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THE MIND IN DAILY LIFE

BY

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PREFACE

THIS book is an elementary exposition. It contains no more technicality than seemed readily understandable by the intelligent layman and the medical student desiring a merely general introduction to modern views on the motives of human conduct and the mental processes of which that conduct is the expression. Part I gives some account of processes and motives that are universal and therefore normal. Part II is written from the angle of the physician who sees the results, always common but nowadays more frequently discussed, of the miscarriage of the normal development of human beings as such. The writer is well aware that these motives and processes are artistically set forth in literature properly so-called, especially in the triumphant art of modern biography ; but a more particular knowledge of the systematization that has been attempted by scientific psychologists (for there are such people) may perhaps enable the reader to penetrate further into the lives portrayed in literature, as well as into the motives, thoughts and feelings, alike in health and in sickness of mind, of his fellow-men and even of himself.

The writer has restricted himself to the statement of those theories which, from his own experience, have so far seemed best to fit the ascertained facts. The labour of distinguishing the different theories of different schools, so numerous in the field of psychological thought, and of indicating which belong to which, has been avoided, except where it was found desirable to mention views which are at present distinctly esoteric.

The writer acknowledges his indebtedness to the books named in the Bibliography, among others, and especially to Waddle's, in reference to facts in Chapter II, and Murchison's, in Chapter VIII.

Acknowledgements are due to Messrs. Heinemann, Ltd., for permission to quote two passages from their publication *Father and Son* by Edmund Gosse.

December 1932

R. D. G.

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NOTE

For permission to include Figures 1 and 2, from Köhler's "An Aspect of Gestalt Psychology" in *Psychologies of 1925* edited by Murchison (Clark University Press, 1926), and Figure 4, from Starr's *Nervous Diseases* (Lea and Febiger), acknowledgments are due to the respective authors and publishers.

THE MIND IN DAILY LIFE

PART I

PSYCHOLOGY OF THE NORMAL

CHAPTER I

DEVELOPMENT OF THE EMOTIONS AND THE SELF

IF there is one fact on which the various schools of psychological thought are agreed, it is of the great importance of the period of infancy and childhood in determining the subsequent character and behaviour of the individual. It is partly on account of the unanimity in this respect that any discussion of first principles must begin with a description of the development of the individual mind from the days of infancy. Bertrand Russell, for example, who is in the distinguished line of philosophers whose writings have concerned themselves with the education of the young, believes that if care is taken in character-building during the first six years, the rest of the time of pupillage can safely be devoted to other things.

The new-born child is little more than an automatic machine in his performance, though so vastly different in his potentialities. On his first entrance into the world the cold air stimulates the skin and causes the child to utter a cry with its first breath. Some philosophers have ironically interpreted this as a howl of protest: others as one of the manifestations of the feeling of distress supposed to be experienced during the ordeal of birth.

It is probably neither, being but the automatic kind of act we have alluded to. If because of a difficult birth there is so much asphyxia that the reflex nervous mechanism is dulled, and the child fails to cry, some mild slaps applied to its buttocks make him do so. A day or so later he is put to the breast, contact with which after a time causes the lips to make sucking movements. The bowel and bladder empty directly they are sufficiently distended, without deliberation or respect of persons. Many of the actions of the new-born child, in brief, appear to be immediate responses to rather simple stimuli impinging on its internal or external bodily surfaces. But there are other activities which appear quite early, which in later life are usually classified as "mental" activities, i.e. occurrences appertaining more to the individual as a whole, considered as a person among other persons, than to parts of the body and its functions. Such activities are those which are held to indicate fear, rage and love—three examples, in other words, of what we call the emotions. Emotional reactions are usually considered to be inborn. Of all the emotions known to us, signs of only the three mentioned could be detected in a very young infant by J. B. Watson, who was, curiously, the first to make a point of investigating the matter by direct observation of very young children. Previous writers had simply assumed that all the emotions known to adults had existed in some form from the beginning, and tabulated a list of as many as they felt they could distinguish by introspection (i.e. by examining their own minds). These arm-chair writers did not trouble to confirm their speculations by watching young children to detect the epochs when the various emotions first appeared in them. The question is whether what Watson observed in the newly born are emotions in the usual adult sense at all—whether there is more than a mere nebula of conscious feeling attached to them, and whether they have any 'meaning' in the sense of having any experiences associated with them in the child's mind. Watson's methods were to observe the reactions of very young infants, of a few days to a few weeks old, to certain conditions of a simple kind. When the infant is sud-

denly bereft of its support, or when a loud sound is made near it, it shows the outward signs of fear, and presumably something comes to pass in its rudimentary consciousness. When its movements are confined and restricted it shows the signs of rage, but they consist of diffuse movements without any co-ordinated aim. But in addition to the fact that the baby's experience is so limited at this stage that few associations can have been formed to give meaning to the reactions, we know also that his brain, and especially those regions of it in which associations between new experiences and memories of old ones principally have their seat, are imperfectly developed (Chapter II). Furthermore it has been shown that all the manifestations of rage can be elicited from a dog in which all the front part of the brain, down to what is called the 'between' brain, has been destroyed. This indicates one of the possible pitfalls of psychology, that one must be cautious in attributing to other persons or animals the same conscious mental experiences as ourselves, merely because they appear to behave as we would do if certain experiences were happening in us. The dog in the condition mentioned, although it exhibited all the signs of rage, could have little or no consciousness of anger, as consciousness in the higher animals appears to be associated mainly with the action of the superficial layers of the brain, which in this animal had been destroyed. It is similar with infants, although in them there is some consciousness.

(a) APPRECIATION OF THE EXTERNAL WORLD

The child's mental life in general and not only in connexion with these emotional reactions is necessarily very limited at this time. Nearly all of its experience is new, although of course the old steadily increases in quantity and furnishes material for associating with each new experience, so that meanings are always being acquired and enriched. It used to be held that the infant's or young animal's experience at first consisted only of simple sensations from within and without—of smell, taste, touch and hearing at first and later of sight, and that these sensations were amplified later by

association with similar experiences or with memory traces of previous ones into 'perceptions'. But the views of psychologists have lately changed, and it is now believed that what the infant first obtains in his consciousness is a general impression, blurred at first no doubt, but gradually discriminated into its separate components as time proceeds, i.e. that a complex perception and not a fairly simple sensation is the primary experience. This conclusion has been arrived at partly by experiment with animals. It was found that if the food of hens was so arranged that palatable morsels were placed on a piece of grey paper and less palatable morsels on a piece of darker grey, the hens soon learned to make immediately for those on the light piece; but if two new shades were substituted with the same degree of difference between them as the first pair the hens still made for the lighter piece, i.e., it was not the particular shade that had led them to the correct place, but the contrast between the shades; it was as if the hens perceived the pieces as a whole and not singly. Similarly with the perception of certain forms by adult human beings. Köhler gives the following example. Here is a series of straight lines, regularly arranged.



FIG. 1.

Printed thus they are not seen as a mere series of straight lines but as sets of pairs, as if each pair represented a discrete object, related, however, to the others, as e.g. each stake in a fence to the others. It might be replied that the adult had been educated by experience to see them as stakes, but if we take the following figure the result is the same. We do not see the K as such until our attention is drawn to it.

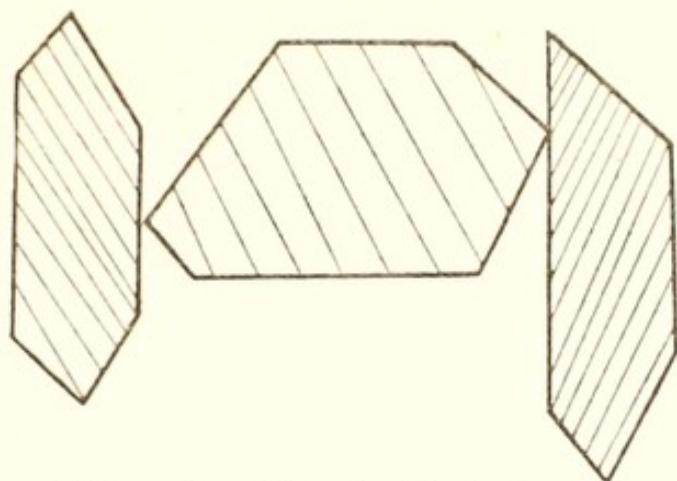


FIG. 2 (after Murchison's *Psychology of 1925*).

A simple diffuse experience of the sort just described is called a perception. This is now supposed to be the process by which the child perceives the outer world as presented to its senses—by a perception of the whole settings of things, followed by a progressive differentiation of their component parts. An entire system of psychology has been built up on such observations, and has been called the 'psychology of wholes' ('Gestalt psychology'). The very simplest experience, e.g. a flash of light, which anyone can have, is called a sensation; but it is doubtful if there ever is a pure sensation. There is nearly always an admixture of memories of previous experiences, giving a percept (i.e. sensation plus associated simultaneous previous experiences). When an experience resembling a sensation or a perception arises in consciousness without external provocation one speaks of an 'image'. When the elements of several images (internally revived perceptions, as one believes them to be) coalesce to give a new image of something never previously experienced by stimulation from without, we have an 'idea'. The term 'concept' is technically reserved for a group of associated ideas giving us a systematic notion of something. The growth and development of perceptions, images, ideas and concepts constitutes the intellectual aspect of the development of the mind. The individual mind must be considered always as a whole; and the separation of intellectual from emotional development in describing its growth is only made for the sake of convenience; there is in a sense an emotional as well as an intellectual

aspect to every occurrence. But it is necessary for descriptive purposes to deal with the emotional and intellectual aspects separately. It is the emotional side which is more important in the young, and in fact at all ages, from the point of view of health and disease. Consequently it will be necessary for our purpose to discuss the emotional aspects of mind in more detail than the intellectual.

The Nature of Emotions. It will be remembered that Watson could decipher the signs of only three principal emotions in the infant—love, fear and rage. But in children and adults there are many more emotions than these, such as happiness, sometimes called ‘elation’, sadness, technically called ‘depression’, pity, hate and the like. The list of such emotions compiled by McDougall is probably the best known. He classified emotions into primary, secondary and derived groups. The primary emotions, McDougall considers, are those which accompany the operation of an instinct. An instinct is defined as an inborn mode of response, being purposive although the organism has had no previous experience in the given direction to guide it. According to McDougall there are six primary emotions associated with the operation of six primary instincts. An analogy from a topic discussed in the chapter on the physiology of the central nervous system suggested to McDougall that an instinctive action may be represented as taking place through the medium of some structures in the central nervous system whose pattern is that of a reflex arc (see Chapter V). It is in association with the workings of the central portion of this reflex arc of instinct that emotion is supposed to arise. Such is McDougall’s schematic image of the physiological basis of emotion and instinct. The value of a ‘reflex arc’ theory of any kind of mental activity instinctive or acquired is extremely doubtful, since the relation of mental process to physical process in the brain is pure guess-work: but this theory of McDougall’s has been widely adopted. It is held by some in addition that the more resistance or ‘friction’ that is encountered by the passage of an impulse along McDougall’s reflex arc, the more definitely the emotion is felt.

In this theory the emotion is the reflection in consciousness of partially obstructed physiological process in the central nervous system.

There is an alternative theory, that the emotions consist essentially in the conscious reverberation of physiological processes occurring outside the nervous system, in the heart, lungs and viscera. This view was propounded almost simultaneously by Professor William James in America and by Professor Lange in Germany, and is consequently known as the James-Lange hypothesis. As James put it, 'When we see a bear we are frightened and run, but in fact we are frightened because we run. . . .' If we cry and feel sad, in James's opinion then we feel sad because we cry. This peripheral theory of the basis of emotion has aroused much discussion, but at present as the result of experiment and reflection does not find much favour. The experimental evidence, and such evidence as it is possible to procure from the study of disease, is on the whole against it. If it were correct, the people who complain, as some do, in mental disease that they no longer have any capacity to feel emotion should have no visceral sensation, but in practice it is found that such people do have visceral sensation. Even in the case of one woman who complained not only of complete lack of emotion but of visceral anæsthesia as well (she felt neither hunger nor thirst, for example), I found that the viscera reacted in the usual way to the appropriate stimulation, namely distension, conscious discomfort or actual pain being produced by a small balloon placed in the œsophagus and inflated.

The modern view is that whatever the exact physiological basis of an emotion may be, its physiological focus is in the central nervous system, but that from this focus there spreads a nervous disturbance which results in a temporary change in the other parts of the body, especially in the viscera. The accompanying conscious experience is the emotion as we know it. It has not been found that there are specific changes in the body for each emotion. Very different emotions such as fear and joy are apt to produce very similar

or identical body changes. Some of the bodily effects are well known to every one, for example the trembling limbs of fear, and viscerally the more rapid action of the heart. There are of course changes in facial expression also ; but here again there is not the specificity which we might expect. This can be best shown by exhibiting a series of photographs of the faces of persons in attitudes of fear, rage, joy and the like to any one and asking him to name the various emotions depicted. As a rule the answers are correct for little more than 50 per cent of the photographs.

To sum up ; an emotion includes a conscious component, e.g. a feeling of fear, plus a physical disturbance of the body, especially of the viscera (heart, lungs, intestines, etc.). The physiological processes involved will be discussed in Chapter V.

Such is the barest outline of the psycho-physical equipment with which every child is endowed for the manifestation of its emotions : but the emotion as such is of comparatively slight importance. What matters is the specific situations in which emotions are displayed ; and this implies the continued existence of a definite individual, i.e. a being with a conscious and unconscious more or less organized set of standards, aims and habits. It is necessary to consider, therefore, the development of the individual personality which gradually learns to feel and behave in certain ways as the result of constantly accumulating experience.

(b) DEVELOPMENT OF THE SELF ; AND OF THE DISTINCTION BETWEEN SELF AND THE OUTER WORLD

One of the essential preliminaries for the child's development of a separate personality is its gradual recognition of a distinction between itself and the outer world, between a ' me ' and ' not-me '. In the earliest days there is no possibility of such a distinction ; the infant is not conscious of itself as a separate entity. But gradually the child becomes aware of a number of things which do not so immediately respond to its wishes, in contradiction to the things that do. For instance, he encounters resistance in some directions and

not in others—his arm moves at will, but the wall which his arm touches does not move at his command. There comes also a differentiation from other people. At first the child and its mother are virtually one. It is as if she were a part of the child and the child still part of her. This is the so-called 'magic stage' or stage of omnipotence in development, in which the child, although itself utterly helpless, yet finds everything done for it. He is, as it were, a king and the environment (the mother or nurse) is enslaved. It has been suggested that the Golden Age after which so many of us hanker, is a reminiscence of this happy state. But there begins to be a less absolute dominion; every wish is not gratified; there are more and more denials. The 'not-me' makes itself felt more and more. There is an addition something intermediate between the child's more immediate self and the external world. This is the child's own body and limbs; they respond to his wishes, he feels a peculiar intimacy with them; but they are visible and external; they are not the most intimate 'me'. He gets a certain pleasure out of these sensations from his body, especially from certain parts of his body, for example the mouth in sucking. Hence he feels the withdrawal of the breast as a serious deprivation, rebels and may be consoled with a comforter. Rebellions of this type, if not well managed, often leave their mark upon a child, to an extent that is realized only when the morbid attitudes of older children and adults come to be studied in detail.

Prolongation of what has already been designated the 'omnipotence' phase, fostered by a too fond parent's natural inclination to indulge the reluctance of the child to leave this easy-going state, is what is commonly called 'spoiling' the child. Paternal behaviour that would be normal in the ordinary early phase of helplessness becomes grotesque when prolonged in this way. The number of mothers who continue to bath their children, especially their boys, of 10 and 12 years of age is surprising. I have even known one mother who supervised the daily bath of her seventeen-year-old son. Minor but equally pernicious examples of this unwise stretch-

ing-out of the phase of complete dependence are well known to every one ; but it is not generally realized that prolongation of any detail of any stage of the development of independence and of the abandonment of childish comforts may leave a mark which can have effects in after life on that part of the personality that is usually called character. A comforter—to take a very simple example—is to be avoided not merely on physical hygienic grounds, but because if retained after weaning it represents babyhood and a point at which development has not kept pace with the rest of the process of ‘growing up’.

An undue prolongation of breast-feeding itself can, at least in our community where prolonged lactation is not the rule, help to keep alive too much dependence of child on mother ; and may also in extreme cases nourish feelings of shame in the child, who is apt to realize that although he cherishes it, breast feeding is a mark of babyhood. I remember one man who was more than usually attached to his mother, but who among other feelings of his own insufficiency remembered with shame that he was still occasionally put to the breast when he was as much as four years old, and how this fact was discovered and ridiculed by his playmates.

On the other hand, if a normal phase of dependence is too abruptly or too soon cut short, then there is some evidence that the avoidably deep feelings of loss so occasioned may persist as a general psychological disposition, either as an under-current of sadness and pessimism, or as resentment, which will often manifest itself as undue stubbornness. The ‘not me’ is felt to be peculiarly unkind and the child feels friendless long after the original grievance of deprivation of pleasure has passed.

The ‘me’, usually called the ‘ego’, gradually becomes more complex, because it is the product of all the experiences up to date. What happens to the ego has an intimate warmth and familiarity which distinguishes these experiences from others heard, and later read, about. While awareness of the external world, of the ‘not me’, begins in the first few months of infancy, self-awareness, the awareness of a distinct ego, is

said not to occur till the third year. Following this development there appears a further distinction within the child's mind, a distinction between himself as-he-feels and as-he-ought-to-be. The latter, the ideal self, is a gradual growth of conscience, and is a mental condensation of all those ideals and standards of conduct which are impressed upon him by his environment, and especially in the beginning by his parents, but later on by his teachers, companions, the books he reads, and, nowadays, the cinema plays he sees.

Most of the progress in the study of human psychology in the last few decades has come from the study of aberrations in development in two directions. One of the principal schools, that of Freud and his followers, has described its observations, and deductions from them, in terms of 'sexual' interest. Other schools, of which Adler's is a representative, have studied principally the psychology of the egoistic aspects of mind.

In what follows most of what is said could be drawn from the observations made by these two large groups of psychopathologists, but the writer will include mainly that part which he has so far been able to confirm for himself. The beginnings of the development of ego and ideal ego have been traced above ; some of the further development will be traced in later chapters. In this section, the rest of our attention will be devoted to outlining the development of the affections and especially of sexual interests. Even the affections are of importance in childhood principally in relation to the ego ; it is only in later childhood and adolescence that as a rule they become, and then only in part, definitely associated with sex in the physical sense. This is not said because of any reluctance to accept whatever view may be justified by the results of investigation by scientific methods ; but because of the fact of observation. It is amusing to hear indignant persons fulminating against the Freudian theories because these seemed to attribute any disturbance in mental health and happiness to sexual causes, and advocating instead the importance of abnormal tendencies associated with the ego ; as if it were nobler to fall ill on egotistical grounds, than

for reasons associated not with the preservation of oneself but with the reproduction of one's species. But the fact remains that as far as the so-called 'nervous' disturbances of children are concerned, including their abnormalities of behaviour, the data of observation emphasize a much more frequent significance of what can only be called in ordinary language egotistical trends than of clearly sexual ones.

(c) LOVE OR AFFECTION AND SEXUAL DEVELOPMENT

The most curious psychological fiction of the last generation was that sex, regarded as interest, experiences and what-not, 'began' at puberty. It is now recognized that sexual phenomena commence earlier, even much earlier than that. It depends, of course, on what one includes in the heading 'sex'. If it is made to include on the elementary level all pleasurable phenomena whatever that can be derived from the body, then some form of sexual pleasure exists practically from the beginning of the individual's life; but sensuous would be a more fitting term than 'sexual' for this stage. Thus the infant probably derives pleasure from the contact of its body with anything soft and warm and especially of its mouth with the mother's breast. There is evidence that even at a very early age, there are certain regions of the body which give more definite pleasure when stimulated than the rest of the surface area. These are the mouth, the external genital organs and the anal region. As the child grows older the maximum pleasure becomes associated with the stimulation of the genital area, while the mouth zone, which was originally the most important, assumes secondary importance. The mouth area does not however entirely lose its sensuous significance, which is in fact perpetuated by the social custom of kissing. The anal region on the other hand normally loses its sensuous significance almost entirely. All this happens normally; any pronounced deviation from this process gives rise to what is called a sexual perversion, as for example certain perverse forms of kissing, and in the case of the anal area the practice of sodomy. It is a mistake to regard the latter as essentially homosexual. It is unusual to find the practice among homo-

sexuals and it is practised sometimes between persons of the opposite sex.

The merely bodily aspect of sex is of course the most primitive. Pleasure consisting merely in the stimulation of one's body is called 'auterotic', and this is all the infant's sexual pleasure amounts to and would more properly be called 'sensuous' pleasure. But afterwards the individual comes to associate such pleasure with ideas of another person's participation. This is correctly called sexual in the adult sense of the word. Some persons associate the pleasurable experience with persons of the same sex. This is called homosexual to distinguish it from the more usual heterosexual attraction. The age at which experiences of a sensuous kind come to be associated with ideas of the opposite sex varies a good deal in different individuals, and is dependent to some extent upon chance stimulation and opportunity. In some children one meets a conscious association as early as four years of age independently of any special opportunity. Probably all children are capable of it at this early age; whether the potentiality becomes fact depends much upon chance. Homburger relates in detail the case of a girl of three who showed obvious and crude sexual feelings towards other persons.

