, the outlook on the whole is better in the primary than in the secondary form, it varies considerably with the different clinical varieties. As we have seen, the defect in some of the secondary cases may be very slight, whereas amongst the primary group there are few microcephalics who get beyond the stage of imbecility; a few mongols reach the feeble-minded grade, but the majority of these, in spite of their vivacity and apparent promise in childhood, remain at the best high-grade imbeciles. The most hopeful of the primary group is the simple variety. Since the prognosis in each has already been given in treating of the various clinical types, it need not be further considered here.

Apart from the special prognostic indications in the different clinical varieties, the most valuable help in prognosis is afforded by a careful examination of the child's mental condition, and by observation of his response to training. Attention to the signs and symptoms of idiocy and imbecility which have been described in previous pages will usually enable these degrees of defect to be recognized in the first few years of life, and although training may do much to improve such individuals in habits of cleanliness and obedience, and, in the case of imbeciles, in self-help and usefulness, they will always remain low-grade aments. Above the stage of imbecility it is much less easy to forecast the amount of develop-

ment likely to take place; indeed, it is often impossible to do this without watching the child's progress for a time. Undoubtedly there is often a close relationship between response to scholastic education and general intelligence with consequent usefulness; but this is by no means invariably so, and the physician must guard against basing his forecast entirely upon the extent of the child's educational attainments. As I have previously pointed out, there are children who reach the fourth standard and subsequently prove to be in need of institutional care; there are others ineducable in the ordinary schools and who have to be sent to special schools, but who subsequently prove to be non-defective. Even the I.Q. is a very uncertain guide in prognosis as well as diagnosis. The best indication is afforded by observation of the child's response to " performance " tests, of the manner in which he adapts himself to his surroundings, and of his degree of mental equilibrium. The mentally stable child who shows evidence of some practical capacity and intelligent adaptation to his surroundings, even if he has a low I.Q. and is markedly defective educationally, will usually develop to a higher standard of usefulness than will the one who is unstable and whose behaviour cannot be depended upon, even though he may have a far greater range of school knowledge. It must be remembered, however, that mental development in the defective comes to an end earlier than in the non-defective. The important years of life are the early ones, and if proper training is not given in these early years, the child's developmental potentiality may never be realized and he will remain far more defective than he need have been.

CHAPTER XX

TREATMENT AND TRAINING

I. MEDICAL AND SURGICAL TREATMENT.

SINCE primary amentia—the form to which the great majority of cases of mental deficiency belong—is due either to abnormality of the genes, or to a germinal impairment of developmental potentiality, it is not to be expected that *medicinal treatment* would have any curative effect, and, as a matter of fact, in spite of many vaunted nostrums, there is none which has any direct or specific influence upon this condition.

Cases of secondary amentia stand on a somewhat different footing, in that their defect is not due to germ abnormality, but to some adverse factor of the environment acting after fertilization of the ovum. In some instances it may be possible to remedy this, and then, provided the arrest of development is not too great, or of too long standing, a considerable improvement, or even cure, may result. One of the best examples of this is cretinism. Where the mental defect of the cretin is entirely due to lack of thyroid secretion, the administration of thyroid gland may result in the patient attaining normal development. Patients suffering from amentia induced by epilepsy may also derive considerable benefit from suitable treatment. It is possible that further research may show that other varieties of secondary amentia are due to glandular and other defects, or to disorders of metabolism, and that for these also an appropriate remedy may be found. But the number of such cases is likely to be small, and in most cases of secondary, like primary amentia, it must be said that drugs have no direct influence. Treatment for syphilis has very little, if any, effect upon syphilitic amentia, although it may prevent subsequent mental degeneration.

The same is true of *surgical treatment*. When the theory was

advanced that microcephaly was due to premature synostosis of the cranial bones, it was natural that the surgeon should attempt to relieve it by craniectomy. During 1890, and for some years after, a considerable number of such operations were performed by eminent men, chief of whom may be mentioned Lannelongue (Paris), Victor Horsley (London), and Keen (Philadelphia). The cases operated upon were not only microcephalics, but included other varieties of amentia. The mortality was high (about 25 per cent.), and those who survived showed no mental improvement. It is not surprising that the operation should have been gradually abandoned by reputable surgeons, and to-day it is practically unheard of. It was, indeed, founded upon a mistaken notion of the pathology of this condition, and in the present state of our knowledge operations of this kind on cases of primary amentia are not justified.

The position is somewhat different in some forms of secondary amentia where there is no morbid inheritance. If there is evidence that the development of mind is being interfered with by a removable localized brain injury sustained during or after birth, operation may be justifiable; but it must be performed before irreparable damage has been inflicted. Also, in recent years operations have been performed in hydrocephalus and have, in some cases, been apparently successful in removing the block which was responsible for the increased intra-ventricular fluid. But if, from whatever cause, the brain cortex has been injured long enough to produce mental arrest, it is very doubtful whether surgical measures will be of much avail.

Nevertheless, it must not be assumed that medicine and surgery have little or no place in the treatment of amentia. This is far from being so. *Mens sana in corpore sano* is a true saying. Conditions are often present in defectives which impose a serious bar to their response to education and which are amenable to treatment, and it is certain that the mind will have a much better chance of developing when every means have been used to ensure the best possible condition of the body.

As soon, therefore, as any marked degree of mental retardation is noticed, a complete examination of the child should be made in order to discover any disease, deformity or physical imperfection which might interfere with development, and these should be remedied by appropriate medical or surgical treatment. It is unnecessary to describe all these conditions since they belong to

the realms of general medicine and surgery, and are not peculiar to the ament. It may be stated, however, that some of the commonest which call for treatment are general and special forms of malnutrition, alimentary and respiratory diseases, adenoids and enlarged tonsils, carious teeth, defects of vision and hearing, club foot, spastic diplegia, webbed fingers, and other deformities. Epilepsy in young children should never be neglected, as its persistence will seriously handicap mental development and may cause defect.

In addition to these indications for special treatment, the food, clothing, exercise, cleanliness and general hygiene of defectives must receive close attention. The dietary should be on a liberal scale, with ample green vegetables, fruit, milk, and sugar. Where mastication is imperfect food should be minced, and in the case of low-grade aments spoon-feeding is necessary. In these cases there is a danger of impaction of food in the glottis, and many cases of aspiration pneumonia have occurred. Attention to clothing is particularly necessary in mongols and other aments prone to catarrhal and circulatory disturbances. In cold weather gloves may prevent troublesome chilblains. Daily baths and exercise must always be provided, and care must be taken that rooms are sunny, not too warm, and thoroughly well ventilated. The predisposition of many aments to tuberculosis must be remembered.

It is unnecessary to discuss further the details of medical, surgical, and hygienic treatment, since the principles are the same in aments as in ordinary children. The only point upon which I wish to insist is that mental deficiency is often—indeed usually—accompanied by bodily deficiency, disorder, and disease, and that the treatment of these is an essential prelude to, or accompaniment of, the training of the mind.

II. EDUCATION AND TRAINING.

Having done our best, by careful attention to hygiene—aided, where necessary, by medicine and surgery—to remove any likely impediments to training, and to bring the mentally deficient child into the best possible physical condition, the question of education must be considered. In the following pages I shall first refer to the general principles of this; subsequently I shall deal

with the chief points regarding home, school, technical and moral training respectively. The actual pedagogic methods can, of course, only be learned by practical experience, and any detailed description of these would be beyond the scope of this book.

General Principles.

Education has three main objects: first, to cultivate the inherent intellectual, social and moral potentiality of mind to its fullest extent; secondly, to correct any antisocial and faulty tendencies; thirdly, to instil such knowledge and skill as will, if possible, enable the individual to follow some useful occupation. While, however, this must be our goal, it is obvious that the measure of success achieved will vary very greatly in different individuals. Where the inherent potentiality is small we shall get no further than the development of some capacity for self-help, the curtailing of destructive and dangerous propensities, and the expression, by signs or words, of simple wants—and we may not get even so far as this. Where the initial handicap is less severe the results will be considerably better; while in the mildest cases of all suitable training will enable the individual to read, write and sum, to acquire a considerable range of general knowledge, to perform many kinds of useful work, and to lead an industrious, well-behaved and happy life.

Mental development results from two main influences: first, *spontaneity*, or the inherent tendency of the higher cerebral neurones to develop; secondly, their *stimulation* by afferent impressions. The cerebral neurones of the normal healthy child have an innate capacity for growth which in itself will result in some degree of mental development in any ordinary surroundings. A little friend of mine, aged four years, reads " Alice in Wonderland " with great facility and enjoyment. She has not had a single formal lesson and her acquirement is the result of noticing the differences between the letters of the alphabet, asking questions about them, and so teaching herself to spell and read. The defective child is lacking in this mental aggressiveness, if I may so term it. Left to itself it would make very little intellectual progress, consequently its development has to be stimulated by special means.

This special training is largely based upon the methods which were first enunciated by Dr. Edouard Séguin in 1842, and which

have been further extended by Froebel, Pestalozzi, Montessori and others. At the beginning, training consists in the stimulation of the cerebral neurones through the special-sense avenues of sight, hearing, touch, and muscle movement by such means as romping play, catching and throwing a ball, musical drill, building up and knocking down a tower of wooden cubes, and the like. This is followed by the various "kindergarten occupations" such as matching different coloured wools and counters, threading beads, stick and tablet laying, manipulating size, peg and form boards, cutting out and folding paper, lacing and buttoning, completing jig-saw puzzles, colouring diagrams, copying simple designs, etc.

By such kindergarten occupations the child's sensorium is stimulated and developed, his interest and attention are roused, and his powers of observation, comparison, discrimination, perception and judgment cultivated. They are followed by instruction in reading, writing and summing, object and shop lessons, knitting, sewing, basket and rug making, weaving, modelling with plasticine, subsequently the use of tools and simple carpentry, and finally by more definite technical and trade training.

It must be remembered, that while the normal individual is capable of concentrating on a task which may be uncongenial in itself because it has a derived or remote interest, the mental defective is usually unable to do this. Consequently, if his training is to be attended with success, it must, at each stage, be made attractive and interesting in itself. This is one of the most important duties of the teacher, and may demand on his part considerable ingenuity and adaptability. The child whom nothing will interest is in a parlous state; but the one whose interest is at first purely destructive, and directed to tearing to pieces everything given him, may gradually have his interest enlarged and eventually be led to do simple constructive tasks. He may, for instance, be induced to build a tower of wooden blocks, if only for the purpose of knocking them down, and this may be the beginning of useful work. It must also be remembered that very few defectives are capable of appreciating the abstract, and that everything must be presented to them in concrete form. It is here that the practical "object" and "shop" lessons have their particular use.

Home Training.

The training of the mentally defective child should begin as soon as his condition is recognized. It is no good waiting for him to "grow out of it." Proper care and training in the early months and years of life will not only pave the way for subsequent mental development, but will often prevent the growth of faulty and harmful habits. In the majority of cases this early training will be carried out at home; where circumstances permit, it is advisable to secure the help and advice of a specially trained governess; but where this is not possible, the training must be undertaken by the mother.

In carrying this out time and patience are essential, and the guiding principle is to do nothing for the child which it can be taught to do for itself. The defective child learns so slowly that it is much easier for the mother to continue to feed, dress, and undress it than it is to teach the child to try to do these things. I have known many children of six and seven years of age who were still being treated as babies of a few months old. This temptation must be resisted. It is not only bad for the child, but will inevitably bring its own reward of increased trouble to the mother in years to come. Many children are persistently dirty in their habits for want of proper training. The acquirement of cleanliness in this respect is usually only a matter of patience, except in the lowest idiots.

The child who is inert must be stimulated by being shown moving and brightly coloured objects, by hearing music, and being romped with. Its hands and legs must be moved about, it must be made to grasp things, given toys to play with—even to break. One who is restless and destructive must be gently but firmly repressed. Patient efforts must be made to divert its energies into building a tower of bricks, putting together the various peg and form boards, learning to button, lace, and do any little constructive tasks. The mother should try to gain the child's attention by playing with and talking to him as much as possible. The time will come when he begins to understand what she says, and she should then try to make him say easy words after her. His understanding and speech will be helped if she pronounces very plainly several times the name of the thing she shows him, or the different parts of his

body when he is having his bath or being dressed. She should encourage him to crawl after a ball or toy, then to stand, and later to walk and run by himself.

There are now many local associations throughout the country with a staff of trained health visitors and social workers who can give valuable advice and assistance to the mother in the upbringing of her defective child in these early stages. It is also a great advantage to the mother to have a little handbook of practical directions, and those written by Dr. John Thomson* and Miss Margaret Macdowall† are useful for this purpose.

School Training.

Where the home conditions are such that adequate training cannot be given, or where home training is no longer sufficient for the needs of the child, it is necessary to make other arrangements. The nature of these will depend on the degree of defect and the financial position of the parents. For those able to pay fees the best plan is to send the child to a suitable private special school or " approved home." The usual age for admission to these is about the fifth or sixth year, but many children may be sent with advantage considerably younger than this. In the case of parents who cannot afford private tuition application should be made to the local Education Authority, who are now empowered to examine all children above the age of two years and provide suitable educational treatment for them.

School training consists of more definite and systematized methods directed towards developing the innate potentialities of the child; to teaching him to read, write and sum; and towards enlarging his range of general knowledge. It is carried out in small classes and is therefore less individual than home training; but this is amply compensated for by the companionship of other children. There is no doubt that such companionship is a great help in assisting mental development and the socializing of the child. In many cases a boarding school has advantages over a day school, and this is particularly so where the home surroundings are not satisfactory.

* J. Thomson, " Opening Doors," Oliver and Boyd, Edinburgh, 1923.

† M. Macdowall, " Simple Beginnings in the Training of Mentally Defective Children," Local Government Press Company, London, 1919.

Technical and Institutional Training.

Hitherto we have been concerned with the main methods by which the latent potentiality of the child is realized and brought into orderly use. If the initial handicap is not too great, the application of these by the skilled teacher in the schoolroom should have resulted in a considerable development of the child's mental capacity. His ability to perceive and comprehend should have been increased and his muscular co-ordination greatly improved; he will have acquired many items of general knowledge, together with some elementary scholastic attainments; he should be able to make simple comparisons and discriminations and to form simple judgments; he should have developed some control over his emotions, and some capacity to adapt his conduct to the requirements of his surroundings. Further, if his school training has not been too scholastic, he will have acquired some degree of dexterity in the performance of many simple occupations. The time has now come when he must receive more definite technical instruction.

Even in the case of those who will not be called upon to make any contribution towards their support, the advantage of being able to engage in some kind of useful and constructive work is so great, by enabling them to occupy their time and adding to their happiness, that some form of technical training should always be given. In the less well-to-do, instruction of this kind is a necessity. By its means a large number of defectives become capable of employment in the community, and those who remain in institutions can help to pay their way by useful work. Further, it is to be remembered that the mentally defective learn more through their hands than through their heads; definite occupational training has therefore a very distinct educational value quite apart from its practical utility. I am strongly of the opinion that not only should instruction of this kind be provided for all defectives, regardless of their financial or social status, but that it might with advantage be given much earlier than it usually is.

Training of this kind is best obtained by sending the adolescent defective to one of the private " approved homes," or to one of the larger institutions. Whilst in many cases the circumstances of the patient, or his mental condition, are such as to make permanent residence in one of these establishments necessary, this is by no

means so in all. For a large number of cases the approved home or institution should rather be regarded as a more advanced school —in fact, as the public school of the mentally defective; and, wherever possible, every defective person should be afforded the advantages of the extended education which these establishments provide.

The nature of the technical training will, of course, vary in different cases, and must be determined by sex, social position, personal characteristics and aptitudes, and future prospects. For many youths an outdoor occupation is preferable, and these may be taught gardening, poultry and rabbit keeping, fruit farming, dairy work, and agriculture. The openings for employment in these directions, however, are rather limited, and for the majority of males the most suitable remunerative occupations are boot making and repairing, tailoring, carpentry, wood carving, basket, mat and brush making, chair caning, bookbinding and printing, the running of simple machinery, metal work and the like. For females suitable occupations are cookery, laundry-work, dressmaking, hand and machine sewing, knitting, and even embroidery and fine-art needlework. Instruction in these various occupations is given by skilled master hands, and after a course of training a considerable number of defectives are able to work at their trade with a small amount of supervision. In most institutions the greater proportion of the making, mending, and general domestic work, even the printing, is done by the inmates.

It must not be thought, however, that institutions are merely labour colonies, or that trade training is the only form of education they provide. They have their recreations as well as their work, and these not only ensure the happiness of the inmates, but have a great educational and socializing influence. The well-equipped modern colony has its cricket and football teams, its cinema, its weekly dances, and frequent entertainments and stage plays given by the patients themselves. Perhaps of even more value, it has its troop of scouts, company of girl guides, or pack of Brownies. The first troop of scouts for mental defectives was raised at Miss Douglas Townsend's school at Littleton House by Mr. R. Parkinson, and although at first there was some difficulty in obtaining official recognition there are now a number of such troops and companies throughout the country. It is interesting to note that not only do these attend the ordinary camps and take part in all the activities

of the organization just like normal children, but that they are by no means at the bottom of the list in many of the competitions, whilst a number of their members hold badges for proficiency in special subjects.*

Moral Training.

The training of the child's social and moral sense is by no means the least important of the teacher's duties; indeed, if this is not carefully attended to, the education of his intellect may simply result in an increased power for ill, and cause him to be, not merely useless, but actually dangerous to society. Moral education, therefore, forms an essential part of the home and school training of the mentally deficient child. Its general object is the repression of antisocial tendencies and the inculcation of habits or principles which will enable the child to adapt his conduct to the laws of his society and the well-being of his fellow-creatures. It is entirely removed from, and, from the physician's standpoint, is of greater importance than, religious education. If the condition of the child permits, the elementary principles of a religious doctrine may be added, and in some cases Christian ideals may exert a considerable effect upon behaviour. The question of religious education, however, is the domain of the ecclesiastic, and beyond the scope of this work.

The bulk of aments are rather *a*moral than *im*moral, and their lack of ethical sense stands in the same relationship to that of the normal child as does their defect of general intelligence, requiring also special means for its development. There are, however, three types specially prone to the commission of immoral acts, and the training of these must be the object of particular care.

These are, first, those who are readily induced to commit antisocial acts at the instigation of unscrupulous persons, because of their extremely " facile " disposition. Impressionable, susceptible, and readily swayed, incapable of withstanding the suggestions, good or bad, of their companions, the only safeguard is to keep them away from temptation, and to ensure that their social atmosphere shall be good. It is possible that in course of time this

* On the subject of girl guides in a certified institution for mental defective see an interesting article by Dr. H. Freize Stephens in *Mental Welfare*, October, 1924.

atmosphere may to some extent lead to the formation of an active moral sense, and that the persistent inculcation of moral precepts may make impressions capable of influencing their conduct; but, in my opinion, this can never be relied upon, and the only safe course with regard to this class is to keep them under permanent supervision. They are simple and confiding beings, and many of them are industrious workers.

The second group consists of those persons whose mental constitution is so unstable that the most trifling occurrence produces a violent storm. In this they will commit a grave breach of discipline, an offence against law and society, or even a serious crime. The attacks in many ways resemble those of epilepsy; in fact, I think that many of them are manifestations of epilepsy. They often improve with treatment for this condition, combined with regular occupation and a routine institutional life.

The third group consists of those persons permanently lacking in moral sense. In these there seems to be an absolutely ineradicable propensity to commit any kind of offence, and they will lie, steal, burn, destroy, and assault, without being influenced in the slightest by persuasion, threat, or punishment of any description. Again and again have I known the offence repeated almost whilst words of contrition were hot on the tongue. I believe this condition to be practically incurable, and the only safeguard is strict and permanent detention.

Passing now to the ordinary type, in which there is neither a specially facile disposition, a predisposition to emotional storms, nor deeply ingrained immoral and criminal tendencies, we have to consider the manner in which the latent ethical sense may be sufficiently developed to lead the child to shape his conduct in accordance with law and the manners and customs of good society. If control is not so developed it is tolerably certain that the age of puberty, if not earlier, will see the assertion of many primitive instincts which may result in serious misconduct.

It was said by John Stuart Mill that the foundation of the moral principle lies in *utility*. The mentally normal child may be taught to be moral through appreciation of this. By being made to suffer the natural consequences of his breaches of discipline, he gradually learns, through his intellect, that good behaviour has pleasant, and vice and wrongdoing unpleasant consequences. To a certain extent this principle may be used in the mentally deficient child,

but his defect is often such that he cannot be made to realize the natural consequences, the utility or futility, of every act he commits, and his training necessitates the use of arbitrary rewards and punishments.

There are many rewards for good conduct which appeal to these children. In the lower grades the promise of a toy, a sweet, or some simple treat, will often prove a useful incentive to good behaviour. Similarly with punishment; the deprivation of some favourite food, such as no pudding for dinner, the denial of the entertainment which his companions are allowed to enjoy, the reproof of the teacher —all these may be employed to impress on the child that wrongdoing is unpleasant, and that it pays to be good.

It is important that the teacher should be kind and sympathetic, gentle but firm, and that all petting and spoiling should be rigorously avoided. Approbation, if earned, should be given ungrudgingly; it will be found a powerful incentive to further progress and a help in moral training.

With regard to corporal punishment opinions differ. My own view is that it should be avoided wherever possible. But in certain cases of wilful and flagrant breaches of discipline, open defiance of authority, or malicious cruelty, it may be not only justifiable, but beneficial; in fact, it is often the only means by which the child can learn that respect for others which is the essence of morality. It must be noted, however, that the administration of corporal punishment to defectives in institutions is prohibited by the regulations of the Board of Control.

In the task of implanting good habits and developing moral feeling, the faculty of imitation, often so marked in these children, must not be lost sight of, since it may readily be turned to good or bad account. It is extraordinary how mild and gentle girls, brought up in an atmosphere of refinement and care, will suddenly, and upon the slightest provocation, give vent to a torrent of the most disgusting and obscene abuse which they may have heard by chance on some solitary occasion. It is of the highest importance that the surroundings of mentally deficient persons should be well ordered from the very beginning, and there is no doubt that the home environment of early life exercises a potent influence in after-years. We cannot expect these children to become affectionate, sympathetic, and generous unless these qualities are evident in the lives of those about them, therefore a rigorous

[To face page 440.]



A group of defectives undergoing training in muscular co-ordination at the Fountain Hospital.

(*Photograph by Dr. Brushfield.*)

PLATE XLVI.

To face page 440.



A group of mentally defective girl guides at the Royal Eastern Counties Institution.

(*Photograph from Dr. F. Douglas Turner.*)

PLATE XLVII.

censorship of the entire social atmosphere, even with regard to pictures and entertainments, is an absolute necessity. If we are to ensure truthfulness, honesty, and uprightness, it is essential that parents, teachers, and physician should be truthful, just, and straightforward in all their dealings with these children. Rewards and punishments must be deliberate, and apportioned in a manner not only to fit the crime, but to establish their relationship in the mind of the child. Otherwise they will do more harm than good, and will inevitably lead to an alienation of confidence and affection. By judicious punishment or reward, which the child can recognize as being related to his fault or virtue, we shall be in no danger of losing his love and affection or of violating his sense of justice. We shall develop, rather than perplex, his reasoning power, and we shall cultivate his moral sense and control just as his intellectual capacity was developed.

CHAPTER XXI

THE LAW OF ENGLAND RELATING TO MENTAL DEFECTIVES

PRIOR to 1913 the laws of England regarding the care and control of mental defectives were very inadequate. Idiots and imbeciles could be dealt with under the Idiots Act of 1886, and idiots under the Lunacy Act of 1890; the education of mentally defective children was also permitted, but not compelled, by the Defective and Epileptic Children (Education) Act, 1899. But the largest and most important class of all—the adult feeble-minded—were not recognized by the law, and unless they could be certified under the Lunacy Acts as " persons of unsound mind," as, in fact, a proportion of them were, there was no legal machinery for providing them with any form of care, supervision, or control. It was largely the recognition of this fact which led to the appointment of the Royal Commission of 1904 " to consider and report upon the existing methods of dealing with idiots and epileptics, and with imbecile, feeble-minded, or defective persons not certified under the Lunacy Laws."

The Report of this Commission resulted in the passing of the Mental Deficiency Act of 1913, and a further amending Act was passed in 1927. These Acts repeal the Idiots Act, and although diots and the feeble-minded may still be dealt with under the Lunacy Acts, and the Education Act of 1944 contains provisions for the education of mentally handicapped children, the Mental Deficiency Acts, 1913 to 1927, are now the chief statutes under which mental defectives may be dealt with. It is therefore necessary to give a short summary of the main provisions of these Acts.

THE MENTAL DEFICIENCY ACTS, 1913 TO 1927. (Not extending to Scotland or Ireland.)

DEFECTIVES WITHIN THE MEANING OF THE ACTS.

The classes of persons who are defectives within the meaning of the Acts are four—namely, *Idiots*, *Imbeciles*, *Feeble-minded*, and

Moral Defectives (1927, Sect. 1). The legal definitions of these classes have already been given in the chapter on Classification.

Forms of Care, Supervision and Control.

There are three chief forms of these available under the Acts—namely, *Institutional*, *Guardianship*, and *Supervision*. It may be useful to give a short description of each of these and to mention the types of cases for which they are suitable.

Institutional Care.

There are four different classes of establishments which may be described under the heading "Institutional," inasmuch as they are all residential. These are as follows:

(*a*) **State Institutions.**—These are established, maintained, and managed by the Board of Control for defectives of criminal, violent, or dangerous propensities. [Sect. 35.]

(*b*) **Certified Institutions.**—These are official establishments maintained by the local authority, the poor-law guardians, or other recognized public bodies. Practically, they correspond to the ordinary rate-aided mental hospitals, and they are chiefly applicable to those defectives who are unable to pay fees; but the managers are empowered to receive private patients, and to provide special accommodation for them. They may receive defectives of all classes. [Sect. 36, 37, 38.]

(*c*) **Certified Houses.**—These are houses, certified as fit by the Board of Control, in which defectives are received for private profit. They are used for patients who can afford to pay fees, and the managers may receive and detain defectives under the order of a judicial authority in the same way as certified institutions. Defectives who are not under orders may also be placed in them. No part of the cost of maintaining defectives in certified houses can be paid out of public funds; consequently, they cannot receive patients paid for by the local authority or by the Public Assistance Committee. [Sect. 49 (2).]

(*d*) **Approved Homes.**—These are premises approved by the Board (1) in which defectives are received and supported wholly or partly by voluntary contributions, or by applying the excess of

payments of some patients towards the support of other patients; and (2) houses in which defectives are received for private profit. Defectives cannot be admitted to approved homes under the order of a judicial authority or a court, but may be received in such homes without orders. [Sect. 50.] A defective of any age may be " placed " in an approved home by his relatives, but since he is not under any form of order he cannot be kept there against his will.

It will be seen that the character of these various establishments differs very greatly, as also does the type of patients for whom they are suitable and the procedure for obtaining admission. The State institutions for criminal and dangerous defectives correspond in essentials to the State institutions for criminal lunatics. The certified institutions are practically confined to those defectives whose relatives are unable to pay fees, and the majority of the patients in them are paid for by the local authority. Many of these authorities now have their own institutions, but where this is not the case they may contract with other authorities for the reception of their patients. The certified houses, and the approved homes, are for defectives whose relatives can afford to pay fees, which fees range, according to the accommodation needed, roughly from £100 to £300 or more per year. The certified institutions and houses afford means of full control, and most of the inmates are under detention orders. They are subject to regular visitation and oversight by the Board of Control, and have to conform to the Board's regulations regarding the keeping of records and medical journals, furnishing reports, and many other matters. It should be noted that whilst the provision of suitable care and protection is an important function of these establishments, it is by no means the only one. Their aim is to provide instruction and training, to stabilize and socialize their inmates, and, if possible, to fit them for some kind of useful employment in the general community. To this end they have facilities for education and trade training, as well as for various indoor and outdoor recreations, amusements and games. A number of them have active and efficient troops of girl guides and boy scouts. As will be seen presently, leave of absence on licence may be granted to those defectives who seem suitable for employment and sufficiently stabilized to live in the general community.

Guardianship under Order.

This is a form of care in which a defective is placed under the control of a suitable person appointed to be his guardian. When so placed on the order of a judicial authority, the rules governing detention, visitation, escape, or death, the provision of medical certificates, the keeping of a medical journal, and so forth, are very much like those in the case of a defective detained in an institution. The powers of the guardian are such as could be exercised by the parent of a child under the age of fourteen years. He has full power and authority over the defective in regard to his residence, diet, education, occupation, recreation, and similar matters. The guardian is prohibited from inflicting corporal punishment, and the defective must reside with him. He can only receive one such patient unless he has the special sanction of the Board of Control. He must conform (under a penalty of £20) to all the rules and regulations prescribed by the Board. No person can undertake the duties of a guardian unless he is fully conversant with all the various duties required of him.

The guardian appointed may be a parent or other relative, an employer, or someone not connected with the patient. The method is chiefly applicable to, and of considerable use for, three classes of patients—namely, (1) mild aments (who may be in well-to-do circumstances) not needing institution care, but whom it is desired to board out under the control of some responsible person; (2) mild aments capable of useful work who can be placed under the guardianship of their employer; and (3) low-grade, well-behaved aments with good homes, who can be placed under the guardianship of their parents. The advantage in the last case is that the local authority is then enabled to provide financial assistance, even to the extent of paying for the entire cost of maintenance of the defective.

Supervision.

Statutory supervision is the simplest form of control under the Acts. No judicial order is needed and it merely consists in the visitation and general oversight of the defective in his own home by the local authority, usually through the medium of a special officer, or through health visitors, school nurses, social workers, or local

mental welfare associations.* Under the regulations of the Board of Control the visitor is required to make a report to the local authority immediately it is found that supervision is not affording proper protection. The defective may then be placed under guardianship or sent to an institution. Local authorities are also required to provide suitable training, or occupation, for the defectives whom they have placed under supervision. In the case of low-grades, this is usually done by means of *occupation centres*, which are mainly for children who are too defective to profit by the instruction in special schools. In the case of high-grades this may be done by providing the person with some suitable employment near his home. In a few large towns *industrial centres* have been established which provide various forms of industrial training for those over the age of sixteen years who have left special schools. Attendance at occupation and industrial centres is purely voluntary and cannot be enforced.

In addition to the above, defectives may be placed in two other situations—namely, " places of safety " and " single care."

Place of Safety.—Circumstances may arise which render it necessary for a defective to be placed under immediate care, pending the presentation of a petition. In such a case he may be detained in a " place of safety " for a sufficiently reasonable time to allow of this being done. But notice of his reception must be given to the Board of Control and the local authority within forty-eight hours of his admission to the " place of safety." The relevant sections of the Act are as follows:

" If any officer of the local authority authorized in that behalf, or any constable, finds neglected, abandoned, or without visible means of support, or cruelly treated, any person whom he has reasonable cause to believe to be a defective, he may take such person to a place of safety, and such person may be there detained until a petition under this Act can be presented." [Sect. 15 (1).]

" If it appears to a justice on information on oath laid by an officer or other person authorized by the local authority that there is reasonable cause to believe that a defective is neglected or cruelly treated in any place within the jurisdiction of the justice, the justice

* These exist in a number of areas and perform most valuable work. Most of them are affiliated to the National Council for Mental Health, 39, Queen Anne Street, London, W.1, the Secretary of which is always glad to answer any inquiries relating to the training, care and control of defectives.

may issue a warrant authorizing any constable named therein, accompanied by the medical officer of the local authority or any other duly qualified practitioner named in the warrant, to search for such person, and, if it is found that he is neglected or cruelly treated, and is apparently defective, to take him to and place him in a place of safety until a petition can be presented under this Act, and any constable authorized by such warrant may enter, and if need be by force, any house, building, or other place specified in the warrant, and may remove such person therefrom." [Sect. 15 (2).]

" The expression ' place of safety ' means any workhouse or police station, any institution, any place of detention, and any hospital, surgery, or other suitable place, the occupier of which is willing to receive temporarily persons who may be taken to places of safety under this Act." [Sect. 71.] In practice, public assistance institutions are those which are generally used for this purpose.

Single Care.—In past years it was a common practice for medical men, clergymen, and other persons to receive several defectives as boarders, or " paying guests," into their houses. This is now illegal, and no person, without the consent of the Board of Control, may undertake the care of more than one defective elsewhere than in an institution, a certified house, or an approved home. Single patients may still be received as heretofore, but in such case notice must be given to the Board and the local authority within forty-eight hours of the patient's reception, and the person in charge must comply with the directions of a commissioner as to the patient's physical, mental, and moral welfare. Such cases are also subject to periodical visitation, but they need not be under medical certificates. [Sect. 51 (1), (2).]

Methods of Procedure.

The methods of procedure for dealing with a defective under the Acts are of two kinds—namely, (A) placing without an order, and (B) by the order of a judicial or other authority. The applicability of these methods depends upon the class of defective to be dealt with, his age, and certain special circumstances which will be stated below.

A. Placing without an Order.

1. **Idiots and Imbeciles.**—An idiot or imbecile of any age may be placed in an institution for defectives, or under guardianship, at the instance of his parent or guardian, upon two medical certificates in the prescribed form and a statement of particulars. One of these certificates must be signed by a medical practitioner approved for the purpose by the local authority or by the Board of Control. The Act does not specify that the second certificate shall be signed by the usual medical attendant of the patient (as is the case where a petition is presented); but the regulations require this wherever practicable. The Act does not state that the examination shall be made within any fixed time of the placing, but the Board of Control require that the medical certificates shall be given within a reasonable time, all the circumstances of the particular case being taken into consideration. This method of dealing with a defective is the simplest under the Act, and does not necessitate any order by a judicial authority. It is only applicable to idiots and imbeciles.

2. **Feeble-minded and Moral Defectives under Twenty-one Years of Age.**—These may be placed in institutions or under guardianship at the instance of a parent. In this case, in addition to the two medical certificates and statement of particulars (which must be signed by a parent), similar to those required in dealing with idiots and imbeciles, there is also required the certificate of a judicial authority, stating that, having inquired into the case, he is satisfied that the person to whom the certificate relates is a defective within the meaning of the Act, and the class of defectives to which he belongs. This certificate of the judicial authority must be appended to each medical certificate, and may be given " after such inquiry as he shall think fit "; consequently, there is no obligation upon the judicial authority to see the patient, although many judicial authorities may doubtless consider it their duty to do so. [Sect. 3 (1).]

Where a defective has been *placed* by his guardian or parent in an institution or under guardianship, the parent or guardian may withdraw him at any time on giving notice in writing to the Board of Control, unless the Board, after considering what means of care and supervision would be available if he were discharged, determine within fourteen days that his own interest requires his further detention, and in that case no further notice by the parent or

guardian shall be allowed till after the expiration of six months from the previous notice. [Sect. 12 (1).]

Subject to the foregoing, a defective who has been *placed* in an institution or under guardianship (not under orders) may be detained therein, and his case is subject to the same reconsideration by the Board and by the visitors as if he were under orders. [Sect. 12 (2).] This also applies to patients *placed* (without orders) in certified houses. [Sect. 49 (2).]

"The managers of any certified institution, or house, or any approved home, may discharge any defective placed there by his parent or guardian on giving one month's notice to the Board and to the parent or guardian of the defective, if known." [Sect. 12 (3).]

B. By Order of a Judicial or Other Authority.

A defective of any class and any age may be detained in an institution for defectives or placed under guardianship on the order of a judicial or other authority, but only if, in addition to being defective, he is **subject to be dealt with** by coming within one or other of the following categories:

(i.) "Who is found neglected, abandoned, or without visible means of support, or cruelly treated; or with respect to whom a representation has been made to the local authority by his parent or guardian that he is in need of care or training which cannot be provided in his home."

(ii.) "Who is found guilty of any criminal offence, or who is ordered or found liable to be ordered to be sent to a certified industrial school"; or

(iii.) "Who is undergoing imprisonment (except imprisonment under civil process), or penal servitude, or is undergoing detention in a place of detention by order of a court, or in a reformatory or industrial school, or in an inebriate reformatory, or who is detained in an institution for lunatics or a criminal lunatic asylum; or"

(iv.) "Who is an habitual drunkard within the meaning of the Inebriates Acts, 1879 to 1900; or"

(v.) "Who is a person with respect to whom a report has been issued under the enactments relating to education that he has been found incapable of receiving education at school, or that by reason of a disability of mind he may require supervision after leaving school." (*Amendment by Education Act*, 1944); or,

(vi.) " Who is in receipt of poor relief at the time of giving birth to an illegitimate child or when pregnant of such child." [Sect. 2 (1).]