Sex, however, involves infinitely more than mere pleasurable sensory stimulation. Affection is involved in all but its most primitive manifestations. It is certainly not a matter of observation that affection and sexual pleasure are always found together; although there are those who would assert that affection always implies, consciously or unconsciously, sexual attraction. But if sex is used in this way it becomes very doubtful if it can be held to have any sensuous significance at all in a large number of instances: hence it seems to be more in accordance with the observed facts to confine the term sex to those activities, interests and sensations which either are physical and pleasurable in nature and associated with ideas of the contact of another person or are more or less directly connected with the reproduction of the species; and to regard affection as something distinct from it as a rule although often found together with sexual attraction.

In the natural order of things the child's first object of affection is its mother who supplies its wants, or anyone who takes the mother's place. The father's importance is later and has a different value. Brothers and sisters are much less important as objects of affection,—except so far as an elder brother or sister may take the place of the father or mother. But the attitude to brothers and sisters is not an unmixed one. They are in a way rivals for the affection of the parents and may therefore be objects of jealousy as well as affection; and they are very often objects of one feeling at one time and of another at another time. It is not generally realized, however, that parents may be the objects of both affection and jealousy or even actual hatred. A child may want all the affection of one parent (not necessarily the parent of the opposite sex as some have supposed), and may in its own mind heartily wish its parental rival out of the way. Love or affection has as its opposite hate; and there is no doubt, unpalatable as the thought may seem, that young children are capable of hating even a parent, and an inoffensive one at that, even to the extent of wishing the parent dead. Death, of course, does not mean to a child what it does to an adult; it means to him chiefly disappearance and seldom a sense of loss, or if it feels a loss the feeling does not last. One of the disconcerting things which fond parents have to remember is the rapidity with which their removal, temporary or permanent, from the scene is forgotten by their younger children.

How soon a child extends its affections outside its own family will depend partly upon opportunity, and partly upon the response with which it meets within that circle. A boy with an unresponsive father will seek a substitute for this father in an elder brother or uncle or some other responsive male outside the immediate family; or he may be so hurt by the refusal of father-like affection that he may gradually build up an ideal which he longs for but which he never dares to put to the test by fitting some real person to the ideal. Normally, however, except in rare and morbid instances, there begins to appear affection for playfellows, mingled, of course

with rivalries. The affection in the earlier years is mostly given to playfellows of the same sex ; if given to one of the opposite sex it often implies qualities in the preferred member which are more characteristic of the same sex : for example a girl may be liked by her boy companion because of her tomboy qualities. This preference for the same sex goes on until puberty, or even usually for a year or two afterwards : but it is not by any means exclusive of a liking for some one of the opposite sex. The latter can exist alongside it from a very early age in a fully conscious form, although except in the very rare examples alluded to above there is in the early years no conscious sexual feeling associated with it. I remember one young man who could count at least twenty-six ' affairs ' between the ages of 4 and 24.

Affection for a person of the same sex is more obviously displayed by girls than by boys, partly because girls are on the whole less reserved in emotional matters than boys are, and partly because ' homosexual ' attachments are permitted among females to an extent not allowed among males of any age. Attachments of this kind constitute the ' crushes ' and ' pashes ' of school-girls and have been a topic of such books as Clemence Dane's *Regiment of Women*. Usually the greater feeling is in the younger girl for an older one or for a schoolmistress. The girl makes the older person her ideal and model, and so the latter performs a useful function if she herself is an emotionally normal woman ; but if she is not, the consequences for the younger girl may be very serious. The latter may find herself involved in a relationship from which she ultimately wishes to be freed, or which may cramp her possibilities of affection for other people ; it may lessen her possibilities of affection for other people ; it may especially retard or completely inhibit the development of her feelings towards men. In boys a parallel series of events occurs, although in less obvious forms. Hero worship is one of these of a distinct kind. Friendships of the ' David and Jonathan ' variety are common enough in the years around puberty. Many a boy definitely loves a chosen companion in an idealistic way and will picture himself as willing to die for him if need

be. In boys a conscious sensual element is more apt to creep in. More often it remains absent, or if it exists the sensual feeling of interest does not involve the genitalia, but is confined to a desire to see the other boy nude. If mutual sexual practices of a crude kind occur, as is common in some boarding schools, the subsequent harm lies in the fact that the bent of an individual's sexual interest is very largely determined or 'fixated' by his early experiences. If the first experience of sexual relationships is of this type it may have a considerable influence in making much or all of the future sexual interest belong to the same type. This is one way in which an adult homosexual may be manufactured, but it is not the most frequent way.

Normally, sooner or later, after the occurrence of puberty, affection for the opposite sex and possibilities of sexual pleasure come to be associated; although normally the 'romantic' period maintains a divorce between these two aspects for a time, and the gap must ultimately be narrowed before successful marriage can occur. This reconciliation of the two tendencies fails to occur not very rarely in either sex, largely as the result of faulty education. What has most frequently happened is that the woman learns to believe, more by inference than by direct information, that sexual pleasure is wrong; consequently she becomes affectionate but physically frigid. With the man, the result of mis-education has often been that while he is capable both of affection and physical feeling he cannot allow himself to experience both towards the same person; in other words, he cannot retain an affectionate respect for his wife, or can only do so at the expense of comparative impotence towards her.

There are certain by-products of the sexual interest. One of them is curiosity about sexual matters, leading to inquiries of elders, to searching in books for information and to attempts to inspect children of the opposite sex, including mutual examinations of the body. These are perfectly normal manifestations of sexual curiosity and often manifest themselves as early as 4 or 5 years of age. Physical self-stimulation of the body region, or masturbation, is also a normal pheno-

menon, when normal is used in its proper sense of occurrence in the majority of instances of a class. Nearly all boys attempt it at some time or another, and the percentage of girls experimenting with it is larger than is usually believed. In America, where there is less reserve in sexual matters, a questionnaire circulated to former students of one of the best known women's colleges, gave 40 per cent of affirmative answers to the question whether they had any personal experience of masturbation. A very considerable amount of harm has been done by mistaken treatises on the subject. Popular literature is full of warnings of the supposedly disastrous consequences of masturbation, which are said to include insanity and the like. There is no proof whatever that masturbation ever produced insanity, or indeed any of the ill-consequences threatened in popular writings. It is true that excessive and often unashamed masturbation occurs in adolescents or adults suffering from severe mental disorders, but this is a symptom and not a cause of their condition. The only direct harm that masturbation in its ordinary extent is possibly capable of effecting, and then only if long continued, is premature ejaculation during the normal intercourse of adult life. It is even uncertain whether it is a sufficient cause of that condition. If practised very frequently it can also have some debilitating effect of a temporary kind. But the serious effects are not those of masturbation itself, but of the false teaching about it. Worry about it with a sense of having sinned or of having injured health, is one of the commonest factors in the nervous illnesses of young persons. Sometimes in elderly people who have lived blameless lives, but who ultimately develop a depressed mental state, morbid self-accusation regarding some acts of masturbation performed thirty or forty years earlier, is a distressing feature. Not a few males continue the habit into adult and even married life. The latter extension of the practice is a distinct abnormality and can interfere considerably with conjugal happiness. It represents a failure to achieve normal sexual development ; but in some who practise it only when the spouse is inaccessible, it represents a poor standard of conduct.

To say that the practice is not nearly so harmful as has been supposed is not to condone it. There is no doubt that masturbation repeated more than a few times after infancy implies a certain lack of self-control, and like any other instance of this lack it is to be deprecated as a fault in character. But further than that it is not justifiable to go in condemning it.

Exhibitionism, or the desire to show off, is in some instances purely egotistical, in others, an expression of a sexual urge. As a phenomenon of sexual origin it ranges from the special care of the clothes and of the appearance generally in the normal youth and maiden, to a desire, often betrayed only in dreams, to exhibit one's nakedness. Again this is a normal phenomenon, which, however, may be exhibited to excess and then become abnormal. According to the latest investigations, the child is blissfully unashamed of his nakedness, and would remain so as in primitive races if it were not for the weight of social disapproval. Exhibitionism with egotistical as well as sexual components includes not only bodily display and decorative apparel but feats of prowess, and the like.

Even a superficial consideration of the world's history, or of some contemporary conditions for that matter, shows clearly that there is more than a streak of cruelty in human nature. This streak is not an abnormality. Every individual possesses the possibility of being cruel at times, if his education did not forbid it. In more precise psychological terms cruelty is applied to behaviour, and hate to the emotion that accompanies it. Hate is the psychological opposite of love; but by the curious double tendency (ambivalence) that often exists in the human mind, hate and love, as every one knows, are often very closely associated even in regard to the selfsame object. 'Hell has no fury like a woman scorned.'

There is no doubt that the potentiality for each of them exists at a very early age. Children at least as early as four years of age can be found indulging in deliberate cruelty to small animals or to other children more helpless than themselves. The phase will usually pass with increased socializa-

tion; only if it persists into adolescence can it be considered as beginning to be abnormal. Usually it yields at once to social experience or to wise instruction. By these means of course the tendency is not abolished; it exists still, but under control; only in exceptional circumstances, as in the freedom from the usual social restraint produced by serving in the fighting forces during the war, does it manifest itself. Another exceptional manifestation of cruelty occurs in association with the sexual urge. There exists a definite sensual pleasure in the infliction of pain in some persons in association with the sexual act, and in others as a substitute for it, i.e. as a perversion. In these circumstances the cruelty is not by any means always translated into actual fact but is often confined to phantasies of whipping, etc. The classical example of the literal indulgence of such phantasies was furnished by the Marquis de Sade. Hence the term 'sadism' usually reserved for examples of indulgence in this kind of pleasure.

There is a corresponding opposite to the desire to inflict pain which takes the form of a pleasure in having it inflicted on oneself, either in fact or in phantasy. This masochism, as it is called, is found in children as well as adults, and we so often find a phantasy of being beaten or otherwise ill treated with accompanying sexual pleasure, that it is probably a normal part of the human sexual equipment. It has taken various forms, the most notable being the flagellations and other punishments inflicted by saints and other men of all ages and religion on themselves. Rousseau's *Confessions* contain a famous example. There can be little doubt of its close association with sexual impulses in most cases. It is in its mildest degree a component of the sexual feelings of normal women. Whether the willingness to suffer or sacrifice oneself for another as an end in itself should be regarded as an exalted form of the same tendency, found in both sexes but especially in the female and the less aggressive type of male, it is difficult to say. This willingness certainly is so in many instances. At the one end of the scale we have all the emphasis on the suffering of bodily pain, at the other end all

on the self-sacrifice to another person ; but probably it is a continuous scale with the element of physical pleasure decreasing as the part played by the image or ideal of the other person increases, so that, at the higher end of the series, the sensuous element is absent from consciousness.

Inversion.—There are in the development of the affections and especially of the sexual affections variations from one person to another, so that now one phase and now another assumes unusual prominence, often only to subside. When a given phase of sexual interest not only becomes unusually prominent but persists in accentuated form into adult life, the term perversion is used. Thus the interest in persons of the same sex which is a normal phase of development, may involve the partial or even the complete exclusion of heterosexual interest. This is homosexuality as a perversion of the normal goal of the affections and desires. It is a very common condition. All large cities have their rendezvous of homosexually inclined people, and some authorities such as Havelock Ellis believe that the prevalence of homosexuality is increasing, especially among women, partly as the result of modern conditions of life. There are many varieties of homosexuality ; and as it is comparatively common, and the prevailing attitude to it capable of giving rise to sorrow and disaster, and has been the cause of so much misunderstanding and often of extreme condemnation on the part of well-meaning people, it is desirable for the ordinary citizen to have a clear idea of what homosexuality means, so that he will neither himself blindly become an object of social reprehension, nor mete out to others judgements which may help to cause avoidable and undeserved misery.

There are at least two classes of homosexual invert of each sex : the purely passive male and his active and usually bisexually inclined partner ; and the active homosexual female and her partner, who like her corresponding opposite in the male is capable of being attracted by either sex. A subdivision is also possible into those homosexuals who are content with their condition and those who are not. The

latter are often extremely unhappy ; but the former are the larger class ; they accept and even, partly in self-defence against the known strictures of the community, rejoice in it. The passive male and active female usually belong to the happier class. The amount of physical indulgence permitted varies enormously in different individuals. Some interest themselves with purely platonic friendships ; the majority of male homosexuals limit themselves to mutual caresses. Few go to the length of sodomy ; most have a disgust of it, or if they do resort to it there is afterwards in some instances great shame and remorse and even suicide. Female homosexuals who permit themselves physical contact are probably not uncommon ; there are varieties of their methods which are described in detail by Havelock Ellis. While the affections of male homosexuals of the active class are notoriously inconstant and the source of much jealousy, female homosexuals of the active type appear to be much more constant. Some of these very close and prolonged friendships among women, because of the feeling of guilt produced by the existing social attitude towards such a relationship, especially if the relationship has a definite physical aspect, have an outcome in a kind of joint mental disorder known as one of the types of *folie à deux*, the two persons concerned sharing their delusions of spying, persecution, etc.

It is important to realize that confirmed homosexuality is not a deliberately cultivated vice, but is perhaps in some cases congenital, while in others (the majority if not all) it is the product of circumstances and upbringing. The usual history of the homosexual who comes for treatment is that he or she has been diverted from the normal interest in the opposite sex by some early experience of a deeply emotional, and often, as far as the sensual aspect is concerned, unconscious kind. It is not uncommon to find that the homosexually inclined person has been scared away from any dealings with the opposite sex by unwise monitory teaching by a parent or schoolmaster ; or else by an early introduction to active homosexual practices by some much older person. Most frequently, however, homosexuality seems to be the outcome

of an early, largely unconscious attachment to the parent of the opposite sex, so lasting and so powerful, unconsciously, that no rival to the beloved parent is admitted. In such instances cure, in the sense of normal heterosexual development, is at least theoretically possible.

Not only the shame engendered by feeling oneself a social pariah, as many homosexuals do, but the inhibitions produced unconsciously by the frustrated heterosexual tendencies and consciously by social restrictions and taboos so that the homosexual suffers both from within and from without, produce depression and other symptoms of a so-called 'nervous' kind.

CHAPTER II

INTELLIGENCE

(a) DEVELOPMENT

THE *Growth of the Brain*. It is not so logical as it seems to give an account of the growth of intelligence and of the brain together; for the size of the latter and the number of its nerve cells are not inevitably closely related to the amount of intelligence. Quality, not yet definable in physiological or anatomical terms, is as important as quantity. The brain of some idiots is as large and contains as many nerve-cells apparently as the brain of a normal man. Anatole France's brain was smaller than the brain of the average farm-labourer.

Growth does not begin with birth. The central nervous system, of which ultimately the brain is the principal component, starts very early in the development of the human embryo as a longitudinal tube of tissue differentiated from the superficial or ectodermal layer of the young organism (the same layer as that from which the skin and its appendages, the hair and nails, are developed). Even before the tube of tissue is fully enclosed a widening of it appears at one end. This is the rudimentary brain. The widening is due to an accession of tissues of similar ectodermal origin which form the beginnings of the retina and its nervous connexions with the brain. The neural tube grows in length as the embryo develops and its head or cerebral end grows more quickly than the tissue round it which is ultimately to form the skull and protecting membranes. Consequently the developing brain has to bend on itself to find room within the space provided for it. Three principal bends occur, two of them with their convexity directed dorsally (i.e. towards the

upper surface of the embryo's 'body') and one with its convexity directed ventrally. These bends serve to delimit geographically regions which later have specialized functions: the headmost bend, the 'cephalic flexure' as it is called, occurs in the region of what is afterwards called the mid-brain, the hindmost bend marks the junction of the brain and spinal cord; while the middle bend, with its convexity down-

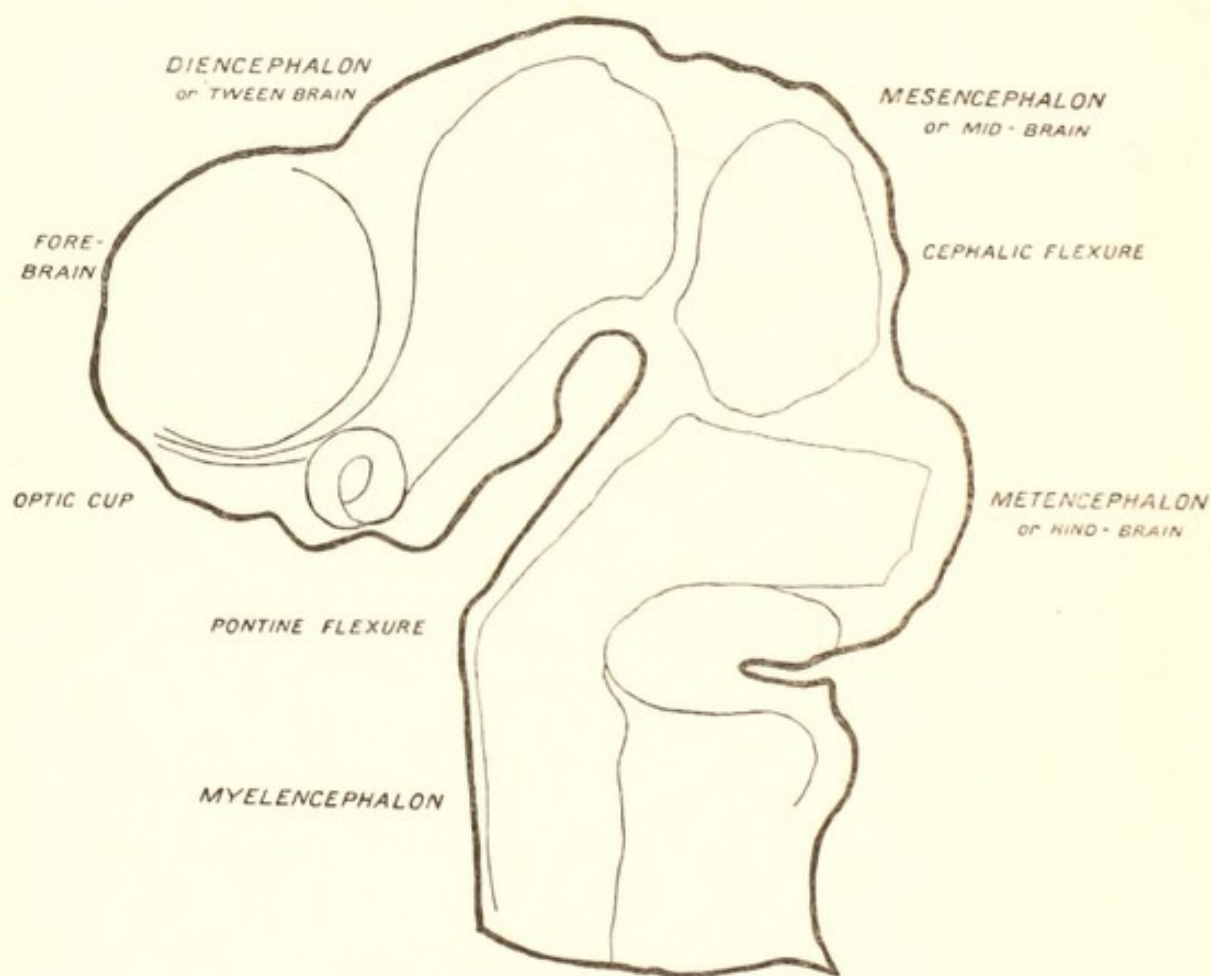


FIG. 3 (after Cunningham's *Anatomy*).

wards, marks the situation of what are afterwards the important nervous regulating centres for the vegetative functions of the body (heart, respiration, etc.). Just in front of the headmost bend there is a small notch which marks the boundary between the forebrain and the midbrain (which is mainly concerned in after-life with the maintenance of the posture and tone of the body musculature). The forebrain itself begins as a tiny bulge or blister at the anterior end of the neural tube: it ends, in the human being, as the great masses of nervous tissue, the

cerebral hemispheres which make up the great part of the adult brain. Originally the cerebral hemispheres are developed round the entrance of the olfactory nerves or nerves of smell into the neural tube, and at first are predominantly olfactory in their connexions. Predominately olfactory they remain in most of the lower animals, and this corresponds with the importance of the sense of smell in the animals' struggle for existence. The cerebral hemispheres, however, are also the

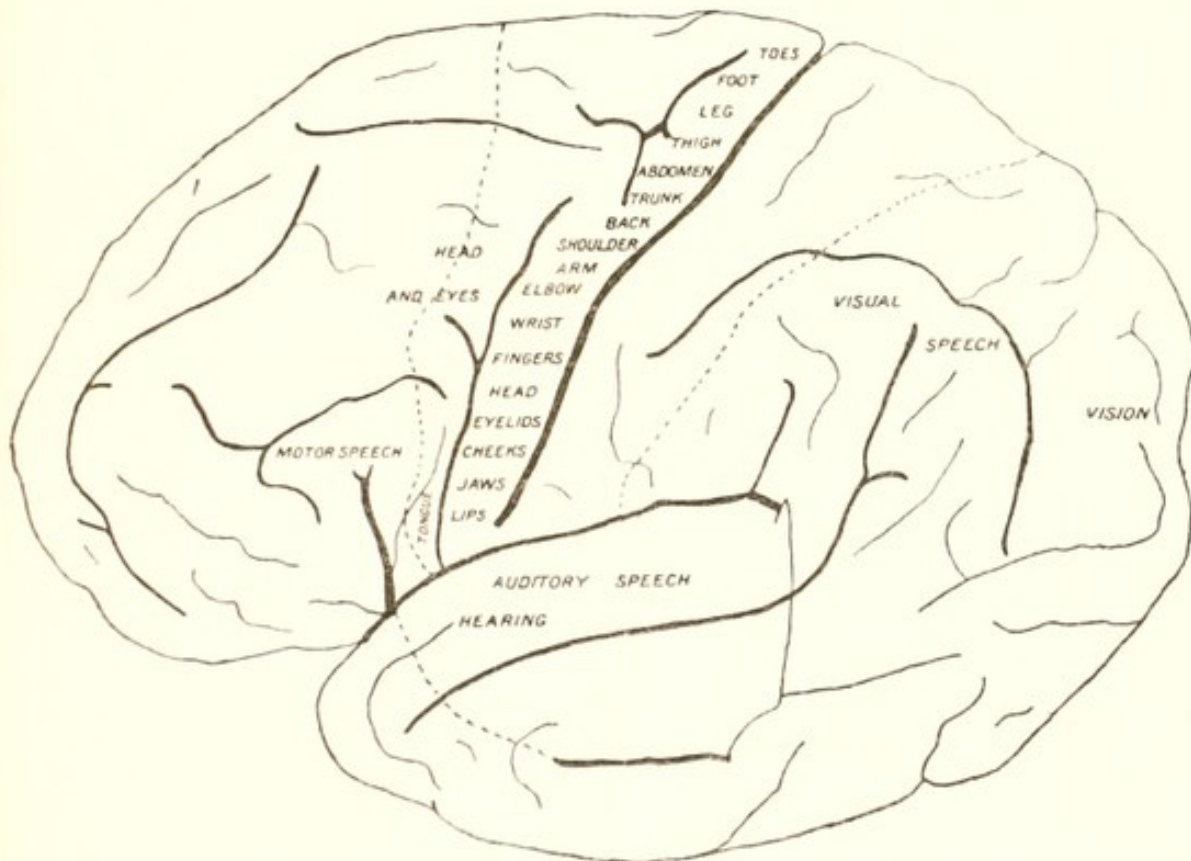


FIG. 4. (after Starr's *Nervous Diseases*).

terminus for the nerves that are connected with all kinds of sense-organ (eye, ear, etc., as well as nose) and mediate all kinds of experience, and it is this portion of the hemispheres which is so much developed in man and the highest animals, and which has been called the neo-encephalon or 'new' brain in contrast with the 'old' brain or paleo-encephalon which includes the spinal cord, the hind brain (with its vegetative centres), the midbrain (with its postural functions), the cerebellum, with its co-ordinating and balancing functions, and the 'tween' brain which is a subordinate relay station below

the hemispheres and has also to do with metabolism and the regulation of growth and sleep. The cells of the hemispheres are mainly concentrated in the surface layer or 'cortex'.

At birth, the brain has attained one-fourth of its adult dimensions and is relatively better grown than the rest of the body: after birth, the increase in brain bulk is relatively less than the growth of other parts. Moreover the weight of the brain after birth increases more slowly as time goes on and the growth of the brain in size is now usually held to be complete in the fifteenth year. During the first year of life, the growth is much more rapid than at any later time, i.e. from about 300 gms. at birth to 750 gms. at one year, the weight increasing two and a half times during this period. During the next four years it continues to grow at a reduced but still rapid rate, until by the middle of the fifth year it has reached over 90 per cent of its adult weight, which is on the average 1,420 gms. or 50 oz. in the male and 1,270 gms. or 45 oz. in the female. After the age of five the increase in brain weight is comparatively slow. It has been suggested that there is a brief acceleration of brain growth at puberty, but this has not been confirmed by statistical survey of the data.

What determines the increase of brain weight after birth, especially in the first year? It is not an increase in the number of nerve cells: all of the 12,000,000,000 nerve cells of the adult brain are said to be present at birth, although immature in size and form. An increase in the bulk of the individual nerve cell, multiplied 12 thousand million times, will naturally have its additive effect. But what is conspicuously less in the infant's as compared with the more mature brain is the insulating substance (myelin) which surrounds the nerve-cell processes which form the connecting fibres between one nerve-cell and another. The fibres that connect the spinal cord with the brain hemispheres do not obtain their sheaths of myelin till some time after birth and until they do so they have very little functional capacity; hence the new-born infant lacks the ability to use his limbs in a 'voluntary' way and can exhibit only automatic move-

ments which are the result of nervous processes or 'reflexes' at levels of the central nervous system lower than the cerebral hemispheres. He compares badly in this respect with the young animal such as a foal or a young pig, which from the time of its birth is capable of walking and moving, clumsily of course, but in the way that we call 'voluntary'. In the foal the paths from the cortex of the hemispheres to the spinal centres of the limbs are already myelinated at birth.

It is a matter of interest also to note that influences which either accelerate or retard the periods at which nerve fibres are brought into functional activity have also an effect in determining the dates at which these fibres assume the sheaths of myelin. Thus when a child is prematurely born the whole process of myelinization is, as it were, hurried up; and further, when in new-born animals light is freely admitted to one eye whilst it is carefully excluded from the other, the fibres of the optic nerve of the former myelinate more rapidly than those of the opposite nerve (Cunningham's *Anatomy*).

Later even than the cortico-spinal fibres (i.e. fibres passing from brain surface to spinal cord) to myelinate are the trans-cortical or association fibres, connecting the cells of one part of the cortex with one another and probably closely associated with conscious mental processes. It has also to be remembered that nerve cells are practically confined to the outermost layer or cortex of the hemispheres, the great bulk of the rest of the hemispheres being made of myelinated fibres connecting various parts of the cortex with the spinal cord and lower centres generally, and with each other. There are also great numbers of supporting (neuroglia) cells which multiply as growth proceeds. These neuroglia cells have probably not only a supporting and protective function, but a nutritive one as well.

If we study more closely the structure of the superficial layer of the brain hemispheres at birth, we find that the bodies of the nerve cells are smaller than the cells of the adult cortex and less well furnished with processes or fibres. These fibres continue to increase in number (it is said) up to the middle period of life, after which the increase in number ceases and a general diminution occurs. This is doubtful. In the early embryo, all the cells of the future cerebral hemi-

spheres are identical in structure. Subsequently they become differentiated into different types of nerve cells, of which the most easily recognized is the pyramidal cell, so called from its outline in cross section. These are differentiated from embryonic cells earlier in some portion of the cortex than in others and earlier probably in what is subsequently known

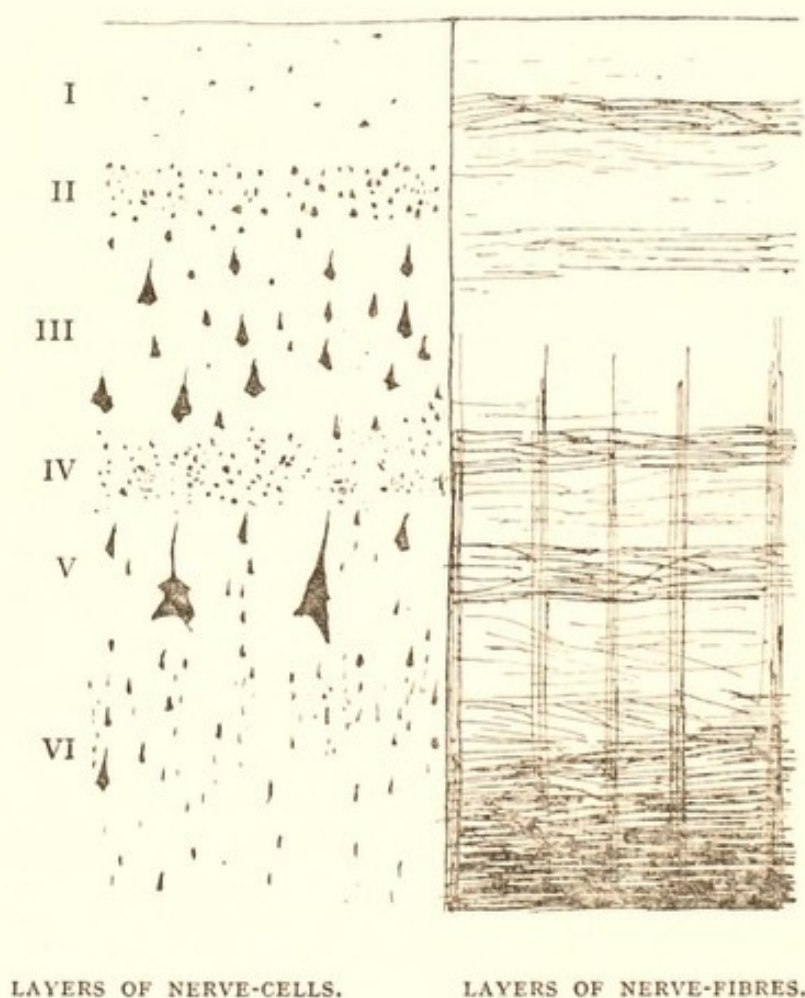


FIG. 5. SECTIONS OF BRAIN CORTEX.

- I Plexiform layer: containing tangential nerve fibres.
- II Layer of small pyramidal cells (external granular layer).
- III Layer of medium and large pyramidal cells.
- IV Inner granular layer.
- V Layer of large pyramidal cells.
- VI Layer of polymorphic cells.

as the motor area of the cerebral cortex. The differentiation of various types of nerve cells occurs in layers, i.e. at different depths from the surface of the cortex, and the regional differences in layering or lamination correspond to some extent to differences in the functions of different cortical areas. For example the visual cortex can be distinguished even by the

naked eye by the peculiar layering which characterizes it. Lamination is latest to appear in the frontal and parietal regions of the hemisphere. There is evidence that the regions last to reach nearly full development in these and other ways are concerned with the most complex of the mental functions (memory, association and attention).

The individual layers themselves grow in thickness. The cortical layers below the pyramidal ones complete their development very early, being as thick in the sixth month of intrauterine life as they are at birth, and very nearly as thick as in the adult. The pyramidal layers, on the other hand, are only one-half as thick in the six months foetus as at birth, and only one-third as thick as in the adult. It is in the thickness of the pyramidal or supragranular layers that the cortex of man differs from that of the lower animals and the adult's cortex from the infant's. Consequently it has been assumed that it is the pyramidal layers and especially the small pyramidal cells which have to do with the most complex of the mental functions—the functions which are involved in intelligent behaviour.

Brain-size and Intelligence. Clinically it is proved that the growth of the intelligence seems closely parallel with the growth of the brain in a given individual. This is quite different from saying that in a series of individuals there will be found a close relationship between degree of intelligence and size of brain (for this point see below in the 'measurement of intelligence').

The evidence for the correlation of brain-capacity and intelligence is derived not only from comparative anatomy, but from embryology, anthropology, and morbid anatomy.

The following table gives the average brain weights of different races (Berry and Porteous).

	Gms.
Australian aboriginal	1,186
Negro	1,244
Malay	1,266
Sandwich Islander	1,303
Chinese	1,332
Caucasian	1,335

Thus cultural development and brain weight seem to be correlated. There is a fairly general belief, which would be in accordance with the apparent bearing of the above table, that the American Negro is on the average less intelligent than the American White, but we shall see later that this conclusion regarding intelligence is a doubtful one.

Spitzka collected the records of the brain weight of 100 distinguished men and found the average weight to be 1,469.98 gms. or fully 100 gms. above the average weight for Europeans. He also showed that senile cortical deterioration is delayed about 10 years in the 'distinguished' as compared with the 'ordinary' man.

The brains of some adult microcephalic idiots examined by Bardleben ranged from 289 to 559 gms. There is then a considerable amount of evidence, from various sources, of the correlation of brain size and therefore of skull size with intelligence. The minute physical basis of the variations in weight of adult brains lies chiefly in the supra-granular layer of the cerebral cortex. Moreover comparative studies in mammals indicate that increasing complexity of behaviour as the mammalian scale is ascended is associated with increasing depth especially of the supra-granular layer.

The measurement of the actual size of the skull as a probable measure of intelligence has therefore some apparent basis, and as a matter of fact the results obtained confirm this impression on the whole, although the groups utilized in the following table were small statistically considered.

149 Students at University of Melbourne :	
20th year	1,483 c.cm.
153 Schoolboys :	
13th year	1,352 c.cm.
60 Australian aboriginal :	
Adults	1,347 c.cm.
Prisoners :	
20th year	1,344 c.cm.
39 Mentally defective boys :	
13th year	1,292 c.cm.
	(Berry and Porteous).

But unfortunately the correlation of head size and intelligence while significant is not at all close, and in school children is not large enough for prognosis (Pearson). For example, although 50 per cent of the individuals who were found to have unusually small heads (below the 10 percentile of a series of 200) were less intelligent than the average, 5 per cent had intelligence above the average ; while in schoolboys with unusually large heads, although 25 per cent were much above the usual average intelligence, 14 per cent were much below it and some were actually feebleminded (Berry and Porteous). Pearson even goes so far as to say ' The anthropologist, who does not advance beyond statical characters, can give no more information as to mental characters than the old phrenologist '.

Fortunately it has been found possible to measure the amount of intelligence a person has, not by the old unreliable method of calculating the size of his brain, but by means of mental tests which will be described later.

Measurement of Intelligence by Mental Tests. The amount of intelligence is calculated by assessing numerically the result of certain standard tests, which are so arranged that certain groups of tests should be passed by the average child at certain ages. The total score in tests successfully performed is called the ' mental age '. Mental age may be plotted against the chronological age for a series of average individuals of different ages. Since the ratio of mental age to chronological age remains fairly constant for the same individual at different ages up to 16 years, the curve will represent also the state of affairs for the same individual at different chronological ages, that is to say that a child who has a mental age of 8 at 8 years will have a mental age of 16 at 16 years ; while a backward child whose mental age is only 8 at 12 years of age will have a mental age of not more than 11 when he is 16 years old.

It will be observed that the curves flatten about the age of 16, i.e. intelligence apparently increases much more slowly after that time. It is true that mental development in the sense of extension of experience continues long after that, but there is general agreement among investigators that intelligence, i.e. intellectual capacity as distinct from breadth

of information, increases much more slowly after the age of 16, but the increase may possibly be considered to continue for another decade.

So far we have discussed two different senses in which the word 'age' may be used—the mental and the chronological. The latter denotes simply how long the child has lived; the former the mount of intelligence he has. But there is also an anatomical or physiological age, which denotes the stage which the growth of the child's body has reached. Just as different children of the same chronological age have attained different stages of intellectual growth so they exhibit different rates of anatomical development.

Three primary indices of physiological age have been used: (a) the appearance of the permanent teeth, (b) the development of the skeleton, and (c) the onset of puberty.

It is found on the whole more accurate to calculate the degree of intelligence uniformly with reference to chronological age, rather than to physiological or anatomical age.

There is another kind of age which, though it has no direct relationship to intelligence, has a very definite bearing on the extent to which intelligence is available and the uses to which it is put. I refer to the stages of temperamental development. The measurement of temperament is extremely difficult; anything approaching the kind of assessment in terms of age which has been obtained with intelligence has not yet been proved possible for temperament. Nevertheless it is a matter of general observation that some people are immature in this way compared with others; what we call 'childishness' is mainly a temperamental thing. It is possible to make very rough guesses as to the stage of temperamental development that a person has reached, as when one says that he has the temperament or emotional constitution of a person half his age. Temperament, however, probably goes on maturing long after the age at which intelligence reaches its highest pitch. There is also a tendency for what looks like a qualitative change to occur in the temperamental characteristics as a person grows older.

(b) THE NATURE OF INTELLIGENCE

In talking of degrees of intelligence, however, it is necessary to consider more accurately what is meant by the commonly accepted term of intelligence itself. Intelligence has been described as the ability to comprehend the relationships which underlie phenomena encountered. Every one who uses the term knows to some extent what he means by it and can roughly recognize degrees of it ; yet intelligence is not easy to define. A subtler analysis than that of everyday life finds difficulty in discovering its essence. Even professed psychologists are vague and differ in their definitions. James says that the 'pursuance of future ends and the choice of means for their attainment, are the mark and criterion of the presence of mentality . . . we all use this test to distinguish between an intelligent and a mechanical performance'. McDougall stresses the profiting by experience. Intelligence, he says, is the capacity to improve upon native tendency in the light of past experience, in contrast with instinct, 'which is the natural or inborn capacity for purposive action'.

The contrast that at once arises is that of intelligence with instinct : but this distinction, according to other writers, breaks down ; 'even instinctive behaviour would be regarded as originally intelligent were it not for the assumed self-evidence of the proposition that intelligent action implies prevision of results which is possible only through previous experience' (Stout), and Stout concludes that 'instinct has an intelligent character which is not wholly traceable to previous experience'. He designates as intelligence simply *attention* plus appreciation of *success and failure*. Intelligence, in other words, is a generalized function : instincts are specific and utilized intelligently in a specified direction. There seem, therefore, to emerge from these rather divergent definitions several characteristics :

- (1) a contrast with instinct ;
- (2) the generalized nature of intelligence ;
- (3) foresight or purposiveness ;

- (4) appreciation of the results of experience shown in the choice of means ;
- (5) persistence.

Of these, *the contrast with instinct* is of special interest. The writer who has developed the assumed contrast with instinct to the fullest extent is Bergson, who treats instinct and intelligence as two entirely different modes of activity, two divergent lines of evolutionary adaptation—two ‘divergent directions of an activity that split up as it grew’. ‘Instinct perfected is a faculty of using and even of constructing organized instruments ; intelligence perfected is the faculty of making and using unorganized instruments’ : in other words instinct uses the bodily organs provided by nature, intelligence manufactures tools for its use anew. He then says a daring thing about intellect. ‘The intellect is characterized by a natural inability to comprehend life.’ It understands only the stable and unchangeable ; whereas instinct is ‘moulded in the very form of life’. ‘The most essential of the primary instincts are really vital processes.’ ‘The potential consciousness that accompanies them is generally actuated only at the outset of the act, and leaves the rest of the process to go by itself.’ Here there is another distinction suggested : consciousness is a condition of intellectual activity : in instinct consciousness is incidental only, and perhaps present only when intelligent co-operation is required. When Bergson speaks of intelligence as being unable to comprehend life, he is apparently thinking of a contrast with what we should call intuition, which evidently he regards as essentially instinctive.

Here then we have other criteria of intelligence—the working with tools hewn out of the environment, as opposed to the activity of inherited structures ; and the attribute of consciousness. Whether intelligent activity can exist without consciousness as ordinarily understood, it is difficult to say. We shall see later that there is much evidence that it can. Here it may be said that in dissociated states in which consciousness appears to be absent, the behaviour may have all the marks of intelligence ; it has even been remarked of certain

persons that they were more intelligent in a dissociated state than when fully conscious. For example, a schoolboy patient of mine was reputed to solve arithmetical problems with much greater facility while in a trance than he could while he was awake. In placing instinct alongside intellect, as a separate but equally endowed mode of activity, Bergson differs from most authors, who would place instinct and intelligence in a hierarchy. Thus Buhler (see Koffka, *Growth of the Mind*) distinguishes three grades of development: the reflex, the habitual and the intelligent. The reflex stage, however, suffers from its lack of adaptability and the stage of habit from its inertia; neither of which disadvantage is possessed by intelligence, which is not only adaptable but rapidly so.

Two primarily opposite theories have been advocated regarding the developmental relationships of reflex (see Chapter V) and instinct, the one theory holding that instincts are developed from reflexes and the other that reflexes are but degraded instincts. By an extension of this principle, instincts were originally intelligent actions which in the course of phylogeny have become habits. The general tendency now is to regard reflexes, instincts and intelligence as being different in degree rather than in kind. Thus Koffka says 'instinct, habit and intelligence instead of being three different principles are the experience, in different forms, of one and the same principle'. Consciousness in this view is not the accompaniment of intelligence alone; the types of activity differ in the amount of consciousness which accompanies them. Thus the principle of continuity is preserved. Jennings, from his studies of the paramœcium and the amœba, came to the conclusion that their activities were such that if the protozoa were magnified many times, we should not hesitate to attribute consciousness to them. The activity even of the amœba has the appearance of being not only conscious but intelligent.

The impossibility of distinguishing the emergence of intelligence and consciousness at any particular level of development, and the greater consistency and plausibility of a hypo-

thesis which regards them as present in rudimentary form even in the activities of primitive organisms, is clearly pointed out by Head.

Head describes the different grades of complexity involved in the various forms of activity from the simplest reflex to the most refined actual activity, viz. that involved in speech, as decreasing degrees of 'vigilance'. He illustrates his contention by pointing to the behaviour of the decerebrate cat.

If the brain is removed just in front of the anterior colliculi (of the mid-brain) . . . water placed in the pharynx is swallowed in a normal manner, and when a small quantity of alcohol is added, the tongue makes a wide sweeping movement, curling as if to lick the lips. On the other hand, oil produces no movement of the pharynx or tongue. Several different reflexes can be evoked from the pinna (ear), each of which is adapted to the nature of the stimulus: if it is pricked it folds down, but touching the hairs within the ear causes a movement, which would be most effective in dislodging a flea. A drop of water placed in the pinna is followed by a rotation of the head, which brings the stimulated ear downwards, followed by a shake admirably adapted to displace the fluid. These responses are truly discriminative.