The procedure in such cases may be by one of the following methods:

1. **By Petition to a Judicial Authority from any Relative or Friend, or from an Authorized Officer of the Local Authority.**—Such petition must be accompanied by *two medical certificates*, one of which must be signed by a medical practitioner approved for the purpose by the local authority or Board, or a certificate that a medical examination was impracticable; by a *statement of particulars;* and by a *statutory declaration* signed by the petitioner and by at least one other person (who may be one of the medical signatories) stating—(*a*) that the patient is a defective within the meaning of the Act, and the class of defectives to which he is alleged to belong, (*b*) that he is subject to be dealt with under the Act, and the circumstances which render him so subject; (*c*) whether or not a petition under this Act or under the Lunacy Act has previously been presented concerning the patient, and if such has been presented, the date thereof and the result of the proceedings thereon; and (*d*) if the petition is accompanied by a certificate that a medical examination was impracticable, the circumstances which rendered it impracticable. [Sect. 5 (1), (2).]

The petitioner must be at least twenty-one years of age, and he must have personally seen the alleged defective within fourteen days of presenting the petition. A relative means husband or wife, or a lineal ancestor or lineal descendant, or lineal descendant of an ancestor not more remote than great-grandfather or great-grandmother.

If the petition is not presented by a relative or by an officer of the local authority, it must contain a statement of the reasons why it is not so presented, and of the connection of the petitioner with the person to whom the petition relates, and the circumstances under which he presents it. [Sect. 5(3).]

The statement of particulars is very similar to that required under the Lunacy Act, and contains details regarding name, sex, age, civil state, and such special symptoms as the presence of epilepsy, suicidal, violent, or dangerous propensities, etc. The Act does not state who is the person responsible for signing this statement.

When the above documents have been duly completed, they

must be presented by the petitioner to a "judicial authority" under the Act. This authority may be a County Court judge, a police or stipendiary magistrate, or a justice specially appointed under the Lunacy Acts.

Upon the presentation of the petition and the aforesaid documents the judicial authority shall either visit the alleged defective person or summon him to appear before him. [Sect. 6 (1).]

Any proceedings before the judicial authority may be conducted in private at his discretion, and shall be so conducted upon the desire of the alleged defective. [Sect. 6 (2).]

If the judicial authority is satisfied that the person is a defective, and subject to be dealt with under the Act, he may then, if he thinks it desirable to do so, make an order for his detention in an institution the managers of which are willing to receive him, or he may appoint a suitable person to be his guardian. Provided that, where the petition is not presented by the parent or guardian, no order shall be made without the consent in writing of such parent or guardian, unless the judicial authority is satisfied that such consent is unreasonably withheld, or that the parent or guardian cannot be found, or that, by reason of the parent or guardian being abroad, any attempt to obtain his consent would result in undue delay in dealing with the petition. If the judicial authority is not satisfied that the alleged defective comes within the Act, or that it is desirable in the interests of the patient that an order should be made, he may adjourn the case for a period not exceeding fourteen days for further information, he may order that the patient shall submit himself to medical examination, or he may dismiss the petition. If the petition is dismissed the judicial authority is required under the rules to deliver a statement of his reasons to the petitioner and to send a copy of such statement to the Board of Control. Unless the petition is dismissed, in any case where it was accompanied by a certificate that a medical examination was impracticable, the judicial authority must order a medical examination to be made. It is to be noted that "consent shall not be deemed to be unreasonably withheld if withheld with the *bonâ fide* intention of benefiting the defective." [Sect. 6 (3), (4).]

2. **By Order of the Court.**—On the conviction by a court of competent jurisdiction of any person of any criminal offence punishable with penal servitude or imprisonment, or on a child brought before a court under Section 58 of the Children Act, 1908, being found

liable to be sent to an industrial school, the court, if satisfied on medical evidence that he is a defective within the meaning of this Act, may either postpone passing sentence or making an order for committal to an industrial school, and—(1) direct that a petition be presented to a judicial authority, or (2) may make an order similar to, and which shall have the same effect as, that made by a judicial authority. [Sect. 8 (1).]

It is to be noted that the court cannot make an order as above in the case of a defective charged with murder; also that the court does not require any medical certificates, but acts upon medical evidence tendered to it.

Where it appears to the police authority that any person charged with an offence is a defective, they shall communicate with the local authority, and it shall be the duty of the police authority to bring before the court such evidence as to his mental condition as may be available, due notice being given to the person charged and to his parent or guardian, if known. [Sect. 8 (5).]

3. **By Order of the Home Secretary.**—Where the Secretary of State is satisfied from the certificate of two duly qualified medical practitioners that any person who is undergoing imprisonment (except imprisonment under civil process) or penal servitude, or is undergoing detention in a place of detention by order of a court, or in a reformatory or industrial school or in an inebriate reformatory, or who is detained in a criminal lunatic asylum, is a defective, the Secretary of State may order that he be transferred therefrom and sent to an institution for defectives, the managers of which are willing to receive him, or that he be placed under guardianship, and any order so made shall have the like effect as if it had been made by a judicial authority on petition under this Act. [Sect. 9.]

Effect and Duration of Orders.

The effect and duration of orders made by a judicial authority are as follows:

(1) If the order is for the defective to be sent to an institution it authorizes his conveyance thereto and his reception therein at any time within fourteen days after the date of the order. [Sect. 10 (1). If the order is not acted upon within this time it becomes void, and proceedings must be initiated *de novo*.

(2) If the order is for the defective to be placed under guardian-

ship it confers on the person named as guardian such powers as would have been exercisable had he been the father and the defective been under the age of fourteen.

(3) The order expires at the end of one year, but may be continued for a further year, and afterwards for successive periods of five years, if the Board of Control, after due consideration, are of opinion that such is desirable in the interests of the defective person and make an order for the purpose. [Sect. 11 (1), (2).]

(4) If the defective has been ordered to be sent to an institution, or placed under guardianship, before he was twenty-one years of age, his case must be reconsidered by the visitors within three months after he attains that age. The visitors are required to see the defective, inquire into his mental condition and the means of care and supervision which would be available if he were discharged, and into all the circumstances of the case, and if it appears to them that further detention in an institution or under guardianship is, no longer required in the interests of the defective himself, they shall order him to be discharged. [Sect. 11 (2, 3).]

(5) *Escapes.*—If a defective who is under order escapes from any certified institution or house he may be apprehended without warrant by any constable, or by the managers of the institution, or by any person authorized by them in writing, and brought back to the institution. [Sect. 42.] This liability to recapture and return to the institution also applies to defectives on licence (see below) who have violated the terms of their licence. It holds good for so long as the order of detention is in force, and not, as in the case of escaped lunatics, only for a period of fourteen days. It would seem that a guardian may also bring back, if necessary by reasonable force, a defective under order who has escaped from his guardianship.

(6) *Leave of Absence on Licence.*—If a defective in an institution is well-behaved and is capable of being employed in the general community, or, if of low grade, has become sufficiently stabilized to live at home and the home surroundings are suitable, he can be granted leave of absence on licence by the superintendent with the consent of a Commissioner of the Board of Control or of two members of the Committee. The defective still remains on the books of the institution, and should it be considered necessary the licence can be revoked and he can be brought back at any time without further formalities while the detention order is in force.

Property.

It is enacted that the provisions of the Lunacy Act, 1890 (Sect. 50 and Part IV), shall apply with respect to the management and administration of the estate of a detective in a certified institution or house, or under guardianship, or of a person proved to the satisfaction of the judge in lunacy to be a defective, in the same way as they apply to a person detained as a lunatic, or who is through mental infirmity arising from disease or age incapable of managing his affairs. [Sect. 64.]

The broad effect of these provisions is (1) to enable the Lord Chancellor or the Commissioners, where they consider it necessary, to make inquiries as to the property of a defective detained under order; and (2) to enable a master in lunacy to appoint a receiver to manage the property of a person proved to be a defective, but who is not under any order of detention.

Carnal Knowledge.

It is illegal carnally to know or attempt so to know any defective female under care in an institution, certified house, or approved home, or while out on licence therefrom, or under guardianship under the Act; or to procure or attempt to procure any defective female to have unlawful carnal connection, whether within or without the King's dominions, with any person; or to cause or encourage the prostitution of any defective female. [Sect. 56.]

The Criminal Law Amendment Acts are applied to female defectives irrespective of their age, and no " consent " is " any defence in any proceedings for an indecent assault upon any defective if the accused person knew or had reason to suspect that the person in respect of whom the offence was committed was a defective." [Sect. 56, 2, 3, 4, 5.]

AUTHORITIES, THEIR POWERS AND DUTIES.

A. The Board of Control is the central authority, and consists of a Chairman, Commissioners, and Inspectors. It is charged with the general superintendence of matters relating to the supervision, training, occupation, protection, and control of defectives [Sect. 21], including the supervision of the administration by local authorities

of their powers and duties under the Act; the certification, inspection, and visitation of institutions, houses, and homes; the visitation of defectives; the provision and management of State institutions. [Sect. 25, 35, 36.]

B. The Local Authority (L.A.) is the Council of the county or county borough [Sect. 27] acting through a statutory " Committee for the Care of the Mentally Defective," which may include co-opted members, and to which all matters relating to mental defectives under the Act (except that of raising a rate or borrowing money, and matters of urgency) shall stand referred. [Sect. 28.]

The duties of the local authority are—

(1) To ascertain what persons within their area are defectives " subject to be dealt with "—*i.e.*, by reason of coming under any of the special categories (i.) to (vi.) previously described.

(2) To provide suitable *supervision* for such persons, or, if this does not afford sufficient protection, to take steps for sending them to *institutions* or placing them under *guardianship*.

(3) To provide suitable and sufficient accommodation for such persons as are sent to certified institutions by orders under the Act. [Sect. 30], etc., etc.

(4) To provide suitable training or occupation for defectives who are under supervision or guardianship or have been sent to certified institutions. [1927, Sect. 7.]

It will be seen from the foregoing that the primary duties of the Local Mental Deficiency Authority (usually known as the L.A.) are the ascertainment of defectives subject to be dealt with, and the provision of proper training, care, supervision and control for such defectives as have been thus ascertained. It may be helpful to draw attention to some points regarding these main duties.

In the first place, it must be emphasized that the L.A. are not concerned with defectives merely *qua* defect; but only with such as come into one of the six categories already mentioned as rendering them " subject to be dealt with." The L.A. has no duties with regard to defectives between the ages of seven and sixteen years, except in the case of those brought before the courts for the commission of some offence, and of those notified to them by the L.E.A. Any other children within these ages must first be referred to the L.E.A. [Sect. 30 (iv).] In practice, the majority of cases become subject to be dealt with by reason of falling within either category (i.) or (v.). It was originally hoped that notification by the

L.E.A.—category (v.)—would be the chief means by which the L.A. would be enabled to deal with defectives, but for several reasons this did not prove to be so. It is now probable that under the Education Act 1944 more use will be made by the L.E.A. of the power of notification.

Regarding category (i), it is to be remarked that the words "who is found *neglected*" may be held to cover a tolerably large group of persons. The word "neglect" does not necessarily imply any censure upon parents or relatives who have had the charge of the defective. They may, in fact, have taken considerable pains to do their best for him. But a defective may be held to be neglected if it can be shown that he, or she, is in need of some particular kind of care, control or protection which the parents cannot, or do not, provide for him.

After ascertainment, the most important duty of the L.A. is that of placing the defective under suitable care. The decision as to the kind of care to be provided rests with the Statutory Committee, but it will usually be based upon the opinion and recommendation of the medical officer and the enquiry officer or visitor of the authority. In making a recommendation attention should be paid to the following points: The degree of defect present; the likelihood of satisfactory response to training; the stability or instability of the defective; the presence of any antisocial propensities which might be a source of danger to the community; the existence of any objectionable habits which might be copied by younger children in the house; and the general condition of the defective's home, particularly with regard to the care and supervision which it affords. In general, it may be said that all those defectives who are likely to derive a definite amount of benefit from institutional training, or who are in need of control which cannot be otherwise provided, should be placed in a suitable institution. Unfortunately, at the present time institutional accommodation is very limited, and admission is largely dependent upon the urgency of the case.

C. The Local Education Authority (L.E.A.).—This is the Council of the county or county borough. Its duties in regard to defectives have been altered by the Education Act 1944, and this Act, and the Rules and Regulations made under it, should be studied by medical officers of the school service. It will be sufficient here to give a short account of the main provisions as they concern defectives.

The 1944 Act repeals the whole of the Education Act 1921 and

repeals or modifies certain sections of the Mental Deficiency Acts relating to defective children. Formerly, the L.E.A. was only responsible for the ascertainment of defectives between the ages of 7 and 16 years; it is now required to ascertain children in need of special educational treatment from the age of 2 years. The Act does not use the term "defective"; but implements the recommendation of the Wood Report and requires the L.E.A. to provide suitable educational treatment for all children who are educable without their being certified as defectives. The relevant sections are as follows:

"It shall be the duty of every local education authority to ascertain what children in their area require special educational treatment; and for the purpose . . . may by notice in writing served upon the parent of any child who has attained the age of two years require him to submit the child for examination by a medical officer of the authority for advice as to whether the child is suffering from any disability of mind or body and as to the nature and extent of any such disability; and if a parent upon whom such a notice is served fails without reasonable excuse to comply with the requirements thereof, he shall be liable on summary conviction to a fine not exceeding five pounds." [Sect 34 (1).]

If the authority . . . "decide that the child requires special educational treatment, they shall give to the parent notice of their decision and shall provide such treatment for the child." [Sect. 34 (4).]

"The advice given with respect to any child by a medical officer . . . shall be communicated to the parent of the child and to the local education authority; and the medical officer by whom the examination was made shall, if required by the parent or by the authority to do so, issue to the authority and to the parent a certificate in the prescribed form showing whether the child is suffering from any such disability as aforesaid and, if so, the nature and extent thereof." [Sect. 34 (5).]

"It shall be the duty of the parent of every child of compulsory school age to cause him to receive efficient full-time education suitable to his age, ability, and aptitude, either by regular attendance at school or otherwise." [Sect. 36.]

". . . A person who is a registered pupil at a special school shall . . . be deemed to be of compulsory school age until he attains the age of 16 years. . . ." [Sect. 38 (1).]

A child (as above) shall not be withdrawn from the school without the consent of the L.E.A.; but if the parent of the child is aggrieved by their refusal he may refer the question to the Minister, who shall give such direction as he thinks fit. [Sect. 38 (2).]

If the L.E.A. are satisfied that a child "who has attained the age of 2 years is suffering from a disability of mind of such a nature or to such an extent as to make him incapable of receiving education at school" it shall be their duty to issue to the local M.D. authority "a report that the child has been found incapable of receiving education at school." [Sect. 57 (1 and 3).]

A child shall be deemed to be so suffering "not only if the nature and extent of his disability are such as to make him incapable of receiving education, but also if they are such as to make it inexpedient that he should be educated in association with other children either in his own interests or in theirs." [Sect. 57 (4).]

"If the L.E.A. are satisfied that any child in attendance at a school . . . is suffering from a disability of mind of such a nature or to such an extent that he will, in their opinion, require supervision after leaving school" they shall issue to the local M.D. authority, and to the parent of the child, a report that the child may require supervision after leaving school. [Sect. 57 (5).]

MEDICAL CERTIFICATES.

Since in the certification of defectives the medical certificate is the document with which the physician will be chiefly concerned, it is necessary to refer to this.

It is laid down that one of the certificates must, wherever practicable, be signed by the usual medical attendant of the patient. The other must be signed by a practitioner approved for the purpose by the local authority or the Board of Control. Each certifying practitioner must personally examine the defective, separately from the other, not more than seven clear days before the presentation of a petition. The marginal notes must be adhered to, and the certifier must state the facts upon which he has formed his opinion that the person is a defective. He must clearly distinguish between facts observed by himself and facts communicated by others, and he must state the class to which the defective belongs—*i.e.*, idiot, imbecile, feeble-minded, or moral defective. He may utilize facts observed at the time of examination or on some previous occasion—

in the latter case, the date when observed must be mentioned; but no order will be made unless the certificate is founded wholly or in part upon facts observed by the certifier. Certificates cannot be signed by the petitioner or by a relative of the defective, or by the manager, or owner, or regular medical attendant of the institution to which the defective is to be sent; nor by a relation, partner, or assistant of any such person; nor must the two medical signatories be related, or partners, or assistants to each other.

With regard to the " facts observed," the view taken by the Board of Control is as follows: " If a medical practitioner in his examination of a patient discerns ' defect of reasoning power,' ' lack of practical judgment,' ' inattention and wandering,' or other abnormal states, these are undoubtedly ' facts observed '; but to justify the conclusion of mental defectiveness it is desirable that some clear idea of the nature and degree of these abnormalities should be given, and this can often be best conveyed by the mention of actions or statements of the patient illustrating them."

It must be pointed out that the mere statement that a person has a certain " mental age " or " intelligence quotient " is not a fact which in itself justifies certification (or non-certification). The certifier must conform to the definitions given in the Act. His certificate must adduce definite evidence, observed by himself, that the person is unable to manage himself or his affairs, or is in need of care, supervision, and control for his own protection or for the protection of others. The Board, in my opinion quite rightly, refuse to accept certificates based upon a mere statement of the person's intelligence quotient. While, however, the certifier must himself observe and specify the facts denoting mental defect, the fact that the defect was present before the age of eighteen years may be based upon information, which must be stated in the certificate, received from others.

THE CRIMINAL RESPONSIBILITY OF AMENTS.

The Existing Law.

The law of England has long recognized that idiots and persons who, in the words of Mr. Justice Tracey (1723), know what they are doing " no more than an infant, a brute, or a wild beast " should not be held accountable for their actions. It might at first sight appear that a similar immunity is now conferred upon aments in

general, since the Mental Deficiency Acts [Sect. 8 (1)] provide that any defective adult convicted of any criminal offence punishable with penal servitude or imprisonment may be dealt with under the Acts by being sent to an institution for defectives instead of to a penal establishment. It is to be noted, however, that this is only after they have been adjudged guilty; that it does not apply to the crimes of murder and treason felony (which are punishable by death); and that the use of the word *may*, and not *shall*, still leaves the question of the legal punishment of defectives above the grade of idiocy (and possibly severe imbecility) in the hands of the judge, and their criminal responsibility undefined.

Apart from this permission afforded by the M.D. Acts for defectives found guilty of certain offences to be dealt with in the manner above described, the law, in regard to the question of responsibility, takes no special cognizance of mental defect. It recognizes two states of mind, sanity and insanity; it provides that certain conditions of mind shall constitute " insanity " in the legal sense, and shall render a person non-accountable for his actions; but if a mental defective is to be held non-accountable for an offence, he must conform to these conditions, and be adjudged legally " insane." It may be added that every person accused of an offence is presumed to be sane, and that the onus of proving he is insane lies upon the defence.