If the animal were intact we could say that these reactions were conscious. They are at once impaired or even abolished by toxins such as influenza and sepsis and by trauma and hæmorrhage. The state of high-grade physiological efficiency that is therefore necessary for the occurrence of these complicated discriminative reactions, Head would designate as a high grade of 'vigilance'. It is emphasized that high vigilance is not merely great excitability: it involves also nice adaptive discrimination. Now these highly delicate responses, occurring presumably without consciousness as we usually know it, and readily affected by noxious agents, closely resemble those complicated activities which although first practised consciously, have become habitual and unconscious. These secondarily automatic movements are likewise easily affected by toxins, or even by simple worry. Who has not observed his tennis service go 'off' if he allows himself to worry about a patient during the game? It is not a matter of conscious attention being disturbed, for one can think of other more pleasant things, and one's game is not affected to the same

extent. A toxæmia is not a phenomenon of consciousness, yet it affects these secondarily automatic acts of skill. In Head's phraseology the neural vigilance necessary for them is lowered. The making of a stroke at tennis is an intelligent affair; yet the less consciousness is involved in the stroke itself and the more conscious attention is directed to the ball and to the playing of it, the better the result. Here we have an example of an intelligent action of which one part, originally intelligent in every sense of the word, goes on better without conscious attention. All that is necessary is a certain degree of neural vigilance. Complete consciousness is associated only with the highest degree of vigilance; the lower the vigilance, the less consciousness.

From such observations as Head's, it becomes evident that there is no level of behaviour except the lowest so-called reflex level that is not distinguished by the marks of intelligence in some degree, i.e. some appreciation of present meaning and some evidence of profiting by experience, and consequently some choice.

Animal Learning: Intelligent or Unintelligent? Those who have sought to deny intelligence of any degree to the lower types in the animal scale, have based their opinion partly on examination of animal behaviour in the learning of simple tasks. For example the manner in which rats learn to make their way to food in the centre of a maze, or in which a cat has escaped from a puzzle-cage, has been 'explained' in purely mechanical terms. Thus a cat which has not been fed for a long time, is placed in a closed cage from which food is visible. The cage is provided with a door or some other arrangement which opens as soon as the animal has carried out a certain act, the animal being required to pull down a string, or turn a lock, or press a lever or raise a latch, in order to open the door. The animal does ultimately succeed after a greater or less number of attempts; and after a while discards all unnecessary movement and regularly makes the correct action for getting at the food. According to the mechanical or non-intelligent theory, the result is obtained without any participation on the part of the animal

as an active conscious being: the result simply comes to pass in the long run, as a result of the entirely automatic functioning of its neurones. This is the Principle of Trial and Error, according to which the animal's neuromuscular organization simply goes on reacting till by virtue of two simple laws, the Law of Frequency and the Law of Recurrency, the correct reaction is finally established.

According to the law of Frequency or Exercise, that reaction becomes established which is most often repeated (a neural pathway being grooved by repeated exercise); and as it is the successful reaction which is assumed to be most often repeated, this successful reaction becomes established. Thus, suppose that only two reactions are possible, A and B, and that B is the correct one: then, when A happens to come first, B must follow; but when B is first used, A does not follow, since success is already attained. Now suppose there are eight trials in which the following results are obtained:

- | | |
|--------|--------|
| 1. A B | 5. B |
| 2. B | 6. B |
| 3. A B | 7. A B |
| 4. A B | 8. B |

B, it will be seen, occurs eight times, A only four: hence B tends to become established rather than A (Law of Neural Habit). But in actual practice, the assumption that A and B alternate does not hold. The cat in the cage will often repeat the unsuccessful expedient B. Such results as the following may occur (Koffka):

- | | |
|------------|------------|
| 1. A A A B | 5. B |
| 2. B | 6. B |
| 3. A A A B | 7. A A A B |
| 4. A A A B | 8. B |

Here A, the unsuccessful reaction, has occurred twelve times, while B has occurred only 8 times. Hence, the Law of Frequency cannot apply (Koffka, 'Growth of the Mind').

A study of the curve obtained from observation of the activity of animals in this problem yields further evidence in

the same direction, namely that animal learning is not simply a matter of mechanics.

If the ordinate represents time in seconds taken to obtain the result, and the abscissa represents successive trials, the curve obtained is the curve of learning. It is not a uniformly descending curve. As a matter of fact it commonly shows a sudden descent in some part of its course, after which it remains at a much lower level than before. It corresponds closely in point of fact to the type of curve obtained from human subjects working at mechanical puzzles requiring manipulation.

The sudden drop in a case of animal learning can be explained only in terms of a sudden insight into the solution of the problem, presumably of the same nature as the realization by a human being of the solution to a puzzle.

There are other objections against mere frequency or exercise as the fundamental fact in learning whether in man or in animals. Many examples of learning as the result of a simple trial will occur to anyone. Improvement in a certain capacity does not involve merely a simple improvement in the steps of the method originally learned, but in the devisal of short cuts. Very considerable changes are made at each repetition until the best method is found, which then sticks, although some of the links between the chain of acts have been forged only once. In fact the only support for the theory of intelligent learning as a matter of frequency alone comes from the experiments in learning nonsense syllables, which is not, or should not be, if the experimental conditions were ideal, an intelligent act. Repetition sometimes leads actually to less perfect performance of a learned action—e.g. 'going stale', and 'fatigue' of certain kinds, especially as Lashley points out, the experimental extinction of a 'conditioned reflex'. (See Chapter V.) The theory that intelligence, as it shows itself in learning, can be expressed as simply a matter of habit, or in physiological terms (see Chapter V), the marking of paths in the brain and the rest of the nervous system by frequent retracing of such paths, is not tenable.

It is only necessary to watch the behaviour of higher apes

in order to conclude that something very like intelligent thinking as we know it is present in them, although of course in simple form. Thus Kohler says of his chimpanzee 'Sultan', that when given the problem of fetching fruit which hung out of his reach, and provided with a stick and box to stand on, Sultan scratched his head slowly, otherwise moving nothing but his eyes or perhaps his head, while he observed the situation around him in the most careful manner; then, when he hit upon the solution, a look of enlightenment spread over his countenance.

It is clear that the attributes of intelligence are present in some degree in the activity manifested by the lower animals.

Intelligence in Man. If we now turn to intelligence as we understand it in man, we find that it is apparently a complex affair. It involves, as we found intelligent behaviour in general to involve, (1) the retention of past experience or simply retentiveness (profiting by experience); (2) ability to perceive relationships ('meaning') and to act on this perception by adapting past experience to it; (3) persistence; (4) attentive interest or curiosity; and (5) foresight.

These five conditions of intelligent activity are themselves complex. They presuppose at least the following aspects of mental process:

Attention

Memory of various kinds—auditory, visual, tactile, kinesthetic

Perception, association, imagination, and ideation

Discrimination

Reasoning

Motor co-ordination.

The totality of these conditions we call intelligence.

Having depicted what we mean by intelligence we can proceed to a survey of its development.

Intellectual Development may be considered under three headings:

(1) Sensory functions, including the special senses. These may be called the raw material of intelligence. Their significance is shown by the intellectual backwardness shown by

those who from birth or from an early age are deprived of some of their functions, e.g. deaf mutes, unless steps are taken to train them by special methods ; (2) Motor functions, including speech ; (3) the more purely intellectual functions, including those aspects called memory, imagination, etc. Adopting the motto ' Nihil in intellectu nisi prius in sensu ', we shall consider the growth of the special *senses* first.

I. *Sensory Functions.*

Vision. The eyes of the newly born child close in a bright light and the pupils contract in a well-lit room. From the sixth day onward the eyes will follow a bright light. These facts denote that the retina is sensitive and that some of the reflex paths from retina to brain and thence to eye muscles are functioning. But co-ordinate action of the two eyes is not established till the end of the third month. Seen objects begin to be recognized in the sixth month. This is a step that denotes an organization at a higher level of development than any of the previously noted changes. Recognition is a mental process and probably involves more especially those regions of the brain which are later in developing and are known as association areas. Memory, however rudimentary, is a necessary condition of the occurrence of recognition.

Hearing. The newly born child is quite deaf, from the supposed absence of air from the middle air, or from cedema of the mucous membrane. After the first 24 hours the deafness begins to pass off, and hearing becomes very acute, so that even slight noises are heard and may startle the child. The significance of this sensitiveness to noise has been mentioned under ' emotional development '. By the third month association between the nervous apparatus of hearing and that of muscular functions has been established to the extent that the child turns its head when it hears a noise. At 3½ months voices are recognized. If it is true that recognition occurs earlier in connexion with hearing than with sight, the rôle of hearing in mental development is, at first at least, more important than that of vision.

Touch. Touch sensibility is present at birth, but is not acute except in the lips and tongue, where it is at first most

needed. After the third month it becomes fairly acute over the general body surface. Sensibility to pain is present in early infancy, but it is dull; but sensibility is acute on the tongue, the infant appreciating any small difference in the temperature of its food, as is shown by its neglecting its bottle if the latter deviates a little from the usual temperature. This delicate thermal sensibility is lost by the time adult life is reached, as the result of the way in which we accustom our lips and tongue to all sorts of condiments and all sorts of temperatures, from hot soups to ices. The localization of sensory impression does not begin to be possible till the sixth month, and is very imperfect throughout the first year. Since our appreciation of the size and shape of objects depends a good deal on associating localized tactile impressions with muscular movements and visual sensations, it follows apart from other considerations that size and shape and spatial relation can only be imperfectly learned during the first twelve months.

The discrimination of *Taste* is highly developed at birth as far as the responses to different tastes enable us to judge. Even in the new-born, sweet excites sucking movements, and bitter is responded to by grimaces. The young infant detects the slightest variation in the taste of its food with surprising accuracy.

Smell is surmised to be present at birth. It has already been pointed out that the smell brain is small in humans in comparison with the hemispheres, and this corresponds to the comparatively small use that we make of the sense of smell in our daily life. Nevertheless individuals differ vastly in the degree to which this sense is educated. Long training can bring it to a surprising pitch of development. The description of the 'invisible garden'—i.e. the scents of flowers—by Jason Hill in the *Curious Gardener* exemplifies this. Experienced physicians and nurses can diagnose some of the infectious fevers fairly accurately from the odour of the patient alone. There are great difficulties in the psycho-physiological investigation of smell—with the result that there is no satisfactory classification. It seems almost impossible to devise a satisfactory unit of measurement.

2. *Motor Functions.*

The early movements of the child are purely reflex, i.e. they occur in automatic, immediate and unvarying response to a sound or light, as in turning the head, and the nervous paths used are at a low level in the central nervous system, i.e. the paths do not traverse the brain cortex but only the spinal cord and the hind brain. The first movements with a voluntary appearance do not occur until the fourth month, when the infant will grasp at objects in front of him.

The ability to maintain a position is dependent on a different form of nervous function from that involved in movement; but posture and movement normally go together and the ability to maintain posture begins to appear about the same time as voluntary movement. Thus in the fourth month of its life a child can hold its head erect if its back is supported, and by the eighth month he can sit erect and support himself for several minutes. Standing is usually possible by the twelfth month with slight assistance. The average age for walking, which involves considerable postural ability as well as voluntary movement, is fourteen or fifteen months.

Play. The normal complicated motor activities of the child are almost entirely concerned with play. It is well known that the type of play performed changes as the child grows older, and is to some extent different for the sexes.

Each period of childhood has not only its characteristic kind of plays, but the nature of the play and games themselves is distinctly different in each. For example, toys have great prominence very early but decline steadily in interest throughout the entire period of childhood. Other play interests follow in the main the course of ball-games, which with boys rise steadily from insignificance to a prominence which they retain into adult years (Waddle).

A study of the kinds and characteristics of play indulged in at successive ages throws light on the general psychological development of the child. At first the play is intensely individual, and until the third year is practically entirely so; when a second person is welcomed it is only in so far as the latter furthers the child's interest in himself. Socialization

of play develops progressively and expresses itself partly by an increasing substitution of games (i.e. organized play with rules) for more haphazard play, and partly by increasing inspiration as well as increasing rivalry. At first play is connected with the education of the infant's motor control and with his perception of shape, size, and spatial relations. Later the play becomes increasingly intellectualized, constructive effort, apart from the simplest brick building, being enjoyed at any age from four or so onwards. The appearance of such constructive efforts is characteristic of the change that occurs from play indulged in simply for its own ends, to play that involves a purpose external to the child's own being. Attention becomes more stable and emulation and imagination are increasingly evident in the games of older children. With adolescence, team games become the rule, and co-operation reaches its maximum. As a corollary, leadership and its counterpart, submission, become evident. A wider horizon opens up for camping, exploring, hunting and the like. Girls show a decreased interest in active games and begin to look on at the team-games of the other sex. With girls, of course, social custom has interfered in the past with the normal development of their interest in games.

There have been hot disputes as to why children play. Whatever the basis of the urge, whether surplus energy or preparation for life, the very brief summary just made shows well enough the value, in intellectual and emotional as well as in physical development, of play generally.

Language is a form of motor activity, and the study of linguistic development is most important. It has to be remembered that language includes not only speech, but all means of communication with others, such as signs, gestures, mimicry, attitudes, facial expression, pantomime, explanatory sounds, articulate speech words, writing, drawing, modelling, etc.

Lower animals undoubtedly have some sort of language in the sense of means of inter-communication, but it is confined to the earlier types in the list just enumerated, except (according to some observers) in the higher apes who are

said to have articulate sounds (i.e. 'words') to the number of twenty-five or thirty.

'Why does not the new-born child speak?' The answer is that he has nothing to say, and could not say it if he had (Waddle). His resonating cavity, the mouth and air passages are of a different shape from the adults, from the absence of teeth among other reasons; the auditory apparatus has not yet received the rich education from experience of things heard which is so necessary for the acquirement of speech (children born deaf remain mute if untrained).

Speech is not an instinct, but an act of acquired habit. It is used in the service of many instincts. It is possible that the child brought up away from all possibilities of hearing spoken language of any kind, would remain mute (as deaf children do, until trained, if their deafness is complete before the seventh year.) King James I is said to have placed an infant in charge of a deaf and dumb mute alone on a lonely Scottish island (Bass Rock) with a view to discovering what language, if any, the child would develop.

A Miss Skinner who made a biography of her niece's development, noted that she acquired five spoken words in its first year. They were some months in development before they expressed anything clear. The words were idiosyncratic—they were the baby's own, adapted to certain special needs, and did not conform to any actual English words. They were 'Da', a demonstration (pointing out) = there; 'wa' = no; 'Ma' = mamma, but really expressing dependence; 'gong' = absence or failure and 'kla' = disgust. They all expressed the child's feelings and relieved her mind rather than had any motive of communication with others. This example is typical of the average first year and of the significance of such 'words' as are acquired.

The development of spoken language can be divided roughly into stages, of which Pilsna described six:

(1) The first or *reflex* stage, which is brief and in which differentiated cries and gestures are made spontaneously.

(2) The *cry and gesture* stage is held to date from the appearance of the first smile, which is thought to denote the dawns

of a purposeful use of what means of expression are available at the time.

(3) The *babbling* period, when the spontaneous babbling of the first period turns to imitation babbling (at six or eight months).

(4) The *Imitation* period (an important stage with enduring effects for all the rest of language development), in which meaningless phrases are used simply for the pleasure of imitating what has been heard.

(5) The *Plateau* period, which usually occurs at the time when the child is beginning to crawl and walk, when there is a slowing up in the acquisition of language, presumably due to the fact that the energies are fully occupied in the acquisition of locomotion.

(6) *Experience*. This (commencing in the second year), marks the beginning of speech in its fully developed form, words being used principally with the purpose of communicating thought. At first only single words are used, and by virtue of their intonation and inflection and general setting in gesture, etc., they are made to serve where an adult would use whole sentences. These single words have been called 'sentence words' and they act indifferently as nouns, verbs, etc. Later it becomes possible to classify the growing child's vocabulary and to compare it with the parts of speech in the dictionary.

Nouns are early acquired in large numbers. Verbs are next acquired in relatively large numbers. Pronouns and connecting and subordinating words are acquired last.

The manner in which words are put together to form sentences, shows interesting differences with increasing age, 'One of the clearest signs of increasing progress in childhood is increasing length of sentences' (Boyd). From two to eight the average number of words per sentence was 3, 3, 6, 4, 6, 9, 7, 5, 7, 7, 8, 2, 8, 5. The average for novelist's conversations was 11.1 (women novelists) and 10.0 (men novelists).

The omission of grammatical inflections is frequent at 2. But by the age of 3 grammatical accuracy is attained to a remarkable degree. At 8 years of age, the speech is gram-

matically very like adult speech (Boyd). 'Even with wide provinces of adult culture to be mastered the child of 8 years has an almost adult command of language,' so far as grammatical form is concerned. But the meaning of words is often still very vague. Children and, only to a less degree, all persons use many words with incomplete, incorrect, partial, or almost total lack of content. Even such a common word as 'school' was found correct content with only 40 per cent of children at 6 and with 92 per cent at 12.

Linguistic activity for a single day. The child's total vocabulary is limited, but he uses most of it every day.

There is a tendency on the child's part to utter aloud every thought that comes into his mind. It is unwise to repress this tendency which gives so much practice in the control of spoken language, although parents may find it rather exasperating.

The development of a child's intelligence may be followed by a consideration of his language alone. Waddle enumerates the following ways :

1. By the age of learning to speak ;
2. By the size of vocabulary ;
3. By the use made of words (first indicatively and then explicatively) ;
4. By the method of definition, first in terms of use (e.g. an 'orange is to eat') and then by inclusion in a large class ('an orange is a fruit') ;
5. By the general command of speech.

The Binet-Simon scale of Intelligence tests makes considerable use of all these aspects.

It has to be remembered, however, that meaning and expression in words are not identical or completely parallel functions. Very intelligent people may have a poor command of language ; and some dull people have a linguistic ability which veils the lack of intellectual development. Ogden asserts that the 'Babelization' of the peoples of the world implies not only an unnecessary multiplication of language, but within the same language an unnecessary

number of sounds and symbols ; so that from infancy the individual is burdened with the acquisition of a number of words far in excess of what is necessary, but which he may use to disguise his own real ignorance even from himself.

Drawing is another form of expression to which the child of all ages has been devoted.

Children begin by scribbling usually as a pleasurable activity in itself. The results produced attract the child's attention and he may notice chance resemblances to familiar objects like a cat or dog. Then follows a stage when the child tries to represent objects but only 'as what he knows, not as what he sees'. The failure to produce successful results may lead to a slackening of interest for a time ; but later he may gain an ability to depict with some resemblance to the object—i.e. he now tries to draw from observation—and this gives him an interest in drawing again. This was the stage, according to some observers, reached by primitive man. The things chosen for representation were such as primitives were fond of representing—the wind, the breath, and the soul ; even God was not shrunk from. Younger children prefer human or animal forms ; then come plants and flowers, houses and still life ; and finally conventional design and ornament (Waddle). Even when still life objects are drawn by young children it is with an emphasis on the movement in them—as the smoke of a chimney or engine ; and flowers are made to have faces. Up till about the age of 10, it is chiefly the degree of intellectual development that determines the accomplishment in drawing. After that, however, capacity for drawing is a special ability rather than an expression of general intelligence.

3. *The Child's Way of Thinking.*

So far we have considered the manner in which the child expresses himself. What are we to say of that which presumably precedes or at least accompanies his expression, namely his manner of thinking, which has sometimes been called 'internal speech', although this is probably misleading. To try to give the content of his thoughts would be a very

large task of which fragments are presented in other parts of this book ; but some of the characteristics of the thinking process can be stated more briefly.

In the first place, the young child's thought is essentially egocentric. What he thinks, he also believes, without reference at first to the environment for confirmation or proof. His thinking is a kind of play or make-believe. But there is no effort in the belief ; for belief in his thoughts is the first and often the only thing which occurs to him. Consequently he cannot distinguish between what is true and what is false, environmentally speaking. As a result he is often accused, by adults applying their own standards, of lying. When a child of 4 or 5 is shown two small boxes of the same size and is asked ' Which is the heavier ? ' he sometimes replies at once ' That one ', without ever having felt the weight of the boxes. Even the questions which the young child is constantly asking are largely rhetorical : he knows his own answer and often gives it before there has been time for his interlocutor to respond.

A further result is that experience does not quickly undeceive a mind of this kind. ' Things are in the wrong '—, not the child himself or the primitive man. The savage who calls down rain by magic explains his failure as the work of an evil spirit. Similarly with the young child, whose wants are all anticipated. This is the stage of ' magic thoughts ' which issue in ' magic gestures ' and then in ' magic words '. The child has but to say ' Let it be ' and ' it ' is.

This egocentric attitude undergoes gradual correction in contact with the reality of persons and things. A study of the child's use of language made by Piaget showed that between the ages of 5 and 7 nearly 50 per cent of the child's remarks are entirely egocentric, and that, moreover, of this 50 per cent a very large part was expended in soliloquy, without intention of communication with others. If this were universally true it would seem that children think that each of their own thoughts is common to any other child with whom they are for the time being closely associated ; hence when they utter, as we have seen, everything they are capable

of uttering, they assume they are understood. On the contrary, as experience has shown, young children do not understand each other's spoken statements well, unless they are accompanied by gesture and are concerned with things which are shared by all.

However, Piaget's emphasis on the preponderating egocentricity of young children's thoughts has not been confirmed by other observers. It is thought that his results exaggerated their egocentricity, as they were based on the examination of children living in abnormal circumstances.

Childish reasoning is of a fumbling, trial-and-error sort. It is not self-conscious. The various steps follow one another automatically; there is no attempt to keep the previous steps of a chain of reasoning in mind. It is not necessary that the child should be conscious of his reasoning; we only become conscious of a means to an end when the end is not attained—i.e. when adaptation fails. In so far as the child is egocentric, no difficulty of adaptation occurs: it is when he has made an effort to adapt himself to his fellows and has failed, that he has to become conscious of his reasoning processes.

The egocentricity accounts also for the child's incapacity to make a judgement of relation. Thus in the sentence, 'Paul is my brother', he grasps the relationship of himself to Paul but not Paul to himself. He is unable to put himself in Paul's place, so that when he is given the Binet-Simon test of an absurdity, 'I have three brothers, Paul, Ernest and myself', he is unable to see the absurdity. Similarly, although a child of 7 can usually distinguish his own right from his own left hand, he makes errors regarding the right and left of other people—he cannot readily put himself in their place.

The child also makes at first no attempt to perceive things in any other way than that in which they are presented to him (and a great many adults do not get beyond this stage). Piaget says that most of the boys in Geneva go on believing till they are 7 or 8 years old that the sun and moon follow them on their walks, and are greatly perplexed when they have to say which of two boys walking in different directions is being accompanied by these heavenly bodies.

Similarly also things perceived together are connected alongside one another. They are not synchronized as part of the same whole in the child's mind but are simply juxtaposed. The child artist, for example, will draw an eye alongside a head and not perceive his error. It follows that the child has difficulty in grasping the relation of the part to the whole, and of a member to its class.

Things perceived are afterwards thought of together. 'Everything is connected with everything else.' A part of a thing is held to 'explain' the things, merely because it has been perceived as connected with it; which recalls the sympathetic magic of savages.

It does not appear to be correct, however, to assert, as Piaget does, that young children never think logically. Logical structure is evident, according to other observers, as early as 4 years of age. It would be odd if logical arrangement *suddenly* appeared at any age.

The gradual diminution in egocentricity leads to a growing need for proof and verification and, hand-in-hand with this, to a relative awareness of how thoughts move—i.e. the child becomes conscious to some extent of his own thought processes, and so the latter become increasingly logical.

This development can be related to one of the stages in the child's growth of reality. In the first stages (*æt.* 2-3) reality is simply what is desired. In the second (2-3 to 7-10) there are two heterogeneous but vague realities—in the world of play and in the world of observation; in the third stage (7-8 to 11-12) these two realities persist but the world of play begins to be subordinate in thoughts to the real world; and the fourth stage marks the completion of the process.

In this connexion, Stern has noticed that as early as the age of 3 such expressions as 'to think' and 'to believe' begin to appear, 'indicating that the child has begun to distinguish a shade of difference between two modes of existence:—what is true and what is only imagined'.

How the remaining intellectual functions, like imagination, perception, etc., grow can more conveniently be considered in relation to the measurement of intelligence.

(c) THE MEASUREMENT OF INTELLIGENCE

It has been shown that there is a certain degree of regularity in the development of intelligence ; moreover the intellectual equipment with which each individual must face life varies greatly from one person to another.

It would be clearly a great advantage if we could assess the degree of it whenever we wished to do, in more or less exact manner, and in such a way as not only to afford comparisons, but also to furnish predictions of the individual's future. If we could, for example, measure the intelligence of a child and so conclude at least in a general way what kind of work he will be fitted for and what kind of achievement he may aspire to in adult life, we should be conferring a great boon on the parents, teachers and employers and ultimately on the child himself.

Mental Tests. It is Binet and Simon, two Parisian psychologists, to whom the credit belongs of first devising a workable method of intelligence testing. They had been asked to formulate a scheme which would assist in detecting mental deficiency among the school children of Paris.

Their achievement had several merits.

- (1) They devised a series of tests of mental ability which were applicable to all ages after the first two years of life.
- (2) The results of the tests could be expressed as a numerical score.
- (3) They devised a standard against which the ability of all children at least could be measured.
- (4) The tests were directed as far as possible to innate mental ability and *not* to testing what has been learned in school. In other words the tests on the whole are of ' native wit ' and not of acquired information. This constitutes one of their great advantages. They are, partly for this reason, better indices of intelligence on the whole, than examination papers of the usual kind. In fact it has been found that

the tests not only help to discover the backward child, but also the brilliant one. Paradoxically enough, there occasionally are children who appear backward because they are in fact supernormally intelligent; the work of the class in which they happen to be simply does not interest them enough; advanced a year or two in school ahead of their age such children are found to blossom in their work in a surprising way. Similarly, although there are many adults who cling tenaciously but insecurely to jobs for which they are intellectually unfitted, so there are others who are dull and lethargic and bored because their daily work is not intellectually difficult enough.

The tests consist of simple questions and problems, such as naming coins, reproducing very simple diagrams, repeating numbers, describing pictures, etc. The tests gradually increase in difficulty for higher ages.

The Binet-Simon tests are arranged in age groups: that is, there are five tests which are allotted to age VII and other five allotted to age VIII and so on up to age 16, and beyond to the 'superior adult' level, the average being reckoned as equivalent to age 16 on this scale on the doubtful assumption that intelligence does not increase after age 16.

The following are samples of the tests:

- Age 6. 3. Count 13 pennies (1 of 2 trials, without error).
 Age 8. 4. Give similarities between two things (2 of 4.
 'In what way are wood and coal alike,' etc.):
 (a) Wood and coal.
 (b) Apple and peach.
 (c) Iron and silver.
 (d) Ship and motor car.
 Age 10. 2A 'Absurdities' test (4 of 5, Warn. Spontaneous
 correction allowed). 'What is absurd in this
 sentence?'
 'A man said "I know a road from my house
 to the town which is downhill all the way to the
 town and downhill all the way home!"'

- Age 12. 2. Abstract Words (3 of 5)—Definition of
(a) Pity.
(b) Revenge.
(c) Charity.
(d) Envy.
(e) Justice.

- Age 14. 6A. Clock (2 of 3. Error must not exceed 3 or 4 minutes).

“ If the hands of clock are at twenty-two minutes past six, and the hands are made to change places, so that the small hand is where the big hand was, and the big hand is where the small one was, what time does the clock indicate ? ”

The arrangement of the tests in age-groups means that for example the age VII tests are passed by normal (average) children of age 7 or over but not passed as a whole by normal (average) children of 6 or less than 6 years of age. That was the original understanding. In practice the tests work out somewhat differently. In determining what constitutes a test passed by all average children of a given age, investigators have adopted 75 per cent of all the children of a given age. Burt suggested that it would be more accurate to assign to a given year-group each test which is passed by approximately 50 per cent of the children nominally of the year below (whose age last birthday was one less than the age-group to which the test is assigned).

Binet avoided the mistake of trying to deduce his scale from first principles. He based his scale on fact. Before asserting what degree of intelligence a child of ten ought to possess, he took the trouble to ascertain what degree of intelligence a child of ten actually does possess. Before testing the children with a test he first tested the test with the children (A. P. Ballard).

It should be at once noted that in arranging the tests in age-groups age V, VI, VII, and so on, Binet indicated *mental* age. No matter what age a person might be chronologically, if he passed no further than the tests, say, for the age-group VIII, that was the mental age assigned to him. Thus a child of 12 years of age who could pass no further than the

test for age VIII was said to have a mental age of VIII. In this way Binet established a standard of comparison, which could be compared not only with the performances of all other individuals, but could be contrasted with the particular individual's chronological age. The meaning of the term mental age therefore is 'that degree of general mental ability which would be possessed by the average child of corresponding chronological age'.

In practice another point immediately arises. It is not found that an individual passes say all the tests allotted to age VII and then fails in all the others above that mental age. This is contrary to Binet's original plan; but in practice while an average child of 7 may pass all the tests say of age VII, he may also pass several in age VIII and even a few perhaps in age IX or X. Accordingly it has been found necessary and more reliable to revise the method of scoring, and to give each test in the scale to the individual under examination and to assign him to an age-group equal to the arithmetical sum of the values of all the tests he has succeeded in passing. Thus if he passed sixty tests each of two months value he would be placed in the age group X.

In practice, one usually discovers at what age-group the subject passes all the tests, and adds on to the age-group so determined, all the isolated tests that may be passed above that age. Suppose, for example, the subject passes all the tests of age-group VIII, three tests in age-group IX, two in X and one in age-group XII, his mental age would then be $\text{VIII} + 3 \times 2 \text{ months} + 2 \times 2 \text{ months} + 1 \times 2 \text{ months}$, or VIII years and eleven months.

It will naturally be asked how the tests came to be allotted in rank and how it is known that they test intelligence at all, and what basis there is for supposing that they will hold good in testing any random individual who comes under examination. The answer is that in their modern forms they have been constructed and arranged in accordance with the results of applying them to a very large number of children of different ages. The Stanford revision of the Binet-Simon test, for example, was based on tests of 1,700 children and

400 adults. It is found that if you apply a series of mental tests to a group of children of the same chronological age, and tabulate the scores so as to construct a graph in which the abscissa gives the possible scores and the ordinate the number of children giving each possible score, the curve obtained is of this form.

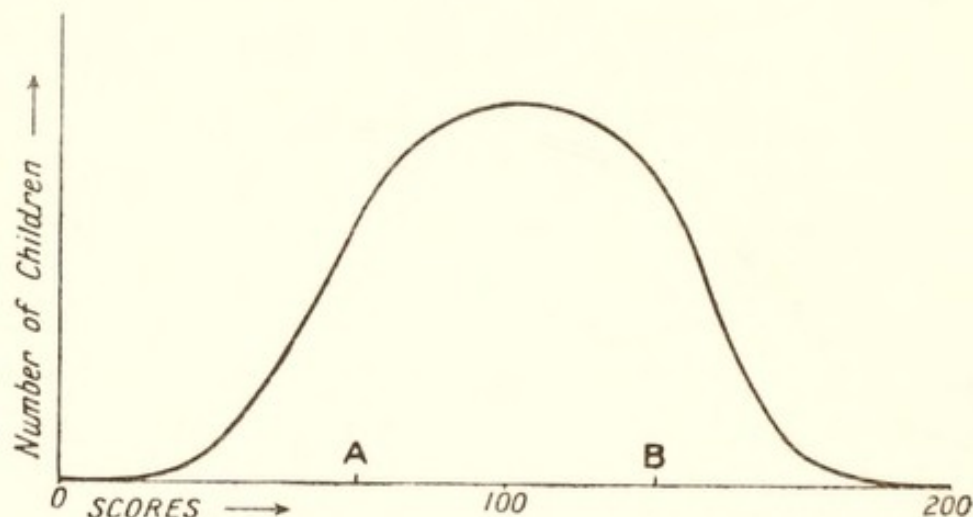


FIG. 6

This is approximately the curve of 'normal frequency'. The same form of curve is obtained with many kinds of variable in nature, say the stature of a large number of persons.

The limits of scores that are to be considered normal are somewhat arbitrarily determined. Supposing we place this limit at A and B (scores of 80 and 120), all the individuals scoring between these values are "normal"; all above super-normal; while all below are subnormal, and would in practice, if the scores extend low enough, include those recognized as mentally defective.

Suppose that the above curve represents the results for the intelligence scores of 500 children of chronological age 8, and suppose 500 children aged 9 are similarly tested. Then the two curves will intersect. In other words there is a considerable overlap of intellectual ability at the various ages and many children aged 8 can do the tests for age 9 while a number of age 9 will fail to perform all the tests for age 8. All those of chronological age 9 who are lower than 7, are mentally retarded by at least a year. They are the so-called

'dull and backward'. If the overlap extends down to age 6, (in the case of 9 year olds) we begin to speak of mental deficiency.

The Intelligence Quotient, or I.Q. or Mental Ratio, is obtained by dividing the mental age as ascertained by testing, by the chronological age and expressing it as a percentage. Thus in a child of 12 with a mental age of 9, the I.Q. is 75. A very important point is that the I.Q. tends to remain constant, within narrow limits of variation, throughout life (but there are exceptions). So that a child whose I.Q. is 50 at the age of 9, i.e. whose mental age is $4\frac{1}{2}$, will have at age 16 a mental age of 8. In other words, we have in these methods a basis for *predicting* what a child's intellectual level will be in after-life. Suppose for example that a boy of 14 is brought up for examination: his parents wish to know whether he should be permitted, when he leaves school at 16, to enter a career which may be the desire of his heart, say engineering. If one finds that his I.Q. is 80 (i.e. his mental age is 11 years and 2 months) and can exclude disturbance of the results by ill-health, or by emotional factors, one can safely predict that he will never qualify as an engineer and that he will be much better occupied at a simple routine job.

It is usually considered that an I.Q. between 90 and 110 is normal; anything below 70 suggests mental deficiency in some degree, and anything above 110 is considered to be supernormal. Idiots do not get beyond a mental age of 2 years (lower than the lowest measured by the Binet-Simon scale or its modifications), imbeciles have a mental age of from 2 up to about 7 years (I.Q. up to 40), and the feeble-minded have an I.Q. of from 40 to 70.

The validity of the tests is established not only by the fact that the curves derived from testing large numbers of children are of the type that would be expected if we were testing functions that varied within the group and developed with the years; but that the results obtained correlate highly with results obtained by other older but less exact methods such as the results of examinations, the estimates of children by their teachers on other grounds, the nature of the occupa-

tions followed in after-life, and the success obtained in them. What is advantageous in intelligence tests over these older methods, is their greater exactitude, their greater freedom from interference by personal bias, their convenient numerical expressibility for the purposes of comparison, and the power they give of prediction.

It may be asked what is it that is probed by these tests. Do they all test the same function, or is intelligence compounded of a set of mutually independent functions? Or is it compounded of groups of functions, each group being independent of every other? Of these three views, the fashionable one at present is a compromise between the first two. It is held that there is a general factor sometimes called 'mental energy' or uncommittally designated simply by a symbol 'g'. This general factor is held to permeate all intelligent activity. Specific abilities are due to the possession of special factors, each designated symbolically and conventionally as s. For example a person who shows all-round intelligence with a special aptitude for mathematics is said to possess much g, together with a specific factor s, for mathematics.

On the other hand, there are those who maintain that there is no such thing as a completely general factor, but that there are group factors of intelligence behind certain sets of abilities, but independent of the intelligence-factors behind other sets in the same individual. For example, a person may excel at languages and be very ineffective at mathematics. A great discrepancy of this kind points, however, to educational and temperamental rather than to, as a rule, intellectual factors.

The Binet-Simon scale includes a sufficiently wide range of specific tests, such as tests of visual imagery both of shape and number, command of language, memory for rote as well as connected material, reasoning, etc., to give a fairly reliable all-round estimate of an individual's abilities. They do not, however, include satisfactory tests of perception of form, or of manipulative ability, or of foresight and planning in practical situations (*v. infra*, 'modifications').

Limitations of Intelligence Tests. It has to be remembered that although intelligence tests perform a very useful function, the results obtained by testing have to be weighed very carefully in the individual case. In the first place, while intelligence is a very important asset, it is not the only one that is necessary for the battle of life. Character and temperament are just as important; in a sense, more so. Some writers, like F. C. Bartlett, hold that of all purely psychological factors, temperamental tendencies have most to do with occupational success and social status. Physique also matters; and moreover physical conditions may have an affect on the result of a test. One should not as a rule submit a person who is physically ill to an intelligence test. I remember one outpatient who was tested and did not do very well in her answers, although she had done well at school. She looked ill. Her temperature was taken and it was found to be 103. She had pulmonary phthisis. Similarly in persons mentally ill, it is unwise to attempt an intelligence test until they have recovered, or at least their general mental condition is not such that it is likely to vitiate their performance.

When the conditions are favourable and an intelligence test has been done, it is necessary to allow for several factors.

(1) The influence of scholastic education on intelligence-rating. It is found that in the Binet-Simon tests, at least, the influence of education plays a considerable rôle: so that of two groups equally intelligent but unequally educated the better educated group will give the higher scores. Canal-boatmen's children, for example, whose schooling is irregular, give lower scores than ordinary school children; yet they are at least as capable of taking care of themselves. For such cases, special tests have been devised—the so-called 'Performance tests,' such as various forms of maze (*v. infra*, on 'Modifications'). For deaf or blind children it is necessary to eliminate certain tests from the scale.

(2) Social status has an influence. Yerkes and Bridges found that, *ceteris paribus*, the school-children from two Boston schools, one a school of better-class children, the other of lower class, differed in their intellectual performance by

as much as 20 per cent or 30 per cent, the more favoured children showing that amount of superiority.

(3) Racial differences also affect the test to a certain extent ; so that the curves established for France and America are not quite accurate for London children. This is partly if not wholly a matter of environmental, linguistic and educational difference, rather than of difference in ability. Children with bookish tastes are relatively favoured by the Binet-Simon scale ; and so also are persons with a verbal dexterity which flatters their general intelligence. A similar fallacy may underly general statements so comforting to the European to the effect that the so-called ' lower races ', the native Africans and the like, are less intelligent than white men. They may be of little use at arithmetic, but adepts at keeping themselves alive in the jungle.

(4) It is necessary to remember that tests such as these do not provide a clear indication of the ability to adapt oneself to society. There are, as has been pointed out, important intrinsic factors of temperament, character, etc. ; but there is also the environment to be considered. In simple surroundings the poorly equipped individual may succeed perfectly well. Burt remarks :

In testing random samples of working men and youths, both at settlements in London and in rural districts of Warwickshire, I have met numerous individuals managing the affairs of the household and discharging the requirements of their occupation, who yet could not pass sufficient tests to allow even a mental age of 8. . . . Many of the dock labourers of Liverpool continue successfully to work and live with a mental ratio of little over 50.

It is nevertheless advisable to watch over these cases : with them supervision is usually expedient, but segregation is not usually necessary. ' Below a mental age of 8, the individuals usually become parasites ' (Burt).

Modifications of the Binet-Simon scale. Numerous modifications, all of a minor nature, have been suggested. It has been necessary to alter some of the original tests in the light of experience, and also to make more of them suitable for other nationalities than French. One of the most important

emendations suggested is that instead of introducing new tests at each age, and dropping old ones, the same kind of tests should be used at each age, as far as possible, so that a continuous record would be gained of the development of one particular aspect of intellect.

In view of the influence of education on the results of testing, and also in cases where the subject to be tested is illiterate, it has been found advisable to adopt tests of a slightly different nature. The maze tests devised by Porteous are a variety of this type. They test the ability to trace one's way through a maze-pattern from centre to outlet. But in addition to this a large group of 'Performance tests' have been devised and partly standardized. These attempts deal with what might be called 'practical ability'. They consist, in the simplest examples, of a dissected wooden mannikin, to be pieced together: and of variously-cut wooden patterns, to be put correctly in place. Sets of coloured cubes have to be built in conformity with certain patterns: pictures with blanks have to be appropriately filled in; and so on.

These tests are still on approval; but they are a useful control to the Binet-Simon method. It is not very often that a child who has had regular schooling comes off better in these tests than he does with the Binet scale; but it does sometimes happen that a child apparently two or even three years backward in the latter, comes up to his age level with performance tests. On the other hand this can happen much more often where there has been irregular schooling, where the instruction has been faulty or the child persistently unhappy, or where by reason of some local and unsuspected defect, such as word-blindness, appropriate special measures of education have not been undertaken.

The principle of devising a standard of intelligence against which every one may be measured if need be has been extended to children of 'pre-school' age, and latterly even to infants; so that it is now claimed that it is possible to predict fairly accurately, even during infancy, what performance in after-life will be. Naturally the tests applicable during infancy and early childhood have to be of the performance variety.

What, in the shape of certain actions, can the child do, in comparison with all the other children of his age? is the question fundamental to these tests. Various workers have on this basis constructed a system of standards both for infants and for children up to 5 years of age.

Group Tests. At first, intelligence tests were applied only to individuals; but it has been found possible to apply the same test to large groups of individuals at a time. The most famous example of a group test occurred in the American Army during the war, when 1,700,000 men were submitted to intelligence tests and allotted for duty accordingly. When it is realized that in a series of nearly 4,000 British troops invalided during the war for mental disorders, nearly half were invalided because of mental deficiency (which had existed from an early age), the value of an intelligence test as part of an enrolment examination will be appreciated.

The American psychologists divided their examinees into five groups according to the results of the test.

A—very superior intelligence. 4 to 5 per cent of the draft quota. High-officer type.

B—superior intelligence. Average record in College. 8 to 10 per cent. Many officers and (mostly) N.C.O.s

C—average intelligence. 25 per cent. Privates and a few N.C.O.s

C—low average. 20 per cent Privates and a few N.C.O.s

C—inferior. 15 per cent. Privates but slow in learning and lacking in intuition.

D and E—very inferior. The majority below mental age of 10.