The conditions held to constitute legal insanity and non-responsibility are not laid down by any statute; they are dependent upon the direction of the judge in each particular case, and such direction has varied considerably from time to time. At present, and for many years past, the rulings of English courts have been based upon the answers of the fifteen judges to the House of Lords in 1843 in regard to one McNaghten, who was indicted for the wilful murder of Mr. Edward Drummond, and who brought forward the defence of " partial insanity." These answers are known as the McNaghten Rules. In brief, they are to the effect that, for an accused person to be held non-responsible on the ground of insanity, it must be proved that, at the time of committing the act, the accused person was labouring under such a defect of reason, from disease of the mind, as not to know the nature and quality of the act he was doing, or, if he did know it, that he did not know he was doing what was wrong.

Although the answers of the judges in 1843 had reference to

insanity, and not to mental defect (indeed, at that time the milder grade of defect now known as feeblemindedness was officially unrecognized), they are nevertheless applied to mental defectives charged with the commission of crime; it is therefore necessary to consider them in regard to these persons. There are two main points which arise—namely, the meaning of the words (1) knowing the nature and quality of the act, and (2) knowing that the act was wrong. The intention of the judges in using, and the meaning to be attached to, the words *nature* and *quality* of the act have been subject to much dispute. Were " nature " and " quality " intended to be merely alternative expressions denoting the physical character of the act, or were they meant to imply two different attributes of it, the one physical and the other consequential or moral? The answer is by no means clear; in my view, the latter is the correct interpretation, as we shall see presently. However this may be, in 1916 an authoritative ruling was given by Lord Chief Justice Reading, in the Court of Criminal Appeal,* and this, whether right or wrong, is at present accepted as the law. Lord Reading said, " The Court is of the opinion that in using the language ' nature and quality ' the judges were only dealing with the physical character of the act and were not intending to distinguish between the physical and moral aspects of the act. . . ."

It follows from this ruling that, so long as the McNaghten Rules are applied to defectives, if a mental defective has sufficient reason to be aware of the merely *physical* character of the act he commits, he is accountable to law. In regard to this I would say that there are few, if any, feeble-minded persons who do not know the *physical* nature of their acts when they do such things as set fire to a hayrick, push a small child into the river, or stick a knife into the throat of a companion; consequently there are very few mental defectives above the grade of idiocy and severe imbecility who can be deemed, on this narrow interpretation and in regard to this qualifying condition, to be non-responsible for their offences.

The second point is whether the defective, when he committed the offence, knew he was doing what was wrong. The answer of the judges in regard to this seems quite clear. It was, that if the accused knew at the time of committing the offence that he was acting contrary to the law of the land, he is punishable. I think it may rightly be contended that many defective persons, owing

* *Codere*, 12 Cr. App., R 21, 1916.

to their imperfect education and small range of general knowledge, do not know that a particular act is contrary to the law of the land. Such persons, if the answer of the judges is strictly adhered to, cannot be held accountable. But Lord Reading, in the judgment previously quoted, laid down a much narrower interpretation. He said " . . . the standard to be applied is whether according to the *ordinary standard adopted by reasonable men* the act was right or wrong . . ." It is to be noted, however, that this referred to a case of alleged insanity and not mental defect.

While in the case of a mentally defective or insane person charged with an offence the directions of the judge are based upon the above rulings, there is one important point to note. This is, that it is left to the jury to decide whether, in fact, the accused person had or had not a sufficient degree of reason to know the nature and quality of the act committed and to know that the act was wrong. Although juries are by no means infallible, this is a considerable safeguard, and it is probable that on the whole, and in practice, it prevents any serious miscarriage of justice. Clearly, however. the decision by the jury regarding this fact will depend very largely upon the evidence, hence the position of the medical witness is an important one.

It must be pointed out that the law does not recognize that disease of mind, by itself, necessarily renders an accused person non-responsible. To do so, the disease must be such as to produce the defect of knowledge of the nature and quality of the act, or of the wrongness of the act, above referred to. The duty of the medical witness, therefore, is to make a full examination of the accused with regard to his mental state, particularly in regard to this state as it affects his knowledge and understanding, and to give his evidence in accordance with his findings. It is then for the jury to decide from this evidence whether such a defect of reason is present as to render the person non-responsible. The medical witness is not called upon to express any opinion as to the responsibility, or otherwise, of the accused, and he should refrain from doing so.

Discussion and Suggested Amendments.

Such is the existing law with regard to the criminal responsibility of defectives. In actual practice, it may be that justice is usually done and that injustice seldom results. I am by no means satisfied,

however, that injustice *never* results; and, since the present administration of the law is based upon opinions expressed as long ago as 1843, when much less was known about psychology than is known to-day, since, moreover, these opinions relate entirely to " partial " insanity, and not to mental defect, it seems desirable to consider whether the conditions which are at present held to constitute non-responsibility are satisfactory in the case of defectives, or whether they are in need of amendment.

The question of the criminal responsibility of persons suffering from mental disease has been a bone of contention between the legal and medical professions for many years. It has been claimed by some medical men that an insane person should, *ipso facto*, be held to be unaccountable for any offence he may commit. This claim seems to me untenable. It is not disputed that a certified lunatic can make a valid will, execute a deed, or enter into a contract in a " lucid interval," if he understands the nature and effect of his act. It logically follows that if he commits a crime of which he understands the nature and effect, he should, subject to certain qualifications to be mentioned presently, not be entitled to claim immunity from punishment on the general ground that he is insane. He cannot have it both ways.

On the other hand, while fully admitting that some conditions governing non-responsibility for crime must be laid down, and that even an insane person should not be held unaccountable unless his insanity is such as to bring about these conditions, I have grave doubt whether the McNaghten Rules as at present interpreted and administered are adequate to ensure that a miscarriage of justice may not occur, particularly in the case of mental defectives. In my view one important amendment needed is in the interpretation of the terms knowing the *nature* and *quality* of the act, and knowing that the act is wrong, and in the directions given to juries on these points.

I do not know on what ground Lord Reading, in 1916, gave it as his opinion that the intention of the fifteen judges, seventy-three years earlier, was to limit the meaning of the words " nature " and " quality " to the physical character of the act. It is clear, however, that the physical character is only one, and the least important, feature of the act. Its consequences, and all that a person of normal and sound mind would expect to follow from its performance, are of far more importance. I am not here concerned to discuss the

degrees of knowledge in non-defectives; but I am quite sure that there are many high-grade defectives who, while knowing the physical nature of their acts, are, by reason of their defective understanding and reason, only partially, or not at all, aware of the consequences which naturally and inevitably follow from them. It seems to me, therefore, quite illogical to restrict the concept of "knowledge" to merely knowing the physical character of the act, and I think the rule, or its interpretation, should be amended accordingly. As was said by Lord Justice Scott, the rule should "include ignorance that the doing of an act will in the natural consequences of events have a certain harmful result."

It is the same with knowing that the act was wrong. Not only do many high-grade defectives, in consequence of their limited range of knowledge, not know that a particular act is contrary to the law of the land, but they do not even know that it is wrong, certainly not *how* wrong it is. The truth of the matter is that the degree of knowledge of both the quality and wrongness of an act is dependent upon the mental development of the individual. This point was clearly appreciated by the eminent judge the late Sir FitzJames Stephen, who, in his "Digest of Criminal Law," writes: "Knowledge has its degree like everything else, and implies something more real and more closely connected with conduct than the half knowledge retained in dreams." As an instance this author quotes the extreme case of the idiot who cut off the head of a man whom he found asleep, remarking that it would be great fun to see him look for it when he woke; and he adds: "Nothing is more probable than that the idiot would know that people in authority would not approve of this, that it was wrong in the sense in which it is wrong in a child not to learn its lesson, and he obviously knew that it was a mischievous trick." It cannot be doubted that the same kind of incomplete knowledge as to *how* wrong an act is exists in the case of many persons suffering from a mild degree of mental deficiency. The high-grade ament at Earlswood Asylum, who has been mentioned as attempting the destruction of an official who had displeased him, undoubtedly knew that in so doing he was doing what was wrong, but I do not for one moment think that he appreciated *how* wrong his act was, or that, had it succeeded, he could justly have been held *fully* accountable for it. The late Dr. Mercier,* commenting on this question, says: "It is a truth on which I have

* C. Mercier, "Criminal Responsibility," 1905.

insisted in season and out of season for many years, that a man may know that his act is wrong without knowing how wrong it is."

It may be added that nowadays no one would think of holding a child fully accountable for criminal acts, and the minds of most defectives are no more developed than are the minds of children. This being so, it seems to me that the McNaghten Rules relating to knowing the nature and quality of the act, and knowing that the act was wrong, should be interpreted as meaning having a full or normal knowledge of the natural consequences and the wrongness of the act, and that juries should be so directed. In the absence of such a degree of knowledge it seems both illogical and inequitable to regard the person as responsible in law.

There is another feature often present in disordered and defective minds which is not recognized by the law as rendering the person irresponsible; that is, *defect of control*. Sir FitzJames Stephen recognized this and considered that an act should not be regarded as a crime if the person doing it was, at the time, prevented from controlling his own conduct, unless the absence of the power of control had been produced by his own default. More recently, Lord Justice Atkin's Committee, appointed in 1922, whilst approving of the McNaghten Rules, considered that they should be supplemented by a clause to the effect that a person charged with a criminal offence should be held irresponsible for his act " where the act was committed under an impulse which the prisoner was, by mental disease, in substance deprived of any power to resist." Although this recommendation has not hitherto been accepted, and judges still direct juries according to the original Rules of 1843, I have no doubt that many crimes are committed by persons as the result of an uncontrollable impulse, and that grave injustice may be, and has been, done by the failure to take cognizance of this fact. Whilst I think that defective control occurs in cases of mental disorder, it is still more frequent in cases of mental deficiency; in which condition the general instability, with incomplete development of understanding, of prevision, and of the higher sentiments, is especially liable to result in an inability to control a sudden instinctive impulse. As we have seen in previous chapters, impulsive behaviour of this kind is characteristic of many mentally unstable aments. It also occurs in epileptics and as a consequence of encephalitis lethargica; whilst moral defectives commit repeated

crimes which no punishment serves to check, which bring them no profit, and which appear to be entirely beyond their power to control.

Fitness to Plead.

The question may arise whether a mental defective, charged with the commission of an offence, is "fit to plead" on arraignment. The conditions which render a person so unfit are, broadly: that his mental state renders him incapable of understanding the difference between a plea of "guilty" and "not guilty"; of challenging a juror; of instructing counsel; of examining witnesses; or of understanding and intelligently following the evidence and proceedings in court. It is clear that these conditions do not necessarily obtain in the case of *all* defectives, or of all persons who are insane. But they are present in all idiots and imbeciles and in many, if not most, defectives of higher grade. If found "unfit to plead" the person is in law "insane," and is sentenced to be detained until His Majesty's pleasure be known. In the case of a defective the Home Secretary may subsequently, if necessary, order his detention in an institution for defectives.

Admissibility as a Witness.

An idiot is inadmissible as a witness, but in the case of an imbecile or feeble-minded person it is for the judge to examine and ascertain whether he is of competent understanding to give evidence, and is aware of the nature and obligation of an oath; if satisfied that he is, the judge will probably allow him to be sworn and examined.

CHAPTER XXII

SOCIOLOGY—THE AMENT AND THE COMMUNITY

THE account which has been given in the preceding pages has mainly related to the characteristics of the mental defective as an individual; in this final chapter it is proposed to consider him in his relation to society, and to discuss the question of mental deficiency as it affects the general community. It is only during comparatively recent years that we have possessed anything approaching adequate knowledge on this matter. Prior to the appointment of the Royal Commission in 1904, we had little information as to the conditions under which defectives were living, and no reliable figures as to their number. The inquiries of this Commission threw a lurid glare upon both these matters, and were the first important modern contribution to the sociology of mental deficiency. In concluding their Report* the commissioners said: "Of the gravity of the present state of things there is no doubt. The mass of facts that we have collected, the statements of our witnesses, and our own personal visits and investigations, compel the conclusion that there are numbers of mentally defective persons whose training is neglected, over whom no sufficient control is exercised, and whose wayward and irresponsible lives are productive of crime and misery, of much injury to themselves and to others, and of much continuous expenditure wasteful to the community and to individual families."

Twenty years after the inquiries made by the Royal Commission, a Departmental Committee† was appointed to consider certain other aspects of the matter. One of the first acts of this committee was to appoint Dr. E. O. Lewis to conduct another personal investigation. Although this only related to a total population of

* Report of Royal Commission on the Feeble-minded, 1908, vol. viii.

† Report of the Mental Deficiency Committee, 1929, H.M. Stationery Office.

622,880, it embraced six specially selected areas which there was every reason to conclude were typical samples of the whole country, and it was conducted with such care and thoroughness over a period of two and a half years that it can be accepted as the most complete investigation which has ever been made in this, if not in any, country.

As a result of these two inquiries, together with the Report of the Sterilization Committee,* the Annual Reports of the Board of Control, and of data furnished by various societies, there is now available a large amount of information as to the number and condition of the mental defectives in this country. This will be utilized in the present chapter. I shall first refer to the chief facts which have been ascertained and then discuss their sociological significance.

Number.

The first important point is the number of aments in existence. As was shown in Chapter II., whilst the Royal Commission estimated that in 1906 the ratio to the total population was 4·6 per 1,000, Dr. Lewis estimated that in 1926 this ratio was at least 8 per 1,000 population, corresponding to a total of 314,000 defectives in England and Wales. The validity of this estimate has been questioned. It has, however, since been shown that in areas where official " ascertainment " has been actively carried out by the local authorities, the results have approximated closely to this estimate; in fact, in five counties and two county boroughs they have actually exceeded it. In my opinion the estimate is a conservative one, and I think that were all the defectives in existence known, it would probably be found that they amounted to not less than 1 per cent. of the total population of the country. As previously mentioned, it is not to be assumed from these figures that the ratio of mental defectives was almost doubled between 1906 and 1926. A considerable amount of the increase can be accounted for in various ways, but I do not think it can be doubted that some increase has taken place, both absolutely and relatively.

Fertility.

The next important point, and one which arises out of the foregoing, is that of the fertility of defectives, and of the families and

* H.M. Stationery Office, Cmd. 4485, 1934.

stocks from which they come. It is necessary to consider these separately.

Fertility of Defectives.—With regard to propagation by defectives, the investigations of the Royal Commission revealed that a large number of feeble-minded women had given birth to children. In a few instances only one child had been born; but this was exceptional; more often there were three or four, and sometimes five or six. Dr. W. A. Potts ascertained that in one area 16 mentally defective women had produced a total of no less than 116 children. The result of the inquiries was to afford clear evidence that at the close of the last century the number of children who were being produced by feeble-minded women amounted to a considerable total.

Dr. Lewis did not specially inquire into this point, although he gives some particulars which show that propagation by defectives was still taking place in 1926. It was also shown by Miss Ruth Darwin, a commissioner of the Board of Control, that of 15,733 defectives under statutory supervision on January 1, 1926, 195 of the adults had married, 252 had contracted immoral relations or perverted sexual habits, and 275 children had been born to married or unmarried defectives. I think there is no doubt, however, that there has been a decided decrease in the propagation by defectives since 1900, and this has caused some persons, whose experience of mental defectives is of recent date, to regard their fertility as mythical. Unfortunately, from time to time cases are brought to light which show that such propagation is still going on with serious results, and, as an instance of this, I may quote the following, doubtless somewhat exceptional, instance which was reported by the National Society for the Prevention of Cruelty to Children:*

"*Case No.* 794 *M.*—Father born 1880; mother born 1883. The paternal grandfather was feeble-minded; two great-uncles were certified insane, and a maternal uncle was epileptic. This woman has given birth to the following:

1. Daughter. } Both illegitimate and both died of convulsions
2. Son. } in infancy.
3. Daughter. Certified M.D. in an institution.
4. Son. Certified as imbecile; died age 11.

* Report of the Departmental Committee on Sterilization, 1934, Appendix, p. 87.

5. Son. Certified M.D. in an institution.
6. Daughter. Certified as imbecile.
7. Daughter. Died age 11 months.
8. Son. Certified as imbecile.
9. Daughter. In service.
10. Son. Died in infancy.
11. Daughter. At school, but very low mentality.
12. Son. At school and of average intelligence.
13. Daughter. In M.D. institution; age 9 years.
14. Daughter. In M.D. institution; age 8 years.
15. Son. Recently admitted to M.D. institution; age 5 years.
16. Daughter; age 4 years.
17. Daughter; age 1 year."

Fertility of Psychopathic Families.—By psychopathic families is meant those families in which there is an abnormal incidence of mental defect, mental disorder, and intellectual dulness. It is obvious that such can do nothing to advance, and may do much to impede, the prosperity and social progress of the nation, for there is evidence that they are the stocks from which the bulk of the mentally abnormal and socially incompetent are recruited. The question of their relative fertility is therefore an important one.

Some inquiries which I made on this subject in 1900 showed that, while the average number of births to a marriage in England and Wales was 4·63, the average number in markedly psychopathic families was 7·3. At the time, these figures were either unnoticed or received with some scepticism; but their accuracy has since been amply demonstrated by other independent inquiries.

Dr. Ettie Sayer* made an inquiry into this and other points regarding mentally defective children attending the special schools in London. The inquiry lasted two years (1904-1906), and in order to avoid selection the name of every seventh child in the school registers was taken, and the family history followed up, the same process being adopted in a normal school. It was found that in 100 normal families there was a total of 506 children and 23 miscarriages, 387 of the children being still alive. On the other hand, in the families from which the 100 mentally defective children came there was a total of 761 children born, 101 miscarriages, and 467 children living.

* Ettie Sayer, *Eugenics Review*, July, 1913, p. 162.

More recently, Professor C. Burt* made an investigation concerning this point in the families of London school children. He found that in those from which the supernormal children were drawn (scholarship winners, Central School children, and the like), the average number of children in the family was only 2·8; whereas in the families from which the dullards and defectives came the average number of children was 5·4, or nearly twice as many.

Mr. Caradog Jones, in the Merseyside Survey,† made a comparison between the number of children born in normal working-class families and those in families containing one or more ascertained mental defectives. He found that in a sample of 4,379 normal families the mean number of children born was 3·92, of whom 2·97 had survived. On the other hand, in a sample of 1,115 defective families there were 7·16 children born per family, of whom 4·69 had survived. Dr. Shrubsall in London and Dr. Newth in Nottingham have also ascertained that there are more children born in the families from which defectives come than in those where the children are of normal, or supernormal, intelligence.

It may be added that not only are psychopathic stocks contributing an undue proportion of children to the population, but this is also the case with regard to the least intelligent members of the community. This has been clearly shown by Dr. J. A. Fraser Roberts,‡ of the Burden Mental Research Trust. Dr. Roberts made a very careful and detailed investigation of 3,305 children, of all social classes, having their homes in the city of Bath, who were born between two given dates. A comparison of their grade of intelligence, as ascertained by mental tests, with the size of the family, showed that the number of children increased steadily as intelligence fell, and that the number of children produced by the dullest group was approximately three times as great as that produced by the brightest people. He concludes that " the four most intelligent people in every 100 will be replaced by three only in the next generation, while the four dullest will be replaced by five." Dr. Roberts confirms the observation that the mothers of the dullest children not only commence their reproductive life much earlier, but continue it longer, than do mothers of the bright group of children.

* Cyril Burt, " The Subnormal Mind," 1935.

† *Cf.* Report of the Sterilization Committee, 1934.

‡ J. A. Fraser Roberts, *Annals of Eugenics*, vol. viii., 1938; also *Eugenics Review*, vol. xxx., 1938.

Condition of Offspring of Defectives and Psychopaths.

It is clear from the above inquiries that the fertility of families in which there are defectives or a marked psychopathic tendency is definitely greater than that of families showing no such tendency. Or, to put it in other words, that psychopathic stocks are contributing proportionately more to the next generation than are non-psychopathic. The question naturally arises, What is the condition of their offspring? Are they up to the normal standard, or do they show any evidence of inferiority? Here again it is necessary to distinguish between the progeny of those parents who are, and of those who are not, themselves defective.

In 1906 I inquired into the condition of the offspring produced by 61 feeble-minded women, 19 of whom were married and 42 unmarried. Up to the time of my inquiry the 19 married had given birth to 80 children. Of these, 16 had died in infancy, 19 were mentally defective, 20 were very delicate physically or were dullards, and 8 were too young to be examined. There were only 17 of the total 80 (or 25 if we include the unassessed) who were up to the average physical and mental standards. The particulars ascertainable regarding the illegitimate children were less complete. The 42 mothers had produced 78 children. Of these 24 had died in infancy, 5 were mentally defective, 2 were dullards, 2 appeared to be normal, and the remaining 45 could not be traced.

In the chapter on Ætiology I have given some more recent and extensive figures, which were obtained by the Departmental Committee on Sterilization, regarding 8,841 children born of 3,733 defective parents. Of this number 22·5 per cent. had died, and 45·4 per cent. of those living over the age of thirteen years were either mental defectives or dullards. I have also referred to figures obtained by investigators in other countries which show the same unsatisfactory condition of the progeny of defectives.

With regard to the offspring of psychopathic families, but where the parents are not defective, there is less detailed information. In 1900 I investigated the condition of the siblings of 150 aments born in such families. Their total number (including the defective patients) was 1,269, or an average of 8·4 children per family. (The average number of births per marriage in England and Wales at that time was 4·63.) Of this 1,269 there were only 456 who were claimed by the parents to be healthy in body and mind; 485 had

died, most of them under three years of age; 245 were defective or otherwise mentally abnormal; and 83 were either physical weaklings, chronic paupers, or criminals.

Reference may also be made to some facts ascertained by Dr. Lewis in the course of his investigations. Lewis states that his inquiries into this aspect of the question were really only a subsidiary matter and were most incomplete; had there been time and facilities, there is no doubt that many more relatives suffering from some form of mental abnormality would have been discovered in the families of defectives; but even so, he found that out of 966 defectives discovered in one particular area, there were 137 families in which there was more than one defective. These 137 families had between them a total of 384 defectives, most of them siblings, the number per family ranging from 2 to 9, as shown in the following table:

Number of aments in family ..	2	3	4	5	6	7	8	9
Number of families	74	38	13	7	3	0	1	1

Dr. Lewis states: " There were ten cases in which husband and wife were both mentally defective. In addition, there were 260 cases of relatives, either aunts, uncles, cousins, nephews, or nieces recorded as mentally defective." It was also found that in 88 families containing one or more mentally defective persons there was a definite history of insanity. Dr. Lewis came to the conclusion that " even these meagre summaries are enough to make it quite evident that mental deficiency is to a great extent a family problem, and that it is not infrequently associated with insanity."

Illegitimacy.

The subject of fertility naturally leads to that of illegitimacy, and it is necessary to give some details regarding this. I shall first refer to data ascertained by the Royal Commission of 1904.

As a result of inquiries made in the years 1902-1904 of the Magdalen Homes in England, to which 100 homes sent replies, it was found " that 14,725 inmates had passed through the homes in that period, and that of these 2,521, or about 16 per cent., were returned

as feeble-minded. Of this number, 588, or 25 per cent., had one illegitimate child, and 198, or 8 per cent., were known to have had more than one, making a total of 786, or 33 per cent., mothers of illegitimate children among the feeble-minded inmates."* But there is every reason to think that these figures were below the actual number, owing to the absence of direct medical evidence regarding the mental condition of the inmates; and Dr. Potts said that of 100 consecutive cases admitted into the Magdalen Home at Birmingham, 26 were feeble-minded, 7 were cases of moral insanity, 1 was epileptic, 1 was lunatic, and 1 was deaf and dumb. Returns obtained by the Preventive Committee of the National Vigilance Society, as a result of special inquiries of 203 Boards of Guardians, showed that, during the year 1889, 715 weak-minded women passed through 105 workhouses; and that the total number of such women who were leading immoral lives (gathered from 56 workhouses) was 366. I had the opportunity of examining practically every woman admitted to a rescue home during the five years 1909-1913 and found that at least 40 per cent. were defectives.

It should be noted that the above figures relate to conditions which existed at the end of the last and beginning of this century, and since then matters have certainly improved. Nevertheless, Dr. Lewis found in 1926 that 196 mentally defective women in an area of the Eastern Counties had given birth to a total of 118 illegitimate children. He estimated that the birth rate of illegitimate children by defective women in this area was approximately five times greater than the illegitimate birth rate by non-defective women. He also considered that about 6 per cent. of the total defectives ascertained were illegitimate.

Venereal Disease.

From the description which has been given of the characteristics of feeble-minded young women, it is clear that many of them possess tendencies which will result in their readily contracting and spreading venereal disease, should the opportunity occur. For whereas the normal girl, if properly instructed, is able to realize and take precautions against the dangers which may result from illicit sexual intercourse, these defectives are not. Whereas the normal girl is usually able to resist more or less chance solicitation,

* Report of Royal Commission on the Feeble-minded, vol. viii., p. 175.

the defective is not; and, in addition, she often has pronounced erotic tendencies. And whereas the normal girl who has happened to contract venereal disease has usually (unless she is a professional prostitute) learned such a lesson that she is not likely to repeat the offence, these defectives are lacking in the capacity to profit by such an experience. Their very defect renders them oblivious to the risk they may run in yielding to suggestion, indifferent to, and unashamed of, the state they are in, unconscious of the effect it may have upon their health and of the need for seeking treatment, and undeterred from yielding to subsequent solicitation.

There is no doubt that opportunities for the sexual intercourse of female aments were greatly increased by certain conditions created by the war of 1914. On the one hand, many feeble-minded girls were enabled to secure employment where before they had difficulty in doing so. This employment made them independent of their parents, and resulted in increased liberty and a marked lessening of any oversight to which they were formerly subject. Even the feeble-minded domestic servant had her night out, and those who were employed in munition works or on the land were subject to practically no supervision at all. Further, during the war the country was flooded with young men who for the most part were away from their families and the ties of home. Large numbers of these were either employed in munition factories or were aggregated in vast military camps, in either event being free in the evenings to seek their pleasure in the country lanes or the nearest town.

Knowing these conditions, it was naturally to be expected that not only would these defectives have greater opportunities for sexual intercourse, but that, in view of their defect, they would be likely to play a considerably greater part in the dissemination of venereal disease than would normal girls. Actual figures on any extensive scale were practically impossible to obtain; but my general experience, supplemented by some inquiries made elsewhere, fully corroborated these *a priori* conclusions. During the years 1916-18 I noticed that in the mentally deficient girls coming into a rescue home venereal disease was much more common. In many instances I ascertained that this was of some weeks' duration, and that during this time these girls had been engaging in promiscuous sexual intercourse. In order to obtain further evidence I communicated with the medical officers of the Lambeth Infirmary and

the Lock Hospital. Dr. George F. Stebbing, of the former, who had taken a great interest in the question, told me that a large number of girls were treated in the infirmary for venereal disease, and that, in his opinion, it was within the mark to say that more than one-third showed recognizable mental defect. He did not think there was any doubt that I was correct in considering that the incidence of these diseases was decidedly greater in the mentally defective than in the normal population. Dr. Stebbing further told me that he had seen several cases which had returned more than once with reinfection, often bearing more than one illegitimate child. Dr. Murphy, of the Lock Hospital, gave it as his opinion that at least 50 per cent. of the cases passing through the hospital were mentally deficient, although the number actually certified as such was very small.

It must, of course, be remembered that the above particulars relate to a period before the operation of the Mental Deficiency Act, and when the conditions were exceptional. Since then there has been a considerable improvement; but I have thought it desirable to refer to them in order to show the dangers which may exist in the community for the female defective if she is not under proper supervision.

Crime.

A description of the delinquent ament has been given in a previous chapter. In this place it is only necessary to add some details from the sociological aspect. I shall first quote some particulars (most of which were ascertained by the Royal Commission) which show the relationship between mental deficiency and crime as it existed in the first decade of this century. It is important to realize that at that time the ament who fell into criminal ways was seldom guilty of a single offence. On the contrary, the average number of convictions per person was considerable, and I had knowledge of many aments who had served scores, and some even hundreds, of sentences.

In giving evidence on this point before the Royal Commission, Dr. Smalley said: " Against 130 out of 333 weak-minded prisoners who were unfit for ordinary penal discipline by reason of mental deficiency, no previous conviction had been recorded; but for this absence of record their nomadic habits might in part account. Against fifty-six 1 conviction had been recorded, against twenty-

eight 2; the remainder varied from 4 to 105 convictions. About half had been convicted from 5 to 10 times. . . . The bulk of them become habitual criminals. Their tendency to recidivism is strongly marked, and it would seem, from a consideration of individual cases, to be almost an invariable rule for persons of this type who have once manifested criminal inclinations to become prison habitués, and steadily to deteriorate morally and intellectually under the present régime." Dr. Hamblin Smith,* Medical Officer of Stafford Prison, as the result of a special inquiry into 100 mentally defective prisoners, found that the 100 had a combined record of 1,104 convictions, or an average of 11 per prisoner, and this number was regarded as being below the actual truth. Ten of the prisoners had over 30 previous convictions. Dr. W. R. Dawson† found that in the two prisons in Dublin 12·21 per cent. of the inmates were defectives. The average number of previous convictions for the male defectives was 17·76, and 15 of them had over 50 convictions each. The average number of previous convictions for the females was 44·13. Many of then ran into hundreds and one defective was in prison for the two hundred and thirty-sixth time; and she was only twenty-nine years old.

Most of the offences committed by these persons were of a minor character; at the same time, the number of serious crimes amounted to no inconsiderable total. Their nature, in order of frequency, was as follows: Drunkenness, vagrancy, begging, larceny and housebreaking, prostitution, neglect of children, indecent assaults, common assaults, arson, suicide, and homicide. The returns of 111 weak-minded convicts at Parkhurst revealed, amongst others, 13 instances of attempting to murder, 10 of carnal knowledge of girls under thirteen years of age, 9 of murder, 5 of manslaughter, and 3 of rape.

It is necessary to emphasize that the foregoing particulars relate to the conditions as they existed at the beginning of this century. Further, that the criminality, which was then such a pronounced feature of a considerable proportion of defectives, was not due to the presence of any special criminal propensities, but to the absence of any means for the proper training and care of defectives, and to serious faults in our penal system. We were then doing our best

* M. Hamblin Smith, "Notes on 100 Mentally Defective Prisoners," *Journal of Mental Science*, April, 1913, p. 326.

† W. R. Dawson, *Journal of Mental Science*, July, 1910, p. 466.

to manufacture criminals. Since then it is unquestionable that an improvement has taken place. The Mental Deficiency Act has made it possible to train and supervise defectives; it has also permitted Courts of Justice to treat such defectives as come before them as patients rather than as criminals. Nevertheless, there is ample evidence that the amount of crime committed by defectives is still considerable. It is estimated that half the delinquent children sent to Home Office schools are either definitely defective or intellectually subnormal, and the same is true of several of the Borstal institutions.*

Employability and Employment.

One of the most important matters affecting the status of a nation is that of the capacity for employment of its citizens. If a section exists which, by reason of inefficiency in this respect, has to be maintained by the rest of the community, the financial status of that community must be impaired. Should this non-productive section be at all considerable, the burden upon the community may be so great as not only seriously to interfere with its social and cultural progress, but to bring it to the verge of bankruptcy. It is therefore necessary to consider mental defectives from this aspect. We may at once dismiss the idiots and imbeciles, for, although the latter may be occupied in certain simple routine tasks, their financial value is practically nil. But the feeble-minded, who are three times as numerous, are capable of useful work, indeed they have been defined as being " able to earn their living under favourable circumstances " ; we may therefore ask: To what extent do the circumstances which now obtain admit of this ?

In a previous chapter I have quoted some figures relating to the after-careers of inmates of the Birmingham special schools. These show that approximately one-third of the total number were engaged in some kind of remunerative work. It is likely, however, that the great bulk of these were not social but merely educational defectives, and it is probable that Dr. Lewis's investigation provides the best available information regarding the former group —that is, defectives of all grades certifiable under the Mental Deficiency Acts.

* *Cf.* Lady Inskip, " The Juvenile Offender and the State," *The Magistrate*, November, 1945.

The figures ascertained by Dr. Lewis are of much interest, in that he took pains to assess the employability of the defectives ascertained in the course of his inquiry. His conclusions are as follows: 34·1 per cent. were considered to be capable of engaging in such skilled operations as shoe making and repairing, tailoring and dressmaking, french polishing, weaving, domestic service, ploughing and dairy work; all these were of the feeble-minded grade. Another 30·7 per cent. were considered to be capable of engaging in semi-skilled work, chiefly the simpler processes in various trades; practically all these also were feeble-minded. Another 18·0 per cent. were considered capable of employment in unskilled work, such as loading and unloading carts, rough work in the laundry, etc.; the majority of these were high-grade imbeciles. Another 9·5 per cent. were considered capable of such simple mechanical work as scrubbing and polishing floors, etc., and 7·7 per cent. were regarded as unemployable. It is necessary to point out that these figures related to what Dr. Lewis considered would be the employability of defectives when placed in suitable colonies or institutions where they could receive the necessary training and supervision, and not to their employability in the general community, where they would be under less supervision and have to compete with normal persons. His inquiries showed that of those living at home actually only 9·4 per cent. were "almost self-supporting," their earnings being about 15s. or more per week; 48·3 per cent. were "contributing a little" towards their keep, the majority only a few shillings weekly; whilst the remaining 42·3 per cent. contributed nothing.

It is clear from the foregoing figures that a large proportion of defectives—indeed the majority of those of the feeble-minded grade—are capable of performing various kinds of useful and remunerative work, provided they can be supplied with work suited to their capacity, and are adequately supervised. This has been amply demonstrated by the few institutions and colonies in this and other countries which have been established on modern lines under the control of an efficient and energetic staff. There is no doubt that under such conditions many defectives are now leading contented, happy, harmless, and industrious lives. It is equally clear, however, that if defectives, even those of mild grade, are not suitably trained and supervised, but are left to shift for themselves in the outside world, they have little chance of retaining or even

obtaining employment and of competing with their normal fellows in the labour market. To some extent their chances of getting work are dependent upon industrial conditions. When trade is good and the demand for labour great, many feeble-minded persons, both male and female, manage to secure some kind of semi- or un-skilled employment in which they can earn enough to pay for their keep.

Thus, during the war of 1914-18 there was a very considerable increase in the number of defectives employed. The same has happened during the recent war. Many high-grade defectives were called up for service in the Forces and a number of them proved useful in labour and non-combatant corps. Another considerable number were satisfactory workers in factories making war equipment and in various forms of civilian employment. Although there have naturally been some failures, the majority of these high-grade defectives have proved themselves capable of working at the same pressure, for the same hours, and of holding their own with their normal companions. Some of them have earned as much as £4 or £5 per week. There is now, therefore, abundant evidence that many of the milder defectives who have been stabilized and trained in institutions are capable of playing a useful part when given work suited to their capacity and provided with adequate supervision.

On the other hand, it is to be remembered that when trade is bad these persons are usually the first to be discharged. There is no doubt, moreover, that although there are many routine processes and stereotyped forms of work in which defectives may be usefully employed in the community, many employers, in both town and country, are reluctant to engage them. This is doubtless due to the extra supervision they need, and possibly also to their greater proneness to accidents owing to their lack of common sense. To some extent also, Workmen's Compensation, Employers' Liability, and National Health Insurance Acts have contributed to this. With increasing industrial competition there is an ever-increasing demand for efficiency, and in some factories employers require applicants to pass a test before engaging them. It seems clear that when labour becomes plentiful, unless some definite system is adopted to provide these high-grade defectives with suitable trade training, many of them will find it very difficult to obtain suitable employment. An important, and so far successful, step in this

direction has been made by the establishment of a number of agricultural and industrial hostels in connection with farms and factories.*

Pauperism.

The inevitable result of the lack of adequate training and supervision is to cause large numbers of defectives to become chargeable to public funds. Thus, the investigations of the Royal Commission showed that in 1906 no less than 67·8 per cent. of feeble-minded, 52 per cent. of imbeciles, and 54 per cent. of idiots, were maintained partly or entirely at the public expense, being either resident in public institutions and charitable homes or in receipt of poor-law relief. The figures ascertained by Dr. Lewis in 1926 showed that of all the adult defectives in the areas examined, 56 per cent. were supported entirely or partially by public funds. It is thus evident that the conditions in 1926 were but little better than they had been twenty years previously.

I think it is likely that, whatever training they may receive, a large proportion of the defectives in the country will be, to some extent or other, a financial burden upon the community. In a proportion of cases this may be comparatively light, and no more than the expense involved in adequately supervising them. In others it will be greater, since it will have to cover the whole, or part, of the cost of their maintenance. But it is clear that in proportion as they are trained and employed in remunerative or useful work the less will be their cost, and at the present time many defectives are being kept in circumstances which entail a maximum of expense to the State and a minimum of happiness and comfort to the individual. This brings us to the next point to which it is necessary to allude.

Aments under Unsuitable and Inadequate Care.

Children.—It was estimated by Lewis that in 1926 there were in the country 23,250 feeble-minded children between the ages of seven and sixteen years whose condition or circumstances were such that they could not be educated in day schools, and for whom residential school accommodation was needed. Such residential

* *Cf.* Report of National Council for Mental Health, 1944; also *Mental Health*, 1946.

accommodation exists for only about 2,000 persons. There were also 17,297 imbecile and idiot children in the country in need of colony or institutional care. A proportion of these were in poor-law institutions or mental hospitals, but the great majority were not provided for. Lewis considered that there were a further 13,610 idiot and imbecile children who could be left in the general community if properly safeguarded. The above figures are in addition to the feeble-minded children in need of special education in *day* schools and classes, for whom the present provision is quite inadequate, and the majority of whom are either in the elementary schools or receiving no education at all.