A non-linguistic group test was found to be necessary, to meet the needs of illiterates. Such a test involves no writing or reading, but only the use of a pencil to indicate similarities in shape, errors depicted in drawings, etc. It was found that, according to the tests used, no fewer than 40 per cent of recruits for the American Army were of 'inferior' or 'very inferior' intelligence. Since the recruits were a fair

average sample of the population, it is clear that the standards set by the tests which would make over 40 per cent of the population 'defective' with a mental age of 12 or less, produce a false impression; and that the lower limit of successful adaptation in civil life must be placed at a mental age of about 8. The higher the mental age, of course, the more complex the possible adaptation.

The mental rating of officers was found to be considerably different in different arms of the Service. The highest proportion of A and B men was found in the Engineers, the next highest in the Artillery, then in the Sanitary Corps, field-signal battalions, machine-gun battalions, infantry, Quartermaster Corps, Medical Corps, Dental Corps, and Veterinary Corps, in that order of diminishing intelligence.

Intelligence is not of course by any means the only factor in determining military value, in which especially temperament (not yet satisfactorily measurable by any known means) is a preponderating influence.

In conclusion, it is clear that while tests of intelligence furnish the means to a conveniently numerical assessment of what is commonly called the intelligence of an individual, the immediate results of such tests must be controlled with great care. Allowance must be made for the state of patients' general health; the testing itself should be done only under suitable conditions and by a person experienced in such work; and the social status and type of education which has been received must also be considered. It has also to be remembered that a person who responds unsatisfactorily to the ordinary type of intelligence test, which is largely scholastic in nature, may give very much better results in tests of practical ability (performance tests). When an attempt is made to apply the findings to prediction and future guidance of the person tested, temperamental factors (*v.* Chapter VI) must be given great weight. There is a great need for a scale of tests of temperament, but no satisfactory one has yet been devised to supplement tests of intelligence. On the whole, more can be gathered about temperament from observing an examinee

during performance tests than when he is attempting tests of the Binet-Simon type.

The practical applications of intelligence tests are of high importance, both in school and afterwards. During the school age it is usually possible to assign a child to his appropriate class on the basis of intelligence tests alone, and it is even possible, within fairly narrow limits, to state his prospects: that he is likely, for example, to win scholarships and reach University level; or that he is not likely to profit from scholastic education beyond the level of a central or an elementary school; or, in the lower grades, that he ought to be sent to a special school, or will do better in a backward class. But the enlightened use of intelligence and performance tests, promises to be of equal importance at the time of leaving school, if supplemented by what are now called vocational tests.

These tests have been specially devised, and standardized, to elicit the capacities necessary for various kinds of occupation—tests, for example, of clerical ability, of mechanical ability, and ability to drive a car. The method of devising these, has been to examine the functions requisite to the efficient performance of a given task, and to build up a test which as nearly as possible contains the problem involved in that task. In the Stenquist Test of mechanical ability, for instance, ten common mechanical objects, such as a bicycle bell, two kinds of lock, a clothes pin, etc., are given to the examinee in parts, and he is asked to assemble them; the score being based on the number of parts correctly assembled, and on the time taken. This test is like the Binet-Simon scale in that success depends a good deal on previous familiarity with material similar to that used in the test.

Attempts have been made to devise tests of specific ability of a higher kind, such as constructive ability and creative imagination. Kelly's test of constructive ability consists of a number of wooden blocks, which the examinee is asked to build into any structure he pleases, as well as he can. The score is in accordance with the merit of the structure he invents, compared against a standard scale of photographs.

Creative imagination consists in uniting old images, ideas and concepts in new combinations of a useful or beautiful kind. The National Institute of Industrial Psychology devised a number of tests, which it was hoped would tap the creative imagination of the examinees. One was to construct analogies after a model like this, 'King is to Queen as Prince is to Princess.' Another consisted in writing a story upon a prescribed theme, and still another in making predictions following upon certain indications. Thus, 'What would happen if we had no teeth?' elicited from one child the prediction, 'We should have to use scissors to cut our nails'.

By all these means a child leaving school can, within limits—which will, however, widen with further experience of this work—be advised as to his vocation in a very helpful way. Vocational advice of this kind is based on, first of all, the result of a standard Intelligence Test of the Binet-Simon type. Vocation can be classified roughly according to the degree of intelligence required in the following way:

I.Q. over 120—Higher professional and administrative work, e.g. Lawyer, Physician, teacher (University and Secondary), chartered accountant etc.

I.Q. from 90 to 120—Bank clerk, book-keeper, draughtsman, electrician, etc.

I.Q. below 90—factory worker, housemaid, miner, plasterer and the like.

Intelligence tests of the Binet-Simon type should be supplemented for vocational purposes by performance tests, the need for which in other connections has already been stressed. By this means the examinee can be relegated with greater accuracy to one of the categories above. This narrows the problem at once. In addition, scholastic tests are useful, especially for purposes of elimination. It is obviously stupid to get anyone who is very bad at calculation to be a shop assistant or a bank clerk, or a boy who is poor at English composition to be a reporter. Tests for special ability are then taken into consideration and the assessment is rounded off with an estimate of character and temperament, including the ability to get on with people. Towards the estimate of

character a history of the individual's life, especially in its social relations, is more valuable than the personal interview, which can be unreliable to an extent not dreamed of by many people who choose their employees on the basis of a personal interview of say fifteen minutes or half-an-hour.

With these methods applied by experienced examiners to schoolboys leaving school, it has been found that 85 per cent of successful predictions have been made of what have proved to be successful careers (Macrae).

CHAPTER III

PHANTASY

(a) DAY-DREAMING

IN addition to the capacity for the registration of external stimuli (sensation and perception) and for their revival in the form approximating to that in which they were first registered (memory), mind has the capacity, which it constantly uses, of building up the material of experience into new configurations—i.e. in relationships with each other which the items of experience did not have when presented to the senses. This is thinking of a conceptual kind. Conceptual thinking can be either realistic or phantastic.

Realism in thinking depends greatly on a continual testing of one's thoughts against reality. For the practical business of life all of us do test things constantly, else we should soon be misled by the trend of our own thoughts, following their own laws. But in so far as we follow a train of thought that does not conform closely to things as they are, our thinking is designated conveniently as phantastic. Phantasy in some degree of development is a useful and even necessary mental function. It makes use of our mental representations of images of ourselves and our actions, and projects them into the future, so allowing us to plan. In so far as this planning conforms to what circumstances are likely to allow, phantasy is useful. But if it ever goes beyond what is at all possible, it becomes superfluous and even pathological.

How apt phantasy is to go beyond the possible is within every one's experience. Our ideals notoriously exceed our grasp. Our ambitions outrun our capacities. Ideals, which are a particular type of phantasy, are usually modelled, in childhood at least, on particular persons, especially parents

or their substitutes. These ideals or 'imagos' often depart considerably from the models upon which they are based: they are, in common parlance, 'idealized'. Furthermore they are not formulated in a fully conscious way but remain rather as frames of reference which are acted upon without the actor realizing what is determining his actions. This does no harm in most instances, but sometimes the 'imago' is too far removed from the original model, as from any possible model, to give a happy and healthy line of conduct; and if the person entertaining such an ideal seeks to follow it blindly, he is apt to find himself getting depressed or developing some other form of mental disharmony. Treatment is then necessary to unveil and define consciously the nature of the imago, and show how unreal and unsafe it has become as a guide to conduct.

Phantasy plays a proportionately larger part in the life of a child than a normal adult, partly for the obvious reason that a child has still its future to fulfil, and partly because it has not yet had the opportunity of testing phantasy against real life—has not, in other words, learned its own limitations. Any healthy child tends to follow the path of maximum pleasure. It is a pleasing thing to picture oneself as a valiant knight or commander of armies or explorer, or Florence Nightingale, Prince Charming or what-not: it is only experience that teaches the normal boy that he cannot be Prime Minister—the girl that Florence Nightingales are scarce.

Most people remember some at least of their early day-dreams. Boys picture themselves as commanders of armies, heroic pioneers, great artists, famous footballers, makers of 'centuries' and the like; the rescue of fair damsels is a favourite topic. The ambition to be an engine-driver or a policeman is hardly on the same level, being more practical, although still influenced mainly by the prowess and prestige of such awesome personages. Phantasies of possession are also common enough. A boy pictures himself as having a unique model steamer or railway—and may deceive himself so far as to boast of his possession to others.

Girls picture themselves as princesses, beauties, prima don-

nas, and much less often as mothers of families than people would like to suppose. A littler later, and sometimes very much earlier, come dreams of conquest in love. Even in young children sexual phantasies are not uncommon, though not as a rule of adult type, but concerned generally with some primitive tendencies such as peeping, exhibitionism, sadistic and masochistic manifestations—such as of beating and being beaten (which is one reason why corporal punishment may be unwise since it may in some instances stimulate such phantasies). Many phantasies are directly compensatory. The cripple child of poor parents may picture herself as tall and beautiful and rich. A common phantasy arising from feelings of neglect or resentment takes the form of a belief that the child's parents are not his real parents, that he is really of royal birth and that some day his true parents will claim him. Phantasies of the sympathy of nature, of animals, trees, birds and flowers, etc., are common in children and are also found in adults. The motives of sympathetic natural communion are reflected in the 'pathetic fallacy' of prose and poetry. In children they are connected closely with the tendency to personify everything in nature, so that for example trees can speak and a cat have an impressive personality. Children who are, or who deem themselves, ill-treated will turn to such phantastical consolations and hold long conversations with inanimate objects or speechless creatures. One such child who was cruelly treated by her father, used to resort to an apple-tree in the garden and talk to it by the hour. Another, fancying himself neglected by his mother and ill used by other boys, made a confidant of an old cow. These habits are sometimes retained into adult life and are then pathological. A university graduate of my acquaintance used when upset to hold conversations with trees, and to imagine that they spoke to him and advised him in return.

The instinctive urges that lie behind the fabrication of day-dreams are similar in every one, but the particular mould in which the phantasies are cast depends to some extent upon the sex of the child. Since many actually expressed ideas are the outcome of day-dreams—although the

most intimate of such dreams are seldom mentioned—it is interesting to notice the results of an investigation into the ideals of children of both sexes and in different countries. Miss Catherine Dodd at the time of the South African War asked 302 boys and 289 girls whether they would rather be men or women and what men and women they would like to be.

Of the girls, 35 per cent wish to be men, and only one boy wishes to be a woman, and that only in order to live an easier life, most of the boys wishing to be Wellington or Nelson; 30 per cent of the girls wish to be women because they have ideals of helping and elevating the world, or would like to be nurses, etc. Florence Nightingale and Gladstone are the people the girls would oftenest like to be; another 30 per cent of the girls would like to be women in order to escape the responsibilities of men's lives and to get more joy out of life. Of the boys, 76 per cent wish to be men for purely selfish reasons, 15 per cent for more unselfish reasons.

Adolescence intensifies the part played by day-dreaming in the normal person. The contents of the phantasies are increasingly coloured by erotic wishes. Ambition in the case of boys especially still holds an important place; with girls erotic interest is more obvious. It has to be remembered that homosexual inclination is nearly always, in the absence of subversion by older people, of a type that involves only affection and not physical practices. These affections of boys and girls for others of their own sex colour their day-dreams considerably, although not as a rule exclusively of phantasies of the opposite sex.

At this stage a boy may picture himself as fighting, suffering or dying nobly for one of his friends in the same way as he will later think of his sweetheart. The ambitious type of day-dream takes its colour from heroes or heroines selected from older people in the environment. A girl selects a school-mistress as an ideal and pictures herself as following in her footsteps in manner, dress, and influence. Such phantasies are seldom openly expressed, except in conditions of severe emotional disturbance such as occur in manic-depressive insanity. Here is encountered the type of delusion that

derives not from repression and projection but from uncritical abandonment to a belief in a phantasy.

Phantasies are usually believed in rather than acted upon. In the main this may also be said to be true of the phantasies of the insane. The extent to which phantasies of delusional insanity are believed is out of all proportion to the extent in which they are acted upon. It has been frequently remarked that an insane woman may believe herself to be the Queen of Sheba, and yet without protest go on scrubbing floors.

There are, however, instances where a phantasy is fully acted upon for a time with accompanying repression of appreciation of reality. Mental disorder of this sort is often transient. An instance occurred recently with a motor engineer who after twelve years with the same firm which he had seen grow from its meagre beginnings to a flourishing concern with many employees, was discharged for a slight lapse in conduct. He brooded over this incessantly for about a month, often picturing himself back at his work again, till one day he disappeared from home. Two days later he found himself in a garage on the Continent, whither in the old days he had frequently been sent to carry out repairs on the company's cars. On this occasion, of course, he found no work waiting for him, and it was then that he suddenly came to himself—i.e. realized that he had no business there and that he was out of employment. He then took the first boat back to England, but could at first remember nothing of how he had left London and arrived at his destination abroad. What had happened was that he had so surrendered himself to his phantasy of being back at work again that he had packed up his tools and gone abroad just as he did when working for his firm, and so was happy again for thirty-six hours. A more prolonged instance of a similar kind, but not involving a fugue or flight and without amnesia afterwards, was furnished by an elderly man, who courted a girl in the same office as himself, where he had worked for many years. She was about half his age. He had previously passed for a very quiet and retiring man, with no interest

in the opposite sex. Now, however, he began to give her fairly valuable gifts, and furthermore on one occasion took her to Bognor, where he pointed out to her a large house on the sea front. He said that this was his house, that it was at present let, but that when the lease fell in, he and his bride would occupy it, as he had a considerable private income. All this time he behaved with propriety, and the girl, in spite of his age, appeared to consider herself fortunate. All went well till near the time of the proposed wedding (which was to take place in church), when the bridegroom began to be pre-occupied. Little notice was taken of this, but when the day arrived his friends had great difficulty in persuading him to dress; so much so, indeed, that after the hour appointed for the ceremony he was still in his lodgings in a collapsed condition. The ceremony was postponed *sine die*, and it was then discovered that the bridegroom had been married before, that his wife was still alive but separated from him, and that the marriage had been extremely unhappy. The man made no attempt to deny these facts, later admitting them *in toto*. Yet he made no attempt to exculpate himself or to run away; he simply appeared more and more preoccupied. When the furore occasioned by the whole episode had died down, he began to be able to concentrate again, and was very anxious to go back to the office where he had worked and first met his 'bride', and seemed only too pleased that if possible the affair should be disregarded.

These attempts to live or realize a day-dream in action stand midway between day-dreaming in its normal function of preparation for useful action and day-dreaming in which the person indulging it does so without any attempt at all at external realization. In the last, the entire time of the patient may be spent in day-dreaming. He lies in bed constantly all the day long, if permitted to do so, and if he is up and about, stands smiling occasionally to himself, utterly preoccupied, answering questions only if closely pressed. This is one of the conditions found in the insane.

Thus a young ship's officer lost his job because he spent more and more of his time imagining himself going about

the world with much money to spend, purchasing Rolls-Royce cars, touring foreign lands, living at the best hotels and so on. He did not seem to mind destroying his career and made no attempt to find another.

Sufficient instances have been adduced to show the transition from normal phantasy to delusions (i.e. to a failure to correct the phantasy by reference to reality), and the pathological extent to which phantasy may replace action instead of stimulating it. Although the phantasies vary with the individual there are some general types which are more common than others, and have played a large part alike in normal individuals and in the genesis of insanity. Among these are the 'Jehovah' complex, death phantasies, rebirth phantasies, phantasies of royal birth and the phantasies of guilt.

The Jehovah complex, or the private estimation of oneself as a great or even god-like person, is a weakness to which most people have to confess. There are certain occupational classes of persons among whom it appears to be more rife, or at least more obvious, than in others; doubtless the circumstances of the work conduce to it—a ship's commander, for example, or, in the medical profession, surgeons. There was a certain eminent surgeon who exemplified the Jehovah complex very clearly. He always spoke in the editorial 'we', walked with great dignity, brooked no really promising man on his staff, and would have no contact with the administration of the hospital which he honoured by his services. His nickname among the irreverent was 'God'. In its fully declared and delusional form this phantasy is seen often enough in the insane, of whom one or two in every asylum believe themselves to be the Deity. In women who are insane the corresponding opposite appears to be the delusion of being the 'Bride of Christ', of whom one may encounter several instances in an asylum of moderate size.

Phantasies of one's own death are cherished very commonly from childhood upwards. The spoiled child whom something has aggrieved thinks how sorry other people will be when he is dead, how his merits will be spoken of, and how his offending parents will have their hearts wrung by grief and remorse.

The same kind of person grown adult likes to compose his own obituary notices in phantasy. In more profound states of discouragement, people contemplate death often enough as a release. Most get no further. Some attempt suicide ; and a few, instead of taking any active step, enact their phantasy of death. They lie in bed speechless, motionless and totally irresponsive,—in other words, stuporous. Sometimes after days or weeks or months of this corpse-like animation, the patient begins to speak again, and tells how during the stupor he thought he was dead, that his friends were dead, and that he had visions of Heaven. In such a patient the phantasy of death represents the longing for release from earthly strife. But usually such longing for death does not exist alone ; there is in addition a longing to be born again—the desire that figures in so many religions—and many such patients say also that they felt themselves going down under the ground, or under water. These latter notions have been symbolic of rebirth since myth and literature began.

The phantasy of rebirth may come to be associated with such symbols because of the known facts about birth from the mother's body, and the identification of the Earth with the mother. Desires tend to be clothed in concrete language among primitive people. It is only among educated persons that there flourishes the tendency to abstract. The doctrines of the transmigration of souls and of reincarnation are derivatives of this phantasy, which is much more prevalent among normal people than is usually suspected. I know a shrewd business man who believes that he had a previous reincarnation in ancient Egypt, and he adduces dreams to prove it. In literature rebirth is a widespread notion.

Lafcadio Hearn gives a pleasant illustration from the Japanese. His story, purporting to be a translation of an old Japanese document, tells how Katsugorō declared that

he had been in his former existence the son of a certain Kyūbei, a farmer of Hodokubo-mura, which is a village in the jurisdiction of the Lord Komiya, in the district called Tamagori, in the province of Musashi ;—

That he, Katsugorō, the son of Kyūbei, had died of small-pox at the age of six years—and

That he had been born thereafter into the family of the Genzo before-mentioned.

Though this seemed unbelievable, the boy repeated all the circumstances of his story with so much exactness and apparent certainty, that the Headman and elders of the village made a formal investigation of the case (*Gleanings in Buddha Fields*).

Mythology contains numerous instances. In the insane this notion of rebirth is a common motif ; for in some of the states of stupor already alluded to, the patient lives through a phantasy of being born again.

Phantasy of royal Birth or distinguished Lineage. This is frequently entertained by children who feel themselves neglected by the parents in favour perhaps of a younger brother or sister, or who suffer from a feeling of social inferiority. It is seen in socialized form in the boasting of adults about their distinguished ancestry, and in commissions to the College of Heralds for the compilation of pedigrees and coats of arms. This kind of manifestation reaches its most complete and absurd climax in America, where there are innumerable societies of persons claiming descent from early settlers, who subsidize professional compilers of pedigrees to the extent of millions of dollars yearly. In asylums the phantasy reaches unrestrained expression in another way. The insane person believes himself to be the son of some royal or distinguished personage ; but whereas the sane are obliged to conform with reality by projecting their yearnings into the past, the insane usually believes himself, independently even of the aid of any heraldic experts, to be the son of some existing royal personage. In women, the phantasy often expresses itself as that of marriage to some royal person.

Guilt Phantasies and expiatory Rituals. It is not a very unusual experience for the police to have some one come and give himself up for some murder, and to find subsequently that the person who has voluntarily surrendered himself has committed no crime at all. Such a person is suffering from such a heavy load of guilt of unconscious origin, that he seeks to account for it in his own mind by imagining that he has committed a serious crime. The unconscious origin of

the guilt is usually some thoughts or minor acts in early life which have conflicted with the subject's standards and have to be repressed.

But more straightforward examples are commoner. Partly on account of the religious and moral teaching given to children, many of them regard certain peccadilloes, especially sexual ones, as being heinous in the extreme, and they consequently regard themselves as being sinners of the worst type. Masturbation is the commonest of these small 'crimes' and the misery caused by the usual teaching about it has been immense. The phantasy of guilt in this connection may lead to pathetically absurd performances. One boy of 18 bought a bottle of eau-de-Cologne, sprinkled his genitals with half the contents as a purification rite and buried the bottle with the remaining half so that the contents could be put afterwards to no base use.

This is a prototypic example of the psychological basis of expiatory ceremonies in general. There is an act, real or phantastical, conscious or repressed, with a feeling of guilt attached, and the guilty feeling creates an unrest which the sufferer seeks by ceremonial measures to appease. The murderer, with his real act on his mind, hears all around the whisperings of his guilt. The insane person, with the phantasy only of some act repugnant to his conscience, likewise believes that people are talking about him, looking at him and pursuing him.

Similar processes lie behind some neurotic symptoms as well. For example, the anxiety that is so common in neurotic patients represents, at least in some instance, a fear of punishment based upon a feeling of guilt arising from actions, real or phantastical, abhorrent to the conscience, implanted by the teachings of parents. A professional footballer complained that his playing skill was seriously interfered with by his fear of a fatal accident. If he received a kick or scratch he became so panicky that he could not attend to the game. This was found to be dependent in part on a feeling of guilt for certain small sexual episodes which had occurred in association with a small girl, when both of them were only 5 or 6 years of age.