Adults.—With regard to adult defectives, it was estimated that there were 84,000 for whom institutional accommodation of one kind or another was necessary. Probably about one-quarter (21,000) of these were already in mental hospitals. Of this number 6,000 were either in an acute psychotic condition or so difficult to control that this was the only form of care possible; but the remaining 15,000 could be transferred to colonies or simpler institutions under the Mental Deficiency Acts, were such in existence. Of the total number of adult defectives who were in institutions, it was found that only 24 per cent. were being dealt with under the Mental Deficiency Acts; 40 per cent. were in poor-law institutions and maintained by the poor-law authority; 32 per cent. were in mental hospitals; and 4 per cent. were in various other institutions. It was considered that in addition to those above mentioned there were between 60,000 and 70,000 adult defectives who could remain in the general community, provided they were under proper supervision. It is thus seen that in 1926 there were 17,297 imbecile and idiot children, and 84,000 adult defectives, in need of institutional care, and another 60,000 or more in need of non-institutional provision—a total of at least 163,000.

It is necessary to add a few words regarding defectives in mental hospitals and poor-law, or as they are now called, public assistance institutions. With the exception of those suffering from a superadded psychosis, or addicted to behaviour needing special control, defectives are quite out of place in a mental hospital. They are kept there at great expense, they receive no proper training, and they seriously interfere with the proper function of these hospitals in the treatment of the mentally disordered.

The condition of defectives in public assistance institutions is

very little better. There is practically no attempt to employ them to any economic advantage, although a few of these establishments, it is true, do provide some form of training and employment in such occupations as boot, mat, and rope making, etc. But these are exceptional, and in most of these institutions throughout the country the feeble-minded inmates, beyond doing a little of the domestic work, such as coal carrying, wood chopping, scrubbing and laundry work, pass their time in idle loafing. The contrast between the dreary, monotonous, and, for the most part, useless existence of defectives in these establishments and the happy, corporate, and busy lives of those in a modern colony is so great that it can hardly be realized by those who have not actually witnessed it. It should be noted that the presence of defectives in workhouses is not due to any attempt to provide for them as defectives; it is merely the consequence of a policy of *laissez-faire*. They are admitted because of their pauperism, and because of the inevitable tendency of the ament who is without adequate training and supervision to drift out of life's stream into the nearest backwater. Defectives in these situations are in reality outside, and debarred from, the advantages and safeguards of the Mental Deficiency Acts. Under the Local Government Act of 1929, Public Assistance Committees are permitted, but not required, to transfer their obligations regarding pauper defectives to the Mental Deficiency Committee. It is satisfactory to find that a number of authorities have done this, to the great advantage of the defectives, and, I think, also of the community.

Conditions of Living.

The foregoing account of the number of aments under unsuitable care may be supplemented by some particulars as to the conditions under which many of them were living in 1926. The inquiries of the Royal Commission showed that in 1906 these conditions were in many instances appalling. In the case of some which I investigated myself they were almost too revolting for publication. Twenty years later there was but little improvement, as is shown by the following cases which I have extracted verbatim from Lewis's report:

" At one of the schools two feeble-minded sisters, aged eight and six respectively, both very badly dressed, much flea-bitten, and ill-

nourished, were brought to our notice; and the head master said they had a mentally defective brother at home who was very troublesome. We visited the home about midday; it was a two-roomed cottage, one of the most destitute and filthy we have ever seen. The lad, aged ten, whom we had called to see, was found asleep on what served as the bed for the family of six, the parents and four children. The father, who depended on casual work at the farms, was that day at home unemployed. He said that the boy had been very troublesome the previous night, and proceeded to show me some of the results of his son's activities during the last few weeks: broken windows, doors, and furniture; a large hole in the partition-wall between the two rooms; and two fire-grates pulled to pieces. The lad was a case of encephalitis lethargica of two years' standing; but fairly conclusive evidence was obtained that the boy had always been feeble-minded. We reported the case to the Medical Officer of the Local Mental Deficiency Authority, and the boy was immediately removed to a Poor Law Institution as a place of safety; but he proved so destructive and troublesome that the master requested his removal as soon as possible to a more suitable institution. Both father and mother were, in our opinion feeble-minded, the mother being the lower grade of the two. At the time of our visit she was nursing a child nearly three years of age who had not begun to walk or talk. The family had been in the district a few months only, and apparently had been moving from place to place during the last ten or twelve years. This made it most difficult to obtain reliable history, but the Medical Officer ultimately discovered that the feeble-minded parents of these mentally defective children were brother and sister."

"Another bad case was that of an unmarried feeble-minded woman, aged thirty-eight, who was allowed to live in a country cottage that had been discarded as unfit by the preceding occupants, and had been uninhabited for some years. So many complaints had been made of the filthy condition of the home and children that the mother was most unwilling to allow anyone into the house. Living with this feeble-minded woman was a low-grade imbecile sister, aged thirty, whose condition at the time of our visit was verminous. There were also five children in the house, of ages ranging from two to eleven. Three of these we had seen at school and all three were feeble-minded. The head teacher complained of their dirty condition, and said it was impossible to allow them to

sit with the other children. The feeble-minded woman admitted that three of the five children were her own, but said that the other two were the illegitimate children of her sister, who lived in a neighbouring town. We found that this was not true, because the two illegitimate children of her sister (who was also feeble-minded) were seen later at a Poor Law Institution; and there was little doubt that all five were her own illegitimate children. We were given to understand that the Poor Law Authority had refused for some time to contribute towards the upkeep of this family; but in some way or other the mother was able to get a certain amount of food and clothing for herself, her sister, and the children."

That the above cases were by no means uncommon examples of the conditions then prevailing is evidenced by many similar ones reported in the memorandum furnished by the N.S.P.C.C. to the Departmental Committee on Sterilization, and which will be found in Appendix II. of the Committee's Report.

The "Social Problem" Group.

Attention has been drawn on several previous occasions to the occurrence in the families from which defectives come of other forms of mental abnormality and social inefficiency. The family nature of these conditions is one of considerable sociological importance and it is of no little interest to note the views expressed by the Departmental Mental Deficiency Committee on the matter. They say:* "Mental defectives are of course found in all races and in all classes of society, among the wealthy as well as among the poor, but in any community a large number of them will be found in a restricted group of families. Let us assume that we could segregate as a separate community all the families in this country containing mental defectives of the primary amentia type. We should find that we had collected among them a most interesting social group. It would include, as everyone who has extensive practical experience of social service would readily admit, a much larger proportion of insane persons, epileptics, paupers, criminals (especially recidivists), unemployables, habitual slum dwellers, prostitutes, inebriates, and other social inefficients, than would a group of families not containing mental defectives. The overwhelming majority of the families thus collected will belong to that section

* Report of the Mental Deficiency Committee, 1929, Part III., par. 91.

of the community which we propose to term the " social problem " or " subnormal " group. This group comprises approximately the lowest 10 per cent. in the social scale of most communities. Though the large majority of its members are not so low-grade mentally that they can be actually certified as mentally defective, it is possible that a not inconsiderable number of them might prove, if examined by expert and experienced medical practitioners, to be certifiable and subject to be placed under care and control."

It may be added that these findings as to the concentration of mental defect, insanity, dulness, unemployability and general social inefficiency in certain families, also the relatively greater fertility of these families, have been confirmed by the inquiries of Mr. E. J. Lidbetter.* This investigator has collected a large number of family histories which are of great value and interest, particularly in regard to the " social problem " group. He considers that one of the chief characteristics of this group is the absence of family or social responsibility, and he attributes the higher fertility rate of these stocks to this characteristic. Lidbetter is of the opinion that their fertility-rate is probably higher than that of any other section of the community.

It is of interest in this connection to quote from a Report published in 1943† relating to the evacuation of children from bombed areas. The Report says: " The effect of evacuation was to flood the dark places with light and bring home to the national consciousness that the ' submerged tenth ' described by Charles Booth still exists in our towns like a hidden sore, poor, dirty, crude in its habits, and an intolerable and degrading burden to decent people forced by poverty to neighbour it. Within this group are the ' problem families,' always on the edge of pauperism and crime, riddled with mental and physical defect, in and out of the courts for child neglect, a menace to the community, of which the gravity is out of all proportion to their numbers."

On this subject reference may also be made to some figures from the U.S.A., ascertained by L. Kanner.‡ This observer tried to trace the subsequent history of 166 mental defectives (15 male, 151 female) who had been released from a State institution on a writ of *habeas corpus* against the judgment of the doctors in charge.

* E. J. Lidbetter, *Heredity and the Social Problem Group*, vol. i., 1933.

† " Our Towns: A Close-up," Oxford University Press, 1943.

‡ L. Kanner, *Amer. Journ. Psychiatry*, xciv., 1938.

A total of 102 were traced from the date of their release to the time of investigation. Of these: 13 had made a satisfactory adjustment to ordinary life; 11 were dead; 17 were sent back to the institution because during their period of freedom they had committed offences against society or were otherwise obviously in need of care; 17 had acquired tuberculosis, syphilis or gonorrhœa; 8 were committed to mental hospitals; 29 became prostitutes; 6 served prison terms of more than three months' duration; and 51 got married. These latter had produced 165 children, of whom 33 were illegitimate, 18 died, 30 were placed in orphanages or foster homes, and no less than 108 were incontestably feeble-minded.

The Present Position.

I have now given the chief facts of sociological importance which have been ascertained by two official inquiries with an interval of twenty years between them. It will be seen that, although the conditions in 1926 were still very far from satisfactory, they were in some respects better than those obtaining in 1906. While in 1926 many defectives were still living in circumstances which were wasteful of public money, a menace to society, and, I do not think it any exaggeration to say, a disgrace to a civilized nation, yet the number of these was certainly less than it had been a generation previously. There had also been a decline in the number of defectives charged with criminal offences, and a diminution of vagrancy, inebriety, and venereal disease among them. I am of the opinion that between 1926 and 1939 there was a still further improvement in these directions. Figures later than this are not available.

There is no doubt that these results are largely due to the administration of the Mental Deficiency Acts. The first, and principal, Act was passed in 1913; but its operation was necessarily in abeyance for a number of years owing to the war. Since then, however, the Acts have been administered with increasing vigour and, although there is still much leeway to be made up, it can be said that the bulk of the defectives of the country are now better supervised and cared for than they have been at any previous time. This is evident from the following figures, which are extracted from the Annual Reports of the Board of Control.

In 1920 the total number of defectives under the various forms

of care provided by the Mental Deficiency Acts was only 12,026; whereas in 1926 and 1939 it was as follows:*

	January 1, 1926.	*January* 1, 1939.
In institutions, houses, and homes	20,297	46,054
Under guardianship or notified	785	43,850
Under statutory supervision	15,733	
Total	36,815	89,904

It is seen from these figures that between the years 1926 and 1939 the number of defectives under some kind of official care had increased by approximately 150 per cent. This increase includes a large proportion of cases coming under the category of "urgent," and I think that were a similar inquiry to that made by Dr. Lewis in 1926 to be carried out to-day, it would be found that a further improvement had been brought about in the condition of defectives and their relations to society. Whether this has been attended with any lessening of their financial cost to the State it is impossible to say, for the reason that, prior to the Mental Deficiency Acts, this cost was spread over so many different headings that no estimate of its total amount can be made. But it is probable that the bulk of the defectives of the country will always be a charge upon the public, and that the most which can be expected is that their training and adequate oversight will lessen many of the social evils which formerly attached to their presence, and, by increasing their capacity for useful employment, will diminish in some measure the cost of their maintenance.

That this is actually being achieved, and that the lot of many defectives is now far happier, is shown, I think, not only by the increased number for whom provision is now made, but also by the important changes which have taken place in the nature of this provision, particularly in the character and objectives of the certified institutions. In former days, although many of the better institutions by no means neglected the training and recreation of their inmates, their chief function was custodial. Their object now is to train, stabilize, and socialize defectives so as to fit as many as possible of them for remunerative work in the general community. To this end there has not only been a great advance in the pro-

* Twenty-fifth Annual Report of the Board of Control, 1939, H.M. Stationery Office. Owing to the war no more recent reliable figures are available.

vision of training and occupational facilities, but also in extending the scope for organized games, recreations, and amusements. The cinematograph is being more and more used in institutions as a means of recreation and instruction, and also, what is for many patients of even greater value, scouting and guiding. At the present time there are 130 guide companies in institutions for defectives, and 41 of these institutions have recognized scout troops.

By means such as the above, although the condition of many defectives will necessitate permanent institutional care, yet there are many whom it will be possible to return to the general community. Permanent institutional care is neither possible nor necessary for a large number, and it has been estimated that between 60,000 and 70,000 of the total number of adults should be capable of being left with safety in the community, *provided they are under adequate supervision.* Leave of absence on licence provides a valuable stepping-stone towards this end, and it is satisfactory to find that it is being increasingly used. On January 1, 1939, the number of defectives on licence from certified institutions was 3,107. Doubtless some of these will prove failures and have to be recalled, but experience has shown that if care be taken in the selection of patients for licence the proportion of failures is a small one. A considerable number of the patients on licence were wage-earning, and many of the remainder were engaged in some kind of useful work at home.

There is, however, one social aspect of the problem which must occasion disquiet to all thoughtful persons. This is the fact that, in spite of all that has been done in the last two generations to improve the health and physique, and to better the surroundings, of the people, the number of mental defectives should still be increasing, and this not only absolutely, but in proportion to the population. As we have seen, this increase is not so great as would at first appear from a comparison of the numbers ascertained respectively by the Royal Commission in 1906 and the Mental Deficiency Committee in 1926; but it cannot be doubted, and it was accepted by the committee, that some increase has taken place. We have also seen that the number of children born in psychopathic families, and in those which comprise the social problem group, is greater than in the non-psychopathic and socially efficient. If, as we are told is the case, the decline in the general birth-rate has now reached a point which will result in the popula-

tion of the country becoming stationary, if not declining, in a few years' time, it is a very serious reflection that it is being recruited to a disproportionate extent from psychopathic and inefficient stocks, and that the ratio of defectives is increasing. This brings us to the question as to whether anything more can be done to minimize the social burden and menace of mental deficiency.

REMEDIAL MEASURES.

The Policy of "Laissez faire."—One suggestion which has been made is that Society should do nothing at all. The presence of mental defectives, it is contended, is entirely the result of our interference with natural selection, and if we would only give nature a free hand and leave these persons severely alone, they would inevitably be eliminated in the struggle for existence. There can be little doubt that in the dawn of human life this struggle did operate to prevent the survival and propagation of those individuals who were markedly inferior to the bulk of their fellows in intelligence and physical fitness. In this way the race as a whole was kept mentally and physically fit, progressive evolution was rendered possible, and man gradually advanced from savagery through barbarism to civilization. But there can also be no doubt that this advance has brought in its train factors which are largely responsible for many of the difficulties with which Society is now faced. The growth of knowledge and humanitarian sentiment, whereby the span of life has been lengthened and the conditions and possibilities of living made easier, have been operative upon the biologically unfit as well as the fit. It has probably been so in greater measure, and has not only permitted the unfit to survive and propagate their kind but has encouraged them to do so. Their number is now so great that the adoption of a policy of *laissez faire* could only have the effect of still further increasing it, and in so doing of hastening the degeneration of the community.

It is clear, therefore, that man, having "eaten of the tree of knowledge," having once begun to interfere with nature, and taken the helm of destiny into his own hands, must go on with the job if he would escape wreckage and social catastrophe. He must lose no time in acquiring full understanding of the laws which govern biological and social progress and in applying this know-

ledge to the welfare and advance of the general community and the race.

Euthanasia.—Another suggestion has been made of a quite contrary kind—namely, that the State should put an end to the existence of these defective and inefficient members within it. Probably most persons will agree that it would be better were there no defectives, and this suggestion is a logical one. The " exposure " of defective and deformed children was, in fact, practised by some of the ancient civilizations. But it has been shown that many high-grade defectives are capable of performing useful work, and, whatever view the State may take in the future, public opinion would certainly not countenance such a procedure with regard to them at the present time.

It seems to me, however, that the position is a very different one with regard to the 80,000 or more idiots and imbeciles in the country. These are not only incapable of being employed to any economic advantage, but their care and support, whether in their own homes or in institutions, absorb a large amount of the time, energy, and money of the normal population which could be utilized to better purpose. Moreover, many of these defectives are utterly helpless, repulsive in appearance, and revolting in manners. Their existence is a perpetual source of worry and unhappiness to their parents, and those who live at home have a most disturbing influence upon other children and family life. With the present great shortage of institutional accommodation there are thousands of mothers who are literally worn out in caring for these persons at home. In my opinion it would be an economical and humane procedure were their existence to be painlessly terminated, and I have no doubt, from personal experience, that this would be welcomed by a very large proportion of parents. It is doubtful if public opinion is yet ripe for this to be done compulsorily; but I am of the opinion that the time has come when euthanasia should be permitted at the request of a parent or guardian. It would clearly be necessary to devise adequate safeguards, but this would not present any practical difficulty. Even if this humane measure were legalized, however, we should still be faced with the root of the trouble—that is, the presence of a large, and increasing, number of mental defectives in the community. Can any measures be taken to check this increase and to *prevent* mental deficiency ?

THE PREVENTION OF MENTAL DEFICIENCY.

It was shown in previous chapters that mental defectives fall into two main groups—*i.e.*, primary and secondary. The secondary group is a relatively small one, and is made up of those cases in which the defect is of the nature of an accident. Whilst it is probable that further advances in medical knowledge and surgical practice may lead to a reduction in the number of these cases, yet, so long as man is prone to disease, some of them will be inevitable.

Primary amentia, on the other hand—to which form the great majority of cases belong—is due to inheritance. In a proportion of cases, probably not more than about 10 per cent., the defective individuals are the children of parents who are themselves defective. In the remainder, the parents are not defective; many of them are mentally normal, others are dullards or psychopaths; but inquiries show that the bulk of them come of psychopathic stocks and that they are potential "carriers" of defect. We have therefore to consider the prevention of propagation: (1) by defectives, and (2) by non-defective carriers.

Control of Propagation by Defectives.

There are two measures which have been proposed to achieve this—namely, (*a*) segregation during the reproductive age, and (*b*) sterilization.

Segregation.—The efficient institutional segregation of defectives would prevent their propagation, and in the original draft of the Mental Deficiency Bill there was a clause empowering the detention of those defectives "in whose case it is desirable that they should be deprived of the opportunity of procreating children." This clause was abandoned owing to a parliamentary outburst of hysterical sentiment. Nevertheless, there are two difficulties in the way of this proposal. The first is, that the number of defectives is so great that for many years to come it will be impossible to provide the necessary institutional accommodation. The second is, that there are many high-grade, stable defectives who are capable of earning a living in the general community and in whose case the only danger is that of propagation. It would seem to be unjustifiable, uneconomic, and unnecessary to segregate these in institutions if the desired result can be attained by other means.

Sterilization.—As formerly practised, this consisted in the operations of castration and ovariotomy; but these have now been superseded by those of vasectomy and salpingectomy. The operation of vasectomy is quite simple, and the experience of many hundreds of cases shows that there is no atrophy of the testicles, no secondary mental or other changes, and no unfavourable symptoms. The operation in the female is naturally somewhat more serious, but this can now be performed with little risk, and it appears quite conclusive that the effect in both male and female is merely to produce sterility without loss of desire or any other untoward results. In America* these operations have now been performed upon many hundreds of cases, both male and female, and it is contended that by their means, in addition to being rendered sterile, many aments have been cured of depraved and bestial propensities. Whilst I think there is doubt as to the benefit accruing to the individual from sterilization, there is no doubt as to its effect in preventing propagation; the question therefore is, Could it be adopted with advantage to reduce the incidence of mental deficiency?

Formerly, I was of the opinion that whilst sterilization might be an appropriate procedure in the case of certain stable defectives, for whom suitable employment could be found in the community, there were certain disadvantages in other directions which rendered its legalization undesirable. Since then, however, as a member of the Departmental Committee on Sterilization, I have had the opportunity of hearing a large amount of evidence and of examining many witnesses on the matter, and I have come to the conclusion that the voluntary sterilization of certain selected defectives, under proper safeguards, would be a useful measure, and that it should be permitted by law. At the present time, although the legal position is not free from doubt, yet in practice it is generally considered that the sterilization of defectives, on purely eugenic grounds, is contrary to the law.

It is necessary to emphasize, however, that, even if every defective in existence were to be sterilized, this would not eliminate mental defect, nor even very appreciably reduce its amount, as is commonly thought; as we have seen, it is only about 10 per cent. of defectives

* Particulars on this point, and information regarding sterilization laws in America and other countries, are contained in Appendix VIII. of the Report of the Sterilization Committee. See also publications of the Human Betterment Foundation, Pasadena, California, U.S.A.

who are the offspring of defective parents, and it is consequently only to this extent that the incidence of mental deficiency would be reduced. The chief source of mental deficiency is not defective parents, but parents who come of psychopathic stocks and who are "carriers" of mental defect. The Committee fully realized this point and recommended that voluntary sterilization should not be confined to defectives, but should be extended to persons who had suffered from certain forms of mental disorder, or who were likely to transmit grave mental or physical disability to their offspring. I think that the sterilization of these persons would have considerably greater effect in reducing the amount of mental deficiency than would the sterilization of defectives.

Control of Propagation by Psychopathic Stocks.

It has been shown that more defectives are the offspring of families and stocks characterized by a marked tendency to psychopathic conditions and intellectual dulness than of mentally defective parents. It has also been shown that such families produce not only the bulk of the defectives, but also a large proportion of the psychotics and psychoneurotics, epileptics, dullards, unemployables, criminal recidivists, and social inefficients. There are, of course, numerous exceptions to this general statement. Moreover, mental defectives, dullards, psychotics, and psychoneurotics occur in all grades of society. I think there is no doubt, however, that these conditions tend to be concentrated in certain families and stocks; that there is a tendency for such stocks to sink in the social scale; that they then become characterized by unemployability, chronic pauperism and crime; and in this way eventually come to constitute the dregs of the nation and the "social problem" group. It is from this group that the bulk of the inefficient members of the community are derived.

It is sometimes asserted that these various forms of social inefficiency are produced by morally and physically unhealthy surroundings and slum life. But the facts are against this view. Vital statistics show that the conditions are more favourable to health and longevity in the rural than they are in the urban and industrial districts; and yet in the rural districts the incidence of mental defect is over 50 per cent. higher than it is in the towns and industrial areas. I have explained in a previous chapter that

this is in all probability largely due to the steady migration of many of the more efficient and enterprising country dwellers to the towns, and of the intermarrying of those left behind. There is possibly also another factor which may be mentioned. The infantile mortality rate is less in the country than in the towns; the towns also differ among themselves in this respect. In general, it has been found that a low infantile mortality rate, whether due to naturally healthy conditions as in the country or to life-saving measures as in some of the towns, is associated with a higher incidence of mental defect than is a high mortality rate. In other words, the incidence of mental defect tends to vary indirectly with the infantile mortality rate, and a high rate weeds out a greater proportion of the unfit. No doubt a low infantile death-rate results in the preservation of many useful lives; but it preserves the liabilities as well as the assets of the race, and it appears to be preserving more liabilities than assets.

When we consider the above points, and the fact that there is an increased incidence of mental defect, notwithstanding the spending of millions of pounds annually upon social services and the great improvements which have taken place in environmental conditions and the mode of life of the people, it is clear that mental deficiency cannot be attributed directly to unhygienic surroundings. With regard to slums, the trend of evidence is to the effect that these are rather the result than the cause of mental incapacity. Dr. Lewis found that where slums had been cleared up and their inefficient inmates removed to good houses in sanitary surroundings, they soon recreated all the conditions of slumdom. I think that if we consider the evidence impartially, and try to divest ourselves of false sentiment and political bias, it will be clear that, if it were possible to check the propagation of these markedly psychopathic and socially inefficient stocks, there would result an appreciable diminution, not only in the incidence of mental defect, but also in that of many other undesirable conditions which are now a drag upon biological and social advance.

At this point it is apposite to allude to a prevalent misconception regarding the relationship of mental abnormality to genius. Since Dryden proclaimed that—

> " Great wits to madness nearly are allied,
> And thin partitions do their bounds divide,"

it seems to have been commonly assumed that genius is so intimately connected with insanity that we must cheerfully put up with the latter for the sake of the former, lest any attempt to diminish mental disease by restricting the propagation of these persons should have the disastrous result of robbing the world of a possible superman. Now I fully admit, of course, the great benefits which have resulted to mankind from the works of men of genius. It is, indeed, to the existence of such men of outstanding ability in the various departments of human knowledge, thought, feeling, and action, that we largely owe our progress and civilization. There is also no doubt that some persons of genius have been of poor physical constitution and prone to ill-health, while others have been eccentric and possessed of a highly sensitive nervous system. But I have searched in vain for any close relationship between genius and insanity, and I believe the common statement that such exists to be a completely fallacious one. On the contrary, I think it will be found that the great majority of men and women of outstanding ability have been particularly sane, and have come of sane and healthy stocks. It is, therefore, a complete mistake to assume that the restriction of propagation by persons of psychopathic inheritance would mean the elimination of genius.

When we come to practical measures for restricting this propagation, it has to be admitted that we are faced with very great difficulties. One would think that the necessity for prohibiting the marriage of defectives would be obvious even to the meanest intelligence; and yet there is not even any law to prevent this, and a number of defectives actually under orders marry and produce children, and this in spite of the fact that they are defined by statute as suffering from a degree of defect " so pronounced that they require care, supervision, and control for their own protection or for the protection of others." I see no reason whatever why the marriage of defectives, chronic epileptics, and persons who have suffered from recurrent insanity should not be prohibited by law, and even if this did not avail entirely to check their propagation, it would do something in this direction, and it would certainly be a great factor in the education of public opinion regarding the responsibility of marriage and parenthood. Were this responsibility more fully realized, and greater care taken in inquiring into the health and antecedents of the contracting parties, we should hear very much less about the need for reform in the law of divorce. Laws

of this kind already exist in some European countries and in several of the States of America, and although it is difficult to obtain definite information as to their working, and opinions differ somewhat regarding their value, there seems to be little doubt that on the whole they have been productive of good, and have not only helped to educate the conscience of the community, but have prevented many undesirable marriages.

It is possible, of course, that if the mating of psychopaths could be restricted to those of like constitution, the disease would in course of time work out its own salvation. To a considerable extent this is what is actually happening, for there is a curious tendency for " birds of a feather to flock together," and for like to mate with like. In such circumstances there is evidence that the morbid predisposition tends to become aggravated in character and antedated in time in succeeding generations, and I think that this is probably an important cause of the increase in mental defect and the various forms of mental abnormality. But, although such a process of restricted mating might eventually result in the elimination of these unfit stocks, it is one which is attended with enormous cost to the nation.

Unfortunately, however, psychopaths also intermarry with the sound and normal members of the community. In so doing they drag fresh blood into the vortex of disease, and it is this which keeps the process alive, and which dilutes and reduces the aggregate mental vigour, stamina, and efficiency of the nation. Under such a process the race gradually becomes more neurotic, mental evolution is brought to a standstill, and there sets in that process of marking time which, if unchecked, may readily be the forerunner of racial retrogression and degeneracy. The immediate cause of a nation's downfall may be some violent social upheaval or political incapacity; but these, as has happened in past history, may well be the result of the mental instability and degeneracy of its people. As has been well said, a nation has the government it deserves.

It may be remarked that, whilst some persons deny the existence of a psychopathic diathesis, others go to the opposite extreme and proclaim that no families are free from it. The one is no more true than the other. I have no doubt that there are many families in the country, in all social classes, which are sound and healthy, and which are capable of producing sound and healthy offspring. The danger to the nation lies in the fact that they are not propa-

gating their kind to the same extent as are the mentally disabled and socially inefficient. They are, in fact, threatened to be engulfed by these latter.

On this aspect of the question it is impossible to avoid a brief reference to the subject of *Birth Control.* It is obvious that if this is not to be attended with any alteration in the ratio of the different grades of the community, it must be adopted by all grades alike. If partial, it must inevitably be followed by a relative increase of that section not making use of it. There is not the slightest doubt that the limitation of birth makes its chief appeal to the efficient, thrifty, prudent, and those who wish to maintain a certain standard of comfort, and, at the same time, ensure for their children the best start they can in life. It makes practically no appeal to the socially unfit, the thriftless, the dependent, and parasitic sections of the community. The general advocacy of birth control can therefore only tend still further to increase the proportion of the thriftless and inefficient. The professional and best artisan classes will continue to have still fewer offspring, while the parasitic class will continue to propagate without restriction. What is needed at the present day to restore the balance of the nation is not the indiscriminate advocacy of birth control—this must inevitably be dysgenic—but the adoption of this method by the unsound and unfit, whilst at the same time every encouragement is given to the fit to "be fruitful and multiply."

With regard to the contamination of healthy stocks by admixture with the unfit, since the nation has not yet arrived at the stage of prohibiting the marriage of those who are definitely mentally abnormal, it is idle to expect the prohibition of those who are merely carriers, and there would appear to be only one practical remedy. That is, by the education of the community as to the part played by inheritance in the causation of disease, and by the development within the nation of the eugenic ideal or conscience.

Eugenics was defined by Francis Galton as "the study of agencies under social control that may improve or impair the racial qualities of future generations either physically or mentally." It is without doubt by the study and application of these principles that we shall find the antidote to degeneracy and the true road to racial progress. By the eugenic ideal, I mean not merely the intellectual recognition of the desirability of producing healthy offspring, but an emotion, a sentiment, regarding this ideal; a feeling of shame and repugnance

at the thought of bringing into the world delicate and defective children, and a feeling of satisfaction, of increased self-respect, and of duty well done at the thought of producing children who are healthy and capable. The human mind has a great capacity for acquiring sentiments, and just as all moral and cultured persons feel deep repugnance at the idea of committing a crime, or when confronted with a disharmony in music, colour, form, or social decency, so it seems to me to be perfectly possible for them to develop the eugenic sentiment, or, if we prefer so to call it, conscience. I am of the opinion that the education of the community as to the consequences of inheritance, and the development of a sentiment of pride of offspring would do more to prevent the contamination of sound stocks than would any legal prohibition.

I feel that this is a matter regarding which the medical profession is in a position to render invaluable service to the State, and this in two ways. In the first place, we should be prepared to give advice as to the desirability or otherwise of a contemplated marriage. It is true that our present knowledge of the laws governing inheritance do not enable us to forecast the result in every case; but there are certainly many prospective unions regarding which the experienced physician is able to give a reliable opinion as to whether the offspring is likely to be healthy or the reverse. The advice given is not always followed, but the fact that it is sought, and in my experience increasingly sought, is evidence of the development of a conscience on the subject. Secondly, it is to our profession that the State looks for advice and guidance regarding the general health of the community, and I consider it to be at once our privilege and responsibility to speak on this subject of the propagation of the constitutionally impaired in clear and unmistakable terms, and so help to form this public conscience.

So long as the nation is content to raise no voice against the marriage of the diseased, the degenerate, the habitual criminal, and the chronic pauper, and is willing to educate, feed, clothe, and maintain as many offspring as these persons see fit to produce; so long as legislation is permitted a free hand in doing everything calculated to diminish parental and personal responsibility and to strike at the very root of any incentive to labour; in so far as our law-makers and would-be philanthropists are blind to the folly of transferring the burdens and penalties inevitably following carelessness, improvidence, indifference, and inefficiency from the shoulders

of those upon whom they should rightly fall to the careful, provident, and industrious members of the State—then so long will the classes characterized by these antisocial qualities continue to be perpetuated, and their numerical ascendancy is simply a question of time.

There are some who would stigmatize these views as "reactionary," and who would be content to await the result with either complacent optimism or blind indifference. It seems to me that to ignore portents of disaster, even if they are at present merely as a cloud upon the horizon, until the storm is upon us is neither moral nor wise—it is supremely foolish.

The Prevention of Germ Impairment.

Finally, we have to consider whether it is possible to take any measures to prevent that impairment of the germ material which is the forerunner of mental deficiency, as well as of many other forms of mental abnormality and social inefficiency. It may be, as some have suggested, that in some instances this germ impairment is "spontaneous" in origin, and so entirely beyond our control. On the other hand, in most cases it seems more likely, as I have previously indicated, that the cause lies ultimately in some adverse factors of the environment. As to what these may be, we have at present no certain knowledge. There may be various debilitating conditions which impair the vitality of the germ plasm and so induce pathological variations; or there may be specific, and as yet unrecognized, pernicious influences at work. But, since such germ changes, however produced, are the basis of evolution, and since their nature will largely determine whether the race shall go forward or back, it is clear that a knowledge of their mode of production, especially those which are pathological, is of prime importance. Indeed, there is probably no subject more urgently in need of, or which would better repay, research.

In the early days of man the matter was of little consequence, for any retrogressive variations and any degenerate offspring were eliminated by natural selection. But at the present day unfit members of the race are not merely permitted to survive, they are encouraged and aided to do so by every means known to modern science, so that their prevention has become a matter of vital importance to the State.

APPENDIX

Age and Sex.	*Weight.*	*Height.*	*Chest. Circumference.*	*Cranial Circumference.*	*Brain Weight.*
	Pounds.	Inches.	Inches.	Inches.	Grammes.
7 days M.	7½	20½	13½	14	330
F.	7⅛	20½	13	13½	283
1 mth. M.	8¼	—	—	14½	—
F.	7¾	—	—	14	—
2 mths. M.	10½	—	—	15	—
F.	10	—	—	14½	—
3 mths. M.	12½	23	15	16	602
F.	12	22½	14½	15½	560
4 mths. M.	13¾	—	—	16½	—
F.	13¼	—	—	16	—
5 mths. M.	14¾	—	—	16¾	—
F.	14¼	—	—	16¼	—
6 mths. M.	15¾	25½	16½	17	712
F.	15½	25	16⅛	16½	670
9 mths. M.	17½	—	—	17½	—
F.	17	—	—	17	—

Development.	*Age.*
Sucks vigorously. Distinguishes between bitter and sweet substances placed on the tongue. Eyes often follow a light.	**7 days.**
Notices if food and bath are too hot or too cold.	**1 mth.**
Eyes rest momentarily on light or bright object. Interested in ticking of watch held to ear.	**2 mths.**
Eyes follow a moving object. Turns head in direction of sounds. Moves hands towards an object held in front of it. Pushes with legs. Recognizes and smiles at mother and nurse, but not at strangers. Cry varies with hunger, anger, fear and pain. Smacks lips at sight of breast or bottle. Laughs aloud.	**3 to 4 mths.**
Recognizes voices of parents. Deliberately seizes and carries object to mouth. Rustles paper. Begins to lift head and shoulders. Makes cooing and babbling sounds.	**5 mths.**
Notices and recognizes a number of common objects. Sits up without support for a few minutes. Understands a number of words and obeys a few simple commands. Begins to imitate movements. Cuts two lower central teeth.	**6 mths.**
Sits erect in chair. If placed on floor makes attempts to crawl. Begins to imitate movements. Hand movements very active. Definite signs of curiosity, interest and attention. Knows names of a number of common objects and of some of his relations.	**9 mths.**

Age and Sex.	*Weight.*	*Height.*	*Chest Circumference.*	*Cranial Circumference.*	*Brain Weight.*
	Pounds.	Inches.	Inches.	Inches.	Grammes.
12 mths. M.	20½	29	18	18	916
F.	19¾	28½	17½	17½	816
18 mths. M.	22¾	30	18½	18½	—
F.	22	29½	18	18	—
2 years M.	26½	32½	19	19	990
F.	25½	32½	18½	18½	890
3 years M.	31¼	35	20⅛	19¼	—
F.	30	35	19¾	19	—
4 years M.	35	38	20¾	19¾	—
F.	34	38	20½	19½	—
5 years M.	41	41½	21½	20¼	—
F.	39½	41½	21	20	—
6 years M.	45	44	23¼	20½	—
F.	43½	43¾	22¾	20¼	—

Development.	*Age.*
Stands alone. Walks a few steps alone. Says five or six words. Can point to eyes, nose and mouth. Feeds with spoon. Drinks out of cup. Unwraps sweet from paper. Imitates movements. Obeys many simple commands. Co-operates in being dressed. Six teeth present.	**12 mths.**
Walks and runs freely. Tries to climb into chair. Tries to put on shoes. Uses a spoon. Has control over bowels. Twelve teeth present.	**18 mths.**
Has a vocabulary of 200 to 300 words. Says sentences of two or three words. Matches primary colours. Begins to build bricks. Points out objects in pictures. Has control over bladder. Sixteen to twenty teeth present.	**2 years.**
Intelligent attempts with form board. Builds patterns with bricks. Knows names and uses of many common objects. Puts on shoes. Threads beads. Opens a door. Fetches and carries to command. Knows own sex. Knows name and surname. Begins to ask questions as to " why " and " what for."	**3 years.**
Appreciation of time and space and able to compare sizes and distances. Succeeds with form board. Tells the longer of two lines. Buttons and unbuttons. Dresses and undresses with slight assistance. Goes to lavatory alone. Counts up to ten. Knows several letters of alphabet.	**4 years.**
Makes little drawings. Compares weights. Describes actions in pictures. Shows considerable determination and will. Gives sensible answers to simple " comprehension " questions.	**5 years.**
Intelligent adaptation to home and school surroundings. Adds and subtracts digits. Spells, reads and writes words of one syllable. Definite constructiveness—*i.e.*, brick building, plasticine modelling, etc.	**6 years.**

Age and Sex.	*Weight.*	*Height.*	*Chest Circumference.*	*Cranial Circumference.*	*Brain Weight.*
	Pounds.	Inches.	Inches.	Inches.	Grammes.
7 years M.	49½	46¼	23¾	20¾	1,138
F.	48	46	23¼	20½	1,135
8 years M.	54½	48	24½	—	—
F.	53	48	23¾	—	—
9 years M.	60	50	25	—	—
F.	57½	49½	24½	—	—
10 years M.	66½	52	25¾	21	—
F.	64	52	24¾	20¾	—
12 years M.	80	56	27	21½	—
F.	81½	57	26½	21¼	—
14 years M.	99	61	28¾	21¾	1,301
F.	100	60¼	29¼	21½	1,154
15 years M.	110¾	63	30	21¾	—
F.	108½	61½	30¼	21½	—
16 years M.	123¾	65¾	31¼	—	—
F.	113	61¾	30¾	—	—
18 years M.	136	67	33¾	—	1,350
F.	126	65	30¾	—	1,220

The object of this table is to give the chief developmental data in a convenient form for reference; but it must be remembered that they represent the mean average of many observations, and that there may be considerable diff-

DEVELOPMENTAL DATA (*continued*).