(b) DREAMING DURING SLEEP

There is a well-known gibe directed against some of those who practise one or other of the forms of modern psychotherapy, that they have 'bought a dream-book' and, armed with this, and sometimes with not much else, proceed to apply treatment. There must be some truth in this accusation; for, having once been asked to talk about dreams, I sent out for a dream-book and my emissary went all up and down the book-shops of the Charing Cross Road without finding a single one, but, returning in despair, bethought her of a shop in the 'Harley Street area', where, to our surprise, she was successful in procuring two, at sixpence and twopence respectively.

It is a commonplace reflection that the life of man at the longest is comparatively short,—that it is very difficult for him to view any question, especially a scientific one, in sufficient perspective. The study of dreams is relegated now to a few consulting-rooms, and the scarcity of demand for popular books on dreams which seems to be indicated by our search for them, suggests that among the section of the population where a belief in a certain type of dream-lore is usually taken for granted, the interest has departed. Yet throughout historical time, and even (there is evidence) before it, dreams have had a large part in shaping the most intimate and cherished beliefs of mankind.

Dreams in primitive Cultures. At the present time, among certain peoples in a primitive state of culture, dreams are still given considerable significance. Most commonly they are held to represent either the visit of a spirit to the dreamer, or the visit of the spirit of the dreamer himself to his friends or to distant places. The conception of the dreamer being visited by a spirit is the basis of the supposed oracular function of dreams. By a similar investment of the dream with meaning, the would-be magician or medicine man acquired his 'familiar', and the individual man-in-the-street met his tutelary spirit. It is a significant fact that such familiar spirits were commonly acquired during fasting, for example

during initiation fasts, which are nearly universal forms of ritual in the earlier stages of culture. It is significant, because similarly induced conditions are met with clinically in our own time.

Exhaustion-dreams and spiritistic manifestations. It is not uncommon in the exhaustion that follows any prolonged physical depletion, especially a combination of starvation, hæmorrhage, and loss of sleep, for dream-like experiences to occur which closely resemble—are in fact essentially identical with—the experiences during fasting upon which primitive peoples base their belief in spirits. A good example cropped up the other day. A woman of 40 had had a good deal of worry in her business and domestic life, and this had culminated in loss of sleep, and in persistent vomiting. At the same time she suffered from menorrhagia. This had, at the time I saw her, been going on for several months. Recently her doctors had noticed that in the day-time as well as at night she seemed to be in a dreamy state. When she was asked what was happening, this is the account that she gave of herself.

“People from the underworld come round my bed. They have beetles and other unpleasant things with them. They asked me to be a medium. My brother came. A little light appeared in the wall (indicating the wall on her right) and I could see his face quite plainly. People of the upper world came too. My brother (he died long ago) said that he could not come to me before, because I had to send messages to him. He could not communicate with me first, as those on earth must do so (i.e. take the initiative). He said he had wanted to help me when my troubles were pressing me. He said he loved me more than anyone else in the world. (They were close friends as children.) So long as I spoke to him, the people of the underworld kept away. He told me they wanted to use me. (‘They’ had said that they wanted to ‘use’ her body as a medium.) If any one is insane it means that their spirit goes to heaven and only the body remains behind.

I couldn’t sleep, because of these people coming and going

in constant procession. Sometimes a leopard would sit on my bed. Sometimes I could see these people through a pane of glass, and then I could not hear what they were saying."

She saw Dr. E., who often came to her in her dreams. He was taking her to Southampton, and they would start off on a road, and she would somehow go back and start on a different one, and he would meet her again. The mental forces and processes behind such hallucinatory experiences as this will be evident when we come to consider the psychology of dreams. In the meantime the mere occurrence of such a case illustrates very well the essential continuity between the mental life of primitive peoples and ourselves, and the importance of dream-experiences for shaping not only some of the cherished beliefs of mankind in general until recent years, regarding extra-terrestrial existences, but of individual belief in 'psychic' or spiritualistic phenomena, in immortality, in the transmigration of souls, and in reincarnation even at the present day and in our own culture. An instance was given above of a man who believes in reincarnation and especially in his own, on the strength of a recurring dream of a female figure, dressed in garments of an Egyptian cut, who declares that she was his love in a previous life. A similar continuity can be shown to exist between dreams and myths. A myth, it has been said, is the dream of the race. What favours or prevents the acceptance of dream-experiences as real is the state either of cultural development or, more roughly, public opinion, and the state of the dreamer's mind. If the last is such as to contradict the former, then public opinion labels the dreamer mad. The clinical corollary is to beware of accepting as madness tales of spirits or voices or the like without considering (*a*) the setting of general health in which the phenomena arose, since delusions based on dream experiences occurring during a period of physical exhaustion are less ominous as a rule than delusions originating differently; and (*b*) the cultural level of the community in which the patient has been reared or now lives. G. B. Shaw's defence of Joan of Arc as eminently

sane in spite of her hallucinations is a good example of a judgement clinically well justified on such grounds.

Before discussing the psychology of dreams, we have to consider first of all whether such a discussion is likely to be profitable. In other words is there really a psychology of dreaming as well as a psychology of dreams? Dreams once produced are admittedly phenomena of a psychological order; but there is not much profit in studying them from a psychological angle, as mere epiphenomena, unless it can be shown that dreaming itself is also determined—at least partly—by factors which are also psychological. Otherwise the study of dreams would be about as interesting and as useless as the study of symptoms apart altogether from the diseases which produce them. Put in another fashion: Are dreams essentially physiological in origin, or do they follow from first to last, or principally, laws of a psychological kind? On the answer to this question depends also whether we can proceed to discuss sleep along with dreams, or whether it is safe, scientifically, to treat them as separate subjects. When, some years ago, I had to write a book on sleep, I gave no space in it at all to dreams; for I believed that sleep was essentially a physiological problem and, so far as I could see, one could learn little about it from dreams. Later I was much encouraged in this belief when in re-reading Freud's classical work on the *Interpretation of Dreams*, I found that for precisely similar reasons he explicitly excluded a consideration of sleep from his book. Sleep, he says, he has always regarded as essentially a physiological and not a psychological topic. So far as I can discover I had no recollection of this view of his when I wrote on sleep. I do not think it even influenced me unconsciously. I was not specially interested in sleep when I first dipped into Freud's book, and I think therefore that this opinion of Freud's made only a transient impression on my mind which did not influence me at all later. So far as I know, my view that sleeping and dreaming were phenomena essentially separate was arrived at independently. I labour this point because, as I hope will appear later, deductions from the psychology of dreaming,

especially those that exhibit the otherwise unsuspected range of memory, will suggest that I really did remember the view of Freud's when I wrote my book, and that it unconsciously influenced me to exclude dreams from it.

Dreams have been an object of interest for thousands of years, but until the last thirty years, at most, theories of their origin have been predominantly physiological. It has been held that the causes are (*a*) either stimuli falling upon the sense organs during sleep, which then undergo a phantastic elaboration in half-awake cerebral centres, in the absence of the control of higher centres which in the fully awake state co-ordinate all the random experiences from the environment, or (*b*) the experiences come from organic sources, the most familiar being a distended stomach.

Some of the support for a physiological view comes from the dreams that have been recorded in patients with organic disease. Hippocrates himself noticed the occasional connexion. Constance Ganner dreamt that he was bitten in the leg by a snake. Several days later an anthrax pustule, hitherto quite unsuspected, appeared in the leg. Lhermitte records that Testi, the aged doctor of King Louis Philippe, dreamt that he had an attack of apoplexy; and three days later he actually had an attack and died. Other writers have recorded disturbing dreams in apoplexy, dreams of fire having been considered as particularly striking in this regard, in the light of a theory that they represent a direct influence of the physiological stimulus upon the actual content of the dream. But so far as dreams in relation to apoplexy are concerned there is another possible relationship between the physiological state and the dream. The dream may in a sense cause the apoplexy and not the apoplectic state the dream. MacWilliam has shown that the blood-pressure can rise during disturbing dreams, especially nightmares, to heights considerably in excess of its waking level (apart from violent exertion): so that even if a person with a known hyperpyesia takes sufficient care of himself during the day-time, he may die in the night from cerebral hæmorrhage brought about by a nightmare. It has been suggested that

this is a comparatively common cause of death from cerebral hæmorrhage during sleep.

Other examples of dreams apparently dependent on morbid organic excitation are quoted by Havelock Ellis. A young lady dreamed that she had swallowed molten lead, and although quite well on awaking, was attacked by severe bronchitis toward midday. This and the anthrax dream suggest that minimal excitations which would be unable to find a place amid the tumult and distractions of waking consciousness may manage to obtrude themselves during sleep. It has been suggested that this may perhaps be especially so with organic stimuli, as distinct from those impinging on the skin or sensory surfaces of the body. For example, Ellis also quotes an example of a girl who dreamt, no fewer than three days before being laid up with typhoid, that some one threw oil over her and set light to it. This suggestion depends upon the supposition that conscious attention is directed relatively more to visceral sensations during sleep than during the waking hours.

Disease of particular organs has been held to have a particular variety of representation in dreams. The frequency of anxiety-dreams in diseases of the heart and lungs has been emphasized by so many writers that even Freud takes it for granted. Tissié declared that those suffering from diseases of the heart usually had very brief dreams of death in terrible circumstances, with a rapid awakening; and that people with lung disease had dreams of suffocation, and of flight, while many had the familiar nightmare. Freud quotes Bonner who succeeded in inducing a nightmare by lying on his face and covering the mouth and nostrils.

Ellis records a dream in a woman with heart disease in which she was driving sweating horses up a steep hill, urging them on with the whip in order to avoid an express train which she imagined was behind her. It is suggested that the panting and sweating horses are the representation of a struggling heart. An asthmatic patient of Max Simon's during an attack dreamed of sweating horses attempting to draw a heavy waggon uphill.

Such dreams seem to represent in characteristic form the perception of distressing sensations. But the most obvious instances of direct influence of the organic stimulus upon the form of the dream content is found in sexual dreams, which are within the experience of every one and are the basis for what might be called the 'illusion theory' of dreams, combined with the theory of an organic cause of dreaming, the organic sensations being misinterpreted in the same way as perceptions in waking life are sometimes misconstrued so as to produce illusions.

But other writers have gone further and declared that each organ has a characteristic representation in dream consciousness, and that these representations appear in dreams even where the organs are healthy. Schreiner (quoted by Freud) holds that the dream phantasy symbolizes the whole body as a house, the intestines as long streets of houses, the heart as a hollow chest or basket, and the bladder as round or hollow objects. But although the conception of symbolism in general is a most important one in the modern theory of dreams, no one has succeeded in producing evidence to support this exact correspondence between exciting organ and symbol.

A number of observers have endeavoured to substantiate by actual experiment the physiological theory of dreaming (you cannot have, as yet, a physiological theory of dreams). Maury placed the limbs of dreamers in different positions and claimed to observe traceable effects in their dreams. Meunier goes so far as to prescribe substances to ensure pleasant dreams. He found that the application of an olfactory stimulus during sleep was particularly effective in this way. In hysterical subjects 'essence of geranium' provoked various agreeable dreams followed by a pleasant emotional tone during the day. Havelock Ellis quotes this without a smile!—perhaps because he has just quoted experimental evidence from another source by an American professor who placed a crushed clove on the tongues of twenty women students on ten successive nights on going to bed. Of 254 dreams which occurred, 15 were smell dreams, 8 were taste

dreams of which some 'actually involved cloves'. This is a beautiful example of the limitations imposed by the physiological theory of dreaming. No enquiry was made as to how many of these young women's dreams involved the professor himself.

This can be held to be established for the physiological theory of dreaming; that organic and peripheral stimuli are capable of inducing certain elements in a dream; and probably also in some instances of starting the whole dream going. From a purely physiological viewpoint also, dreams can be regarded as a release phenomenon—the kind of mental process which occurs when higher centres are out of action. There is some evidence in support of this theory of dreaming as the result of the operation of a degraded physiological level of activity, obtainable from some cases of organic disease (*Lhermitte*).

But any truly physiological theory can never account for the forms of dreams themselves any more than we can describe the processes of waking consciousness in terms of current physiology.

There is another argument in favour of some alternative theory. Physiology is, to my personal taste, the most fascinating subject connected with medicine; but the physiological theory of dreaming, when all is said, is terribly dull. This would, I hope, in any case have suggested to me that dreaming had very little to do with physiology, and that some other organon of dream-interpretation was required. This organon is nowadays provided for us by Professor Sigmund Freud. It is a great pity that his work has become so much associated in the popular mind with sex. This has retarded, for various reasons, the recognition of his contribution to psychology. It is absolutely fair to say that the psychology of human conduct was as a scientific topic extremely fragmentary and unsatisfactory before his advent. The revolution in psychological thought produced by his advent is comparable only in science with that effected by Darwin in biology. And the parallel does not stop there, for like Darwin, he had his predecessors; but like Darwin his

was the unifying genius and the insight which brought both coherence to science and conviction to those who would listen.

Freud's *Interpretation of Dreams* contains his most brilliant work and the fundamental things about it would stand independently of his theory of infantile sexuality. It is both a theory of dreams and a theory of dreaming, as I have distinguished these two, and the worst that can be said about it is that its application is intensely interesting clinically. It is interesting for two reasons: that when put into practice it brings that intellectual pleasure which only a highly probable hypothesis ever does; and that perception of truth which is only obtained when a theory is found unexpectedly to fit all sorts of facts of observation.

Freud had his predecessors. Griesinger in the early part of last century drew comparisons between dreams and the phantasies of insane persons. I have known a patient who saw himself converting the whole of Lancashire into a large farm, with money advanced to him by the King. He was going to place, he said, thousands of ships made of silver, with silver-gilt sails, upon the seven seas. He was arranging a 'mass marriage' of a million of the nicest people by the Bishop of Oxbridge to live on the Lancashire farms, while he himself was to be married in Westminster Abbey. Griesinger long ago saw in this kind of grandiose phantasy a very close similarity with certain kinds of dreams, 'To him who is tortured by physical and mental suffering, the dream accords what has been denied by reality, to wit, physical well-being and happiness.' Is there very much difference between the insane delusions just quoted, and the dream of a young consultant of my acquaintance who dreamt that he went to visit a consulting colleague and found that he was in a house with immensely high ceilings, with vast rooms and tapestries and galleries with beautiful statuary? What was this but a grandiose phantasy of the kind of consulting-room that he had envisaged for himself? Freud refers to this comparison of Griesinger as 'revealing, with the greatest clarity, wish fulfilment as a characteristic of the imagination common to

dreams and the psychoses'. It is the very 'key to a psychological theory of dreams and the psychoses'. This, the key to a theory of dreaming, is anticipated also in some old sixteenth-century French works on dreams which state in as many words that *le rêve est le soulagement d'un espoir*. The same early French works anticipate also part of the theory of dream processes themselves when they attach various symbolic values to certain objects which present themselves in dreams.

When it is declared that wish-fulfilment is the key to the understanding of dreams, what is meant is that dreaming depends for its motive power essentially upon wishes and desires and tendencies in ourselves as human beings, and not as in the physiological theory, primarily and invariably upon the chance disturbances of separate individual organs. Dreams are in fact the manifestations of a consciousness continuous with that of our waking life, but differing from waking consciousness in the plain fact that all interest is withdrawn from the environment and centred upon ourselves. By ourselves is meant not our organs, which would simply mean that sleep was accompanied by a state of hypochondriasis, but our inmost hopes and fears. If wish fulfilment, to use the convenient short description, is the key to the motives of dreaming, the key to the understanding of the subtlest process of dreams lies in their interpretation by the dreamer's own associations. This also, it is freely acknowledged, is recognized by the modern dream interpreters of the East, of whom it is written :

The dream interpreters do not allow any circumstances to escape them, and never give the desired interpretation before having made all the appropriate enquiries. Among these enquiries one always finds demands for precise information in respect of near relatives.

Briefly, an examination of the dream of a given individual in the light of his own account of himself, i.e. of his own associations, as they are usually called, shows that the following kinds of processes are responsible for the actual form of the dreams. These processes comprise, in other words, the principal laws of dream psychology : and it is in harmony

with the view of dream consciousness and waking consciousness as essentially continuous, that it is found that the same laws apply to mental processes in waking life as well, especially in the waking life of neurotics. The most general laws, next to the wish-fulfilment law of dreaming itself, are those of repression and primary symbolization. The others, displacement, condensation and secondary elaboration, as they are called, are really expressions of the operation of repression. A secondary type of symbolization (symbolization in the pure Freudian sense) also exists which is, like these others, a result of repression.

By symbolization of the primary type I mean such symbolization as is impressed on the dream content by the general conditions of phantasy, i.e. thinking without reference to reality, whether one is awake or asleep. Our aspirations, even in waking life, are more often pictorial, i.e. put into visual symbols rather than into words. Any kind of thinking, in fact, is more apt to be conceived in visual than in verbal imagery because, or so it seems to me, words are much less frequent and closely associated with the content of thought than are visual images, except in the highly abstract thinking of pure logic and mathematics. Even physicists dealing with abstractions like the construction of atoms have until recently utilized a predominantly visual imagery in their concepts; thus, the atom is a 'little solar system': the abandonment of these in favour of mathematical symbols is a comparatively recent move.

Primary symbolization is thus unavoidable in dreams, for many things that would in waking life be expressed in words have to be put into pictures. Secondary symbolization is the result of distortion—distortion directed to concealing from such consciousness as exists in dreams, the nature of the wishes or tendencies that actuate the dream itself. This distortion, which is also seen in the other processes we have mentioned, displacement, condensation, etc., is the result of repression, and repression, apart from primary symbolization, is the main cause of the differences between waking and dreaming consciousness. The necessity for repression depends upon the

fact that for survival we have to shape our waking lives upon the standards encountered by our waking consciousness, and consequently these standards when our attention is turned inwards, as during sleep, tend to continue to be critical and repressive of the socially impermissible tendencies they find there.

Some of the tendencies can, however, find full expression in dreams, because they do not conflict with these standards. Such is the frank wish fulfilment of the 'consulting-room dream'. They have the same laws as the phantasy of ordinary waking life usually called day dreaming, or the waking life of an insane person like the one I have quoted. They conflict with the facts of reality, but not with the standards thereof.

It will be easier to define the various processes of dream distortion with the help of examples: but let us first illustrate dreaming as a wish fulfilment, in some of its variants. The simplest are those in which repression is unnecessary: as in the dreams of explorers where sumptuous banquets appear. There is also another kind of wish fulfilment dream which does not undergo distortion, as when with a full bladder one dreams of having got up and emptied it. This type Freud calls a 'convenience dream' in that it saves trouble for the time being. The example he gives is of a medical student roused by his landlady in the morning, who promptly falls asleep again and dreams himself in bed in hospital as a patient, and has the reflection even when asleep: 'If I am in hospital already, I don't need to go there.'

But the majority of dreams do not present themselves as obvious wish-fulfilments. In fact a considerable number seem to be in direct contradiction to this theory. For example, a patient with anxiety symptoms like a fear of travelling in 'buses, dreamt that he and his wife were sitting on the edge of a cliff. Presently the cliff beneath his wife began to crumble, and she slid off the edge out of his sight. In the next scene in the dream he was contemplating in anguish his wife's dead body at the foot of the cliff.

With this dream as a stimulus, I enquired into his relation-

ships with his wife. It appeared that he had a number of complaints about her. She would not go out much and molly-coddled their only child to a ridiculous extent ; or so he felt. Also she had a relative of her own living with them at the moment, and the relation was very trying to the patient. On the basis of this I asked him whether it was not the case that he had sometimes wished his wife dead. He was apparently startled, and at once rather shamefacedly said ' It is quite true, and in the dream I knew that I could have put my hand out to stop her fall, but I refrained. I did not tell you that when I related the dream.'

The dream was that of a distorted fulfilment of a wish which was close to full consciousness, but which he had consciously tried to repress in his waking life, the repression continuing in his dreams and even while he related his dream to me. The extreme distress felt in the dream when he found her dead was a device to distort the real meaning of the dream and was really a measure of the intensity of the conflict between the wish and the repressing self-criticism.

The direction of the wish can never be safely inferred from an inspection of the dream alone, without an intimate knowledge of the state of the dreamer's mind. For example, a young married woman dreamt that she was being married to her husband, but that a bookcase full of books stood between them during the ceremony. Is this to be interpreted as a desire that something symbolized by a bookcase should come between them ? On getting her to talk of the various items of the dream, it became evident that the bookcase stood for her husband's bookish tastes, which she did not share, and that she very much wanted him to devote less time to study, as she felt that she wanted more of his time to be devoted to her. The bookcase in the dream stood for a barrier which actually existed and which she wanted to abolish.

These are very simple examples. The associations to any dream can be very varied and elaborate ; almost as elaborate as one chooses to explore. This is what is meant by condensation—that one symbol in a dream can stand at the same time for a number of different things in the dreamer's life.

Before examining a dream with a number of ramifications it is well to remember that to speak of a dream as a wish fulfilment is a simpler way of saying that it expresses one or many of the dreamer's most intimate tendencies.

For example, a certain patient had the following dream. She entered a church which she heard had been much expanded by the labours of the clergyman. It was a large church. She was going to sit near the back, but some members of the congregation persuaded her to take a front seat. The clergyman came down and talked to her while the service droned on. She thought this was rather slack. She gave the clergyman her name, who said it could not be found. The patient, however, insisted that her name was there, and it was. She came out of church and remarked to some bystanders that the clergyman's reputation was an inflated one—his church was all show. Then some one standing near remarked that the price of wood was going up.

The thoughts that came in association with the various ideas of the dream were as follow. The church was her own good works (she had, with money left her, devoted most of her life to social projects). They were all a façade in her own over-modest estimation—inflated and of no real value. Her symptoms, it should be stated, were that she was always depressed and uncomfortable in the social sense on account of a feeling of unworthiness which obsessed her. The clergyman reminded her of a conversation of the day before with a friend. They were discussing a certain clergyman of whom she had heard it said that he was a good churchman; his friend had replied that he was nothing of the sort—he drank so much. Furthermore, the patient's mother had wanted her to be a boy and that the boy might become a clergyman. The clergyman in the dream therefore represented a number of ideas of different origin and significance and was a good example of condensation. The clergyman from one aspect was the patient herself, in the form of an ideal presented to her by her mother: he was also the patient as she saw herself (not at all accurately)—a fraud. This is an example of over-determination of a dream symbol, which

is a condensation of a number of ideas. There was a still further association with the clergyman indirectly through the book of names. Her headmistress when she was at school had been the sister of a famous Bishop. She had always felt herself to be an unworthy product of a public school, partly as the result of stupid discipline there, and a person therefore whom her headmistress would be unwilling to own. But she had protested that her name was in the roll—and this is significant.

Dreams are often valuable indices of the way in which a patient is responding to treatment. In the dream she was actually asserting that she was a public school girl. This is supported by the patient's associations to 'wood' (the price of wood is going up). Her father had been in the timber trade and had desired for his children freedom from the annoyances and humiliations of trade. The daughter had a double attitude about this. She was sensitive socially about being associated with 'trade'. On the other hand she was very proud of her father and would have been very happy to resort to life among working people. In the dream, when she had been able to criticize her former ideals in the guise of the clergyman, and assert herself as a public school girl, the value of that on which her real social position originally depended, namely the price of wood, was going up.

One may think that there is a good deal of guesswork in this. The only test of the validity of the conjectures is in the patient's response to them. This dream was followed by a tremendous feeling of elation in the patient lasting till bedtime. But next morning she was more depressed than ever. She had had another dream: 'I was with a doctor who used to attend the family. I had a quarrel with him. We fell out. There was bad feeling between us. Something went wrong with me. He took a pint and a half of blood. I was very struck by the poor taste in furniture he had.'

The doctor in the dream was the doctor who was treating her, as she readily admitted. She was very angry with the latter. She attributed to her doctor the statement made during the interpretation of the previous dream that all her

good works were an inflated display. In fact the doctor had said nothing of the kind. She had proffered the explanation herself.

Such a violent reaction as was shown by the feeling in the dream and by the criticism that the doctor was taking a pint and a half of blood from her, i.e. presumably 'bleeding' her, and that his taste was bad, could not have been unconnected with the criticism of her activities which was really her own which she made when interpreting the first dream but which she had subsequently attributed to her doctor. Other considerations involved would take us too far afield: but the position is seen to be similar to that of any other experiment. The specificity and appropriateness of the stimulus (the interpretation of the previous dream) is judged by the presence or absence of a subsequent reaction and by its violence.

The function of the dream as a kind of self-criticism which is exemplified by the Church dream just described has not escaped notice. This is perhaps the germ of truth which may lie behind some of the popular notions about dreams as prophetic and monitory. They recognize dangerous tendencies within oneself which the dreamer, as in the above instance, refuses to see when he wakes. In other words, the dream may give clearer expression to tendencies which are not given proper weight in waking consciousness; and dreams of this kind, properly used, might be conceived as attempts to solve problems more justly than is possible with the ordinary knowledge of himself possessed by the individual when he is awake.

This view of dreams is one of those adopted by the school of Jung, which prides itself on its 'synthetic' analysis of dreams, rather than the purely 'reductive' analysis to antecedent causes that is held to distinguish the Freudian method.

The reductive method is certainly more in the spirit of science, as that term is understood to-day. But not even a scientific view can exclude purpose altogether from consideration in the biological field. The Freudians admit a limited purpose: the dream 'protects sleep' and allows the subject to remain asleep in spite of what would, undisguised, be so disturbing as to awaken him. The disturbing information

may itself be useful ; if waking, the dreamer can interpret and take account of it : and to that extent also dreams may be said to be purposive.

So far we have illustrated dreams as the expressions of simple wish fulfilment and as disguised wish fulfilments. Condensation has been exhibited in the instance of the clergyman, and primary symbolization by, among other things, the church in the dream where it signifies good works. Displacement is exhibited in the criticism of furniture, which is really directed towards the doctor. Secondary symbolization, depending on repression, is shown in the following dream :

A married man of strict conscience dreamt that he saw a friend called Rumpelmeyer pushing a perambulator. The scene was a heath, and shortly after he saw two eggs on the grass, and a snake coiled up in a peculiar position like this :



The thoughts that were spontaneously associated with this dream were as follow :

Rumpelmeyer was the name of a male friend. ' Rump ', the first syllable, reminded him that the day before a young woman of his acquaintance had fallen and hurt that part of her anatomy. He had very kindly feelings towards that young woman, and felt, as he said, like a father towards her. The shape in which the snake was coiled was an exact replica of his own signature. Eggs are a frequent symbol of fecundity as can be seen in the illustrations of popular dreambooks. There were reasons for believing that his interest in the young woman was not wholly paternal in origin although he was quite unconscious of any other feeling. This dream seemed to be a phantasy of a more intimate type of affection. There is no doubt that a snake in a dream is frequently (Freudians would say invariably) a male sexual symbol. It could on the other hand in this dream be construed as signifying danger from himself to the young woman (the snake in the grass), but in view of the eggs and the perambulator and the rump symbolization it seemed that a particular type of danger was implied.

CHAPTER IV

THE RELATION OF MENTAL EVENTS WITH EACH OTHER

(a) THE INTER-RELATIONS OF SOME MENTAL EVENTS

WHAT may be called the internal adjustments of the mind are many, and have many aspects, to which for convenience of description names such as repression, dissociation and the like have been given. But although we must use these terms for descriptive purposes, it is of great importance to remember that they represent, not separate things, but aspects or processes of the same mind. Moreover, they all have to do with what is happening, with the machinery rather than with the structure ; although, again, it is often convenient to speak of the 'structure' of the individual mind where we refer really to a cross-section of a complicated changing process.

Not all the internal adjustments are healthy. The unhealthiness is, however, a matter of degree. The popular saying, that we are all of us a little mad, has this basis, that there is probably no type of morbid mental symptom that does not have its model of mild degree in the minds of all of us.

Healthy and unhealthy adjustments alike result from the pressure of conflicting tendencies and interests in our minds, just as they do in the world outside. The conflicting tendencies are, naturally, connected with the chief motive forces whose development has been briefly outlined, namely those of self-preservation and sex. But the conflict is not so much between these two as between each of them and ideas and standards engendered in the mind by the social environment. Some writers have in fact considered it necessary to postulate a social or herd instinct, so impressed have they been

by the influence on the human adult of social considerations. The question is, whether or not there is an inborn tendency to conform to the behaviour of the rest of one's species, independently of individual experience. A contemplation of the behaviour of some animals would suggest that there was.

Galton says of the South African bison :

Although the ox has so little affection for, or individual interest in, his fellows, he cannot endure even a momentary separation from his herd. If he be separated from it by stratagem or force, he exhibits every form of mental agony ; he strives with all his might to get back again, and when he succeeds, he plunges into its middle to bathe his whole body with the comfort of closest companionship. This passionate terror at segregation is a convenience to the herdsman, who may rest assured in the darkness or in the mist that the whole herd is safe whenever he can get a glimpse of a single ox' (*Inquiries into Human Faculty*).

Although the experimental evidence for the inheritance of acquired characters is still meagre, it would seem strange if, after the 300,000 years or 10,000 generations during which man is said to have existed on the earth, and the millions of years of pre-human evolution, some social tendency had not acquired an inborn status.

But the discussion is one of words. The fact remains that social considerations play a very large part in any one's behaviour ; and very much of this behaviour is learned by the individual as he grows in knowledge. How much he has to learn has been indicated in a previous chapter, where it was briefly shown how his possessiveness, his tempers, his negativistic resistance, his overweeningly ambitious day-dreams, his destructiveness and his lethal wishes, are rapidly modified by contact with his environment and his standards. In the course of this training, he develops an individuality which is unique, because the inheritance of any child—unless he is one of identical twins—and the experience of any child are unique. This unique individuality is called in some quarters the personality, in others, with a different shade of meaning, the ego. These words, personality and ego, are so much used that it is desirable to obtain some notion of their exact psychological meaning.

'Personality' means for psychologists not personal magnetism, but the entire individual as he acts and thinks, as the joint product of inheritance and experience. The ego is the intimate self of which one is always vaguely and sometimes actively aware.

According to the psychoanalytic school's conception, the ego is a kind of precipitate of the joint action of impressions without—from the environment—and urges from within—the instinctive part of the individual. Besides the ego in either of these senses there is always a set of ideas and feelings, the ideal self, or ideal ego. These ideas and feelings are derived from the social standards inculcated by the attitude and actions of those around us. Of some of the standards so derived we are fully conscious; but the rest have become by familiarity so part of ourselves that they sway us without our realization. The discipline of trained soldiers is a clear if rather artificial example of the effect of impressed standards of which the individual has become unconscious: the standards have become 'second nature'.

Adjustment of the individual's mind and instincts are not, then, only adjustments with the immediate environment but with the absorbed impressions of past environments, which have become 'second nature', and even with those that are in the process of becoming 'second nature'. But the greatest difficulty arises with just those adjustments which have to be made with impressions which, although very strong and persistent, have not become completely natural (to the individual) as regulators of conduct.

All such absorbed impressions and ideas as we are not, or have ceased to be, fully aware of, are usually called unconscious, and together with such inborn tendencies of our own as we imperfectly perceive constitute the greatest part of what is called the unconscious. This is an unfortunate designation, as these tendencies and standards are themselves neither conscious nor unconscious. It is the self, or ego, that is conscious or unconscious with regard to them. The epithet 'unconscious' has been transferred, but this usage is so invariable that it is now permanent.

The 'unconscious' in this sense includes everything that the individual has previously experienced from the outside as well as from within. But this is not the same as saying, as some people suppose, that nothing is ever really forgotten ; that if only one knew how, one could recall everything that had happened to one in the past. It is true that to some degree every mental event may be supposed to influence every subsequent mental event ; otherwise learning would be impossible and experience only fragmentary and not cumulative. But there is no evidence that every mental event persists of itself. It is only by their indirect after-effects that many can be known, if knowable afterwards at all. The memories in the ordinary sense of young children are extremely short ; they do not remember much of what has passed the previous day ; neither, for that matter, do adults. Nevertheless the persistence of mental impressions is greater than was until recently supposed. By special methods it is often possible to recall intimate personal experiences which had long since ceased to be recalled. Moreover, as we shall see, such events or experiences often continue to produce effects long after they have apparently sunk into oblivion. What, sometimes, prevents the recall of such experiences is not their fading but a much more active process, usually named repression.

Repression has become an exceedingly popular word, principally because the process it describes has been made responsible for many of the symptoms of nervous illness, and partly because it is capable of misunderstanding and consequent misuse as a cloak for libertinism. It is frequently a normal occurrence ; and it is only in certain circumstances that it has unhealthy effects. It describes the mental process by which the ego may be prevented from being conscious of certain thoughts or feelings. The process of repression itself is held to occur usually unconsciously or automatically ; it is not exercised so much against events that are distasteful in themselves but against events which conflict with the ideas and standards of the self, or at least have an intimate personal meaning of a displeasing kind. Very often one finds that what would be attributed in some quarters to repression

is the result rather of the repression of a knowledge of the connexion between two groups of ideas with a strong emotional connexion. This lack of consciously recognized connexion between two groups of equally conscious ideas is one type of another important variety of mental arrangement, namely dissociation. For example, a regular churchgoer, with the name of God on his lips, is sometimes dishonest in business without being ashamed or even, apparently, aware of the inconsistency. There is dissociation between his religious and business ideas. The connecting contradiction is conveniently repressed.

Such an example might be called vertical dissociation if we allow ourselves to consider for a moment mental processes in cross section. When repression in the usual sense exists so that the repressed material remains unconscious, we might speak of 'horizontal' dissociation.

Some actual examples will make the nature of repression and dissociation clearer.

What is repressed may vary in extent from an item of experience to the entire previous experience of an individual. For example, a patient of mine came one day and said that she was sure that she had written me a letter but could not remember what she had done with it. Under hypnosis she recollected placing it inside her paint box in a cupboard. I told her while still under hypnosis that she would find it and post it to me that night. The letter arrived next morning, but the patient herself had no subsequent recollection of posting it. The forgetting in this case was not by any means as motiveless as appears from this bald account. The letter itself was found to contain ideas of which she was very much ashamed. No item of experience is completely isolated from every other, and consequently when any item undergoes repression, it tends to carry with it other items which may have been associated with it; hence around the pathogenic nucleus that has been the excitant of repression there lies a field of experience that would otherwise have remained conscious or easily available to consciousness, forming a 'complex'. This was very prettily shown by the same

patient. I showed her five objects simultaneously—a pen, a pocket-book, a pencil, an inkstand and a paper clip—and after a brief exposure of them asked her to name the objects she had seen. This she did easily. But on presenting the same group of objects, but with a box substituted for the paper clip, I was surprised to find (for I was carrying out this experiment for another purpose) that she could not now name one of the objects. On asking for an explanation of this curious phenomenon, she said, by the way, that she felt that something had taken the memory of all the objects out of her mind. It was found that the box had reminded her of a peculiarly unpleasant group of ideas (a complex of which the emotional tone was one of disgust) of a closely personal sort. The unpleasant nature of the associations with the word 'box' was evidently responsible for the immediate forgetting of all the other associated objects.

By an extension of this principle, a still more massive repression can occur, even to the extent of a blotting out from the memory of the entire previous experiences of the individual. Were this to happen completely the patient would exhibit a condition similar to that of a new-born babe. This would be an example of complete repression. McDougall records a case in a soldier during the war. The film 'Lord Babs' in which Bobby Howes simulates 'mental regression' to babyhood illustrates the condition, with several errors such as occur in any attempt to simulate a mental disorder. More usually in the case of massive repression educated speech and action remain, but all conscious knowledge of how that education came about—in fact all knowledge of the subject's life up to that time—is lost. An example of this sort was furnished by a young man, apparently about 25, who was brought to hospital by the police, having been found wandering in a London street unable to say who he was or where he came from. He looked somewhat pale and anxious, and answered all questions readily and to the point, but all that he could remember was a Latin motto and the face of a rather stern-looking man with a stubby moustache. He spoke in an educated fashion, but could give no account of where he

had been brought up, or, indeed, of anything up to the moment, a few hours before, when he had found himself in the street. With reassurance and persistent persuasion, his memory of the journey that had brought him to London was, bit by bit, brought back, till suddenly one night at about 3 a.m. everything he had forgotten was remembered. We then learned that he had come from a northern town, that he was in business with his father with whom he had quarrelled, principally on account of his drinking habits, and that his sudden journey to London had begun on the evening of the day of the quarrel, just after he had seen his fiancée to her home. He had had some notion of going to the Continent, but when he reached Victoria he found that he had insufficient money. It then dawned on him that he was behaving very foolishly, and he suddenly felt confused, could not think, could not even give his name to a policeman whom he approached after he began to feel mixed up in his head. In this instance, the complex actuating first the fugue and then the loss of memory, was very apparent. The 'stern-looking man' turned out to be his father. The Latin motto was that of the University in his native city. A reconciliation was effected in hospital and the patient went home to his father's house, apparently well.

Usually the body of repressed experience is much more circumscribed than this, and is discontinuous with the present—so much so that the patient has as it were a 'blind spot' for the repressed experience, i.e. he does not know of its existence. If he does know, the repressed experience is represented in conscious memory as an amnesia—a patch or island of something forgotten.

In such instances the memory can often be recovered by special methods, such as hypnosis, persuasion, free association and methods of concentration, or thoughts appearing on the fringe of consciousness (Morton Price's 'crystal gazing'). When experiences are recovered in this way they may often appear remarkable for the minuteness with which they appear to have been preserved. Conversations which presumably took place twenty years ago are sometimes reproduced verbatim.

What are we to suppose has happened to the repressed experiences in the meantime? This is only a part of the larger problem of memory. All such statements as that memories are stored as in the cerebral substance to be 'ecphorized' later (in Semon's terminology) are pure speculation: but presumably something of the sort does occur. In the case of repressed memories we must suppose that something prevents this being achieved with the same facility as in others. The figurative expression for this inhibition is the 'censorship'. This censorship, in such instances as the above, can only be regarded as equivalent to a wish not to remember, a disinclination on the part of the ego or the ego-ideal to face disturbing experiences.

In cases where an experience is repressed and nothing appears to point to its previous existence, except an amnesia, which itself only becomes apparent on special investigation, presumably the experience remains inactive. But there are numerous instances where evidences of activity appear: many symptoms are the surface indications of activity of this kind. Sometimes after remaining dormant for many years, the repressed experiences begin to make themselves felt; this phenomenon is described by Freud as the 'return of the repressed'. The reason for this reappearance may not be discoverable or it may be the result of some new situation which forms unconscious associations with the repressed material.

Dissociation. Some writers have wanted to reserve the term 'dissociation' for those cases in which repressed material becomes active—in which case it produces what are usually called symptoms. This dissociated activity may take the form of an isolated symptom, as for example the hysterical paralysis of a limb or the kind of amnesia already mentioned, or it may at the other extreme involve the entire life and habits of an individual producing duplication or multiplication of the personality: that is to say, in extreme instances of dissociated activity, the repressed experiences may become conscious and replace all the ordinary activities of the person involved, so that for the time being he behaves

as if he were another person. James' case of the Rev. Ansell Bourne is famous. This clergyman suddenly disappeared. Very soon afterwards, in another district, a man closely resembling him set up shop as a greengrocer. After some years of steady pursuit of this occupation, the 'greengrocer' woke up one morning with complete surprise at finding himself where he was, with no recollection of being a greengrocer, and with a distinct recollection of being the still missing clergyman; which in fact he proved to be.

Morton Prince's case of B. C. A. exhibited at one time or another three different 'personalities'. Here is the subject's own description of herself as a different personality, whom she describes as personality 'B'.

As B, I was light hearted and happy and life seemed good to me; I wanted to live; my pulses beat fuller, my blood ran warmer through my veins than it had ever done before. Nothing is stranger to remember than the vigorous health of B. Never in my life have I felt so well, before or since. I felt much younger and looked so. I neglected my family and friends shamefully, writing short and unsatisfactory letters which left them ignorant of my health and plans. I lost the formality and reserve which was one of my traits. My tastes, ideals and points of view were entirely changed. I remained in this state for some weeks, enjoying life to the utmost in a way entirely foreign to my natural inclinations, and also doing many irresponsible things which were of a nature to cause me much distress later.

Some of this might perhaps be ascribed to improved health though different to anything I had ever been before.

In this instance the dissociated personality was a complete one. To the ordinary observer, 'B' was a normal healthy person. Often the personal equipment of the dissociated personality is small. Janet in this connexion distinguishes monoideational from polyideational 'somnambulism' as he calls the briefer change in personality whose more manifest clinical appearance is a 'fugue' or a sudden journey in a state of altered consciousness. For example, we had an out-patient, a man of about 35, a labourer and an excellent boxer, with a family of five. This man on several occasions, when he should have been at work, found himself several miles from home and without knowledge of how he got there. Once he left home in the morning, apparently

well, and remembered nothing more till he woke up in the late afternoon, 20 miles out of London on the Brighton road.

Sleep walking is sometimes an example of the same kind of disturbance and likewise dependent on psychological unrest. T. A. Ross describes a submarine commander who in his nightly perambulations imagined the hospital was his ship and always donned full uniform before leaving his room. The motive force behind these disturbances was shame for an act of cowardice of which he believed himself guilty.

Fixation. Normally, on becoming a man, one puts away childish things, i.e. one either represses them successfully, or one is able to remember them but without nostalgia. Sometimes, however, they are clung to with great affection: the grown man plays with railway trains; the young woman secretly cherishes some dolls (although these may have a more adult meaning as a substitute for babies). More often the childish past is looked back on with longing eyes as to a Golden Age. All these are instances of a localized lag in development, which hinders enjoyment of the present: and this lag may be called, not very happily, 'fixation', meaning a failure of the affections to detach themselves from old objects and advance to newer and more appropriate ones. Technically the term 'fixation' was originally applied to that lag in the affections which involved persons—either the father or mother, or a brother, sister or some other person of the same sex—and which prevented free advance to the final stage of heterosexual love. Fixation of this type is held to lead to repression as well, since a socially forbidden sexual element is considered to be involved; but the repressed interest continues to operate in a fashion and so produces conflict when adult love is attempted—in the way some of the hysterias and psychoneurotic