Development.	*Age.*
Can state differences and likenesses of objects. Able to make simple generalizations. to form judgments and abstract concepts. Capable of verbal reasoning.	**7 to 8 years.**
Co-operates keenly with companions. Has various hobbies and makes little collections. Evidence of some degree of social sense. Capable of criticizing own work.	**9 to 10 years.**
Prevision, planning and prudence are present. Learns from experience, and within the limits of his experience adapts to new situations.	**12 to 15 years.**
Reasons logically. Perceives abstract relations. Considerable range of scholastic and general knowledge.	**16 years.**
Intellectual development complete. Ideals and sentiments present. Capable of independent adaptation to immediate surroundings; of making sensible plans for future; and of directing and co-ordinating conduct so as to achieve plans made.	**18 years.**

erences in the individual which are within the range of normality. The body weights below 5 years old are without clothing; those above include ordinary clothing.

FORM FOR CASE-TAKING.

PAGE 1.

NAME.

ADDRESS.

SEX. AGE. DATE OF BIRTH. DATE OF EXAMINATION.

A.—FAMILY HISTORY.

Brothers and Sisters.	*Parents, Uncles and Aunts.*	*Grandparents.*
1.	F.B.'s	
2.	F.S.'s	**F.F.** .....
3.	**F.**	**F.M.** .....
4.		
5.	**M.**	**M.F.** .....
6.	M.B.'s	
7.	M.S.'s.	**M.M.** .....
8.		

Condition of Cousins.

Note presence of Consanguinity; Mental Defect; Insanity; Psychoneuroses; Alcoholism; Epilepsy; Criminality; Illegitimacy, etc.

ENVIRONMENT. Note nature of environment and general home conditions.

B.—PERSONAL HISTORY (SUPPLIED BY .)

1. PRE-NATAL. (Note condition of mother during pregnancy.)

2. NATAL.—Full term or premature. Weight.

Abnormal conditions of birth—*e.g.*, injury: forceps; precipitate or prolonged labour; asphyxia; jaundice, etc.

3. POST-NATAL.

Developmental data :

Sat up.	Walked alone.
First words.	First sentences.
Sphincter control.	Able to guard against ordinary physical dangers.
Able to feed alone.	Able to understand and obey simple commands.
Able to wash and dress.	Able to run errands.
Constructive play.	
Puberty.	

Health :

General state of health.	Accidents.
Illnesses.	Convulsions.

School History :

Age when began. Age when left. Kind of school.
Attendance. Progress.
Teacher's report as to general ability and conduct.

After-School History :

Occupations; wages; special aptitudes.

Behaviour :

Information as to general disposition, conduct, and capabilities.

C.—PRESENT STATE.

1. GENERAL.

(*a*) *Physical Condition :*

Height.	Weight.	Max. cranial circumference.
Physique.	Nutrition	

Note any special features.

(*b*) *Developmental Anomalies and Stigmata :*

Face.	Eyes.	Ears.	Nose.	Hair.
Tongue.	Palate.	Teeth.	Jaws.	Skin.
Hands.	Feet.	Limbs.	Body.	Genitals.

(*c*) *General Medical Examination :*

Circulatory.	Urine.	Nose and Throat.
Respiratory.	Glands.	Teeth.
Alimentary.	Skin.	Ears.

Note any special disease.

2. NERVOUS.

(*a*) *Sight :*

Total or partial blindness.	Errors of refraction.
Strabismus.	Nystagmus.

(*b*) *Hearing :*

Deafness.	Tonal deafness.	Word deafness.

(*c*) *Movements :*

Gait.	Posture.	Co-ordination.
Tremors.	Tricks and habits.	
Convulsions.	Irregular movements.	
Paralysis.	Contractures.	

(*d*) *Speech :*

Defective articulation.		Mutism.
Lalling.	Idioglossia.	Echolalia.

C.—PRESENT STATE—*Continued.*

3. MENTAL.

(*a*) *Temperamental Disposition :*

Apathetic.	Curious.	Fearful.	Initiation.
Spiteful.	Sullen.	Sociable.	Submissive.
Affectionate.	Quarrelsome.	Destructive.	Acquisitive.
Truthful.	Honest.	Modest.	Cruel.
Self-Protection.	Self-Assertive.	Mischievous.	Sexual.

Stable or unstable. (Note any special conditions—*e.g.*, food neuroses, night terrors, asthma, laryngismus, temper tantrums, wandering.)

(*b*) *Cognition :*

Perception; Discrimination and Understanding.
Ideation; Prevision; Fantasy.
Judgment; Reasoning.
Planning; Constructiveness.
Attention; Concentration.
Memory.

(*c*) *Character, Behaviour, Moral Feeling, Will.*

(*d*) *Scholastic Acquirements :*

Reading.
Writing from copy; from dictation.
Sums and money values.
Expression by means of speech.

(*e*) *Range of General Information.* (Give examples.)

(*f*) *Capacity for Work, and Special Abilities.*

(*g*) *I.Q.* (*as ascertained by serial tests*).

(*h*) *Response to Performance Tests.* (Specify particular tests used.)

(*i*) *General Observations* as to *common sense* and impression derived from behaviour and response during examination.

4. DIAGNOSIS.

Backward. Dull. F.M. Imbecile. Idiot. Moral Defective. Mental Instability. Psycho-neurotic. Epileptic. Insane. Dement.

Remarks.

DEVELOPMENTAL ANOMALIES ASSOCIATED WITH AMENTIA.

Nervous System.

Brain.—Anencephaly. Microcephaly. General hypoplasia. Partial hypoplasia and agenesis of convolutions, ganglia and other structures. General and local hyperplasia of neuroglia. Hydrocephalus.

Spinal Cord.—Micromyelia. Syringomyelia. Spina bifida. Meningocele. Local hypoplasias.

Special Sense Organs.

External Ear.—Asymmetry. Anomalies of form and size of component parts. Hæmatoma. Marked projection. Defective lobules. Attachment of lobules to cheeks. Supernumerary auricles.

Eye.—Epicanthus. Abnormal shape and size of palpebral fissures. Microphthalmos. Heterophthalmos. Coloboma. Persistence of pupillary membrane. Opacity of media. Cataract. Errors of refraction. Strabismus. Nystagmus. Astigmatism. Various forms of retinitis.

Nose.—Depressed. Large and fleshy. Abnormalities of form and size and of direction of nostrils.

Lips.—Coarse and thick. Mouth abnormally large.

Tongue.—Abnormalities of size and shape. Fissures. Hypertrophied papillæ.

Osseous System.

Skull.—Asymmetry. Bosses. Abnormalities of size and shape—*i.e.*, microcephaly, macrocephaly, oxycephaly, scaphocephaly, etc. Facial asymmetry.

Palate.—Saddle-shaped; V-shaped.

Mandible.—Protruding. Small and receding.

Teeth.—Irregularities of position, number, form, size and condition.

Spine.—Absence and malformation of vertebræ (chiefly cervical). Spina bifida.

Limbs.—Gigantism. Dwarfism. Hemihypertrophy of body. Arms disproportionately long. Legs short and bowed. Talipes. Polydactylism. Syndactylism. Suppression of digits. Clubbing and webbing of fingers and toes.

Cutaneous System.

Skin.—Moles. Nævi. Shagreen patches. Leucodermia. Lentigo. Ichthyosis. Adenoma sebaceum. Molluscum fibrosum. Supernumerary mammæ. Deep post-anal dimple.

Hair.—Excessive growth on parts usually hairless; absence on parts usually covered. Multiple vortices of hair on scalp. Alopæcia.

DEVELOPMENTAL ANOMALIES ASSOCIATED WITH AMENTIA —(*continued*)

CIRCULATORY AND RESPIRATORY SYSTEMS.	**Heart.**—Subnormal size. Defective development of auricular and ventricular septa. Stenosis of pulmonary artery. Anomalies of arterial trunks. Stenosis of aorta. Persistent ductus arteriosus. Malformations of valves.
	Bloodvessels.—Various aberrations in size and position.
	Lungs.—Complete or partial hypoplasia of one lung. Partial agenesis of parenchyma. Multiplicity of lobes.
ALIMENTARY AND GLANDULAR SYSTEMS.	**Œsophagus.**—Pouches and fistulæ.
	Stomach.—Stenosis of pylorus.
	Intestine.—Persistence of allantoid cloaca. Imperforate anus. Meckel's diverticulum.
	Glands.—Various anomalies of thyroid and other glands.
URINARY AND GENERATIVE SYSTEMS.	**Kidneys.**—Unilateral hypoplasia. Persistence of fœtal lobulations. Horse-shoe. Duplication of pelvis and ureter.
	Bladder.—Extroversion. Ectopia.
	Male Genitals.—Epispadias. Hypospadias. Infantilism. Cryptorchism.
	Female Genitals.—Hypoplastic and fibrous ovaries. Bicornuate uterus. Rudimentary and asymmetrical uterus. Atresia of genital canal. Infantilism. Labial anomalies.

The Case of Neville George Clevely Heath.*

In September 1946 Neville G. C. Heath, a man aged 29, was tried at the Central Criminal Court, London, for the sadistic and most brutal mutilation and murder of a woman in a hotel. That he had committed the crime was not disputed; indeed, it was stated by counsel for the defence that Heath had also mutilated and murdered another woman a fortnight later. Counsel contended, however, that Heath was not responsible in law for these crimes on the ground that he was a "psychopathic personality" and a sufferer from "partial insanity" and "progressive mania."

In regard to this contention Heath's personal history is of interest and importance, and the following account was given by the police officer in charge of the case. Heath was born in 1917 and had a good education, leaving school at the age of 17½ years. He then joined the Artists' Rifles as a Territorial and served for about nine months. In February 1936 he joined the R.A.F., serving on general duties, including flying. In the following year he was court-martialled for being absent without leave for four months, for escaping while under arrest, and for taking away a motor-car without authority. For these offences he was dismissed from the R.A.F. in September 1937. Two months later he was charged with obtaining credit by fraud at a hotel and attempting to obtain a car worth £175 by false pretences. Eight other cases of fraud were taken into consideration, in two of which he had posed as Lord Dudley. For these offences he was placed on probation. In May 1938 he was employed for a fortnight as a salesman's assistant, and two months afterwards was charged with stealing jewellery valued at £21 and obtaining clothing worth £37 by a forged banker's order. Ten other cases of fraud in various parts of the country were taken into consideration, and Heath was sentenced to three years' Borstal treatment. After two months, in September 1939, he was specially released owing to the national emergency. The following month he enlisted as a private in the R.A.S.C. and in March 1940 was commissioned as a second lieutenant and posted to the Middle East. In July 1941 he was tried by court-martial on charges of obtaining a second pay book on a false statement and of making a false statement to his commanding officer to enable him to be absent from his unit. There were also five charges in respect of a dishonoured cheque.

* Extracted from *The Times*, September 25, 26 and 27, 1946.

He was found guilty, cashiered, and ordered to be sent back to England.

While on the voyage home Heath escaped from the troopship at Durban and made his way to Johannesburg, where he posed as " Captain Selway, M.C., of the Argyll and Sutherland Highlanders." Shortly afterwards he changed his name to Armstrong, and in December 1941 joined the South African Air Force. He remained in this for four years until the end of 1945, being engaged in transport and instruction duties and reaching the rank of captain. In May 1944 he was seconded to the R.A.F. and came to England for operational duties with a bomber squadron, in the course of which, after D-Day, he flew over France, Holland and Belgium. Early in 1945 he returned to South Africa; he had married there in 1942, and nine months after his return his wife obtained a divorce on the ground of desertion; there was no suggestion of cruelty or sadism. In December 1945 he was tried by court-martial on six charges: three of conduct prejudicial to good order and military discipline, and three of wearing decorations without authority. He was convicted and dismissed the Service for the third time, returning to London in February 1946. Two months after his return he appeared before a magistrate on the charge of unlawfully wearing decorations and military uniform to which he was not entitled; for these offences he was fined £10. After this he studied for a commercial flying licence, but did not take the examination.

Such was Heath's record as known to the police. There was no evidence of any misconduct until he was 20 years of age. After that, with the exception of the four years from 1941 to 1945 when he was in the South African Air Force, and during which there was no record of misbehaviour, his life was one of almost continuous crime, taking the form of theft, fraud and false pretences, and culminating in June 1946 in the sadistic mutilation and murder of two women within the space of a fortnight.

At his trial, a psychiatrist who had examined him in prison, and who gave evidence in his defence, stated that in his opinion Heath was " born with a deficient moral sense," that he was a " sadist," " morally insane," suffering from " general moral degeneracy," and certifiable as a " moral defective." He further said that while Heath " appreciated at the time what he was doing and appreciated the consequences, he did not appreciate that what he was doing was wrong." In cross-examination the witness said that when Heath

inflicted these injuries and murdered the women he thought he was doing what was right. Two medical witnesses for the prosecution disagreed with this opinion and said that while Heath was a " psychopathic personality " and a " sadist," he was not insane and not mentally defective.

In his address to the jury the judge said: " A strong sexual instinct was not, of itself, insanity.... A difficulty to resist temptation, and equally the satisfaction of some perverted impulse, were not, in themselves, to be excused on the ground of insanity.... Insanity was not to be found merely because some conduct might be regarded as so outrageous as to be wholly unexpected from the generality of men.... The law of insanity was not to become a refuge for those who could not challenge a charge made against them.... The law of insanity was well settled and they might think it wise that there should be definite principles of law in regard to this matter." The judge directed the jury in accordance with the McNaghten Rules and said the issue before them was not whether Heath was morally insane or mentally defective, but whether the accused was labouring under such a defect of reason from disease of the mind as not to know the nature and quality of the act he was doing, or, if he did know, he did not know that what he was doing was wrong. The jury found Heath guilty; he was sentenced to be hanged, and hanged he accordingly was.

I have no personal knowledge of the case, but, on the evidence as reported, I find it difficult to assume that at the time Heath committed the various offences which have been described his mind was that of a normal person. The earlier offences, it is true, were merely manifestations of the primitive instincts of acquisitiveness and self-display which are possessed, but kept under control, by most normal persons; while the two murders were the result of a sex instinct which had become perverted. Moreover, it must be admitted that each of his misdeeds was intended to, and that for a time many actually did, bring him some advantage. In these respects, therefore, Heath's behaviour resembled that of the ordinary criminal. But, viewed as a whole, his conduct was so unsuccessful and resulted in such little gain that it indicated mental abnormality. He was repeatedly caught and suffered punishment. He was discharged from the Service three times, on the last after having reached the rank of captain. He committed the second murder when he must have known that the police were hunting him for the first, and,

although he took some steps to avoid detection, he did so by the mere expedient of changing his name and making a clumsy attempt to lay a false trail. With the exception of four years free from at least recorded crime, his whole history from the age of 20 years showed a want of moral sense, an inability to learn from experience, and a lack of judgment, prevision and common sense.

At first sight it might appear that this was a case of moral deficiency, as stated by the defence; but the facts that there was no evidence whatever of Heath showing any abnormality of conduct, nor any lack of moral or common sense until after the age of 20 years, and that he was said to show affection for his parents, are against this. It is clear that he did not conform to the definition of a moral defective as given in the Mental Deficiency Acts, and that he was not certifiable as such. In many respects his behaviour corresponded with the concept previously mentioned of a " psychopathic personality"; but in my view his life history is more indicative of a disorder, or degeneration, of mind than of an innate and constitutional peculiarity. It may be that the murders, and some of the other offences, were committed when his inhibitory mechanism was temporarily out of gear as a result of drink; but on the whole his history is more suggestive of a progressive degeneration of the higher altruistic sentiments, ideals, and intellectual attributes of mind, in consequence of which there was produced an instability of equilibrium with over-action and perversion of his primitive instincts. In this condition of mental disorder, or degeneration, he might well be aware of the physical nature of his acts; he might appreciate that they were wrong and punishable, and take some precautions against their detection; but he would not possess the necessary moral feeling to appreciate their enormity, *how* wrong they were, that is—their quality; nor would his precautions be likely to be effective.

As I have pointed out in dealing with criminal responsibility in a previous chapter, the law does not recognize any degrees of knowledge, nor any difference between knowing the *nature* and knowing the *quality* of an act. A person accused of crime is assumed to be sane unless he is proved to be insane, and he is only legally insane and deemed to be non-responsible if he conforms to certain criteria known as the McNaghten Rules. As these rules are at present interpreted there can be no doubt that the verdict and sentence were correct. It is interesting to speculate, however, what would have been the verdict of the jury had they been directed that there was

a difference between knowing the nature and knowing the quality of an act. It may be that they would then have brought in a verdict of " Guilty but insane," in which case Heath would have been committed to the State Criminal Lunatic Asylum. Whether, in this particular case, this would have been in the best interest of the community in general is a debatable point; but it would certainly have been of psychological interest to observe Heath's subsequent mental career.

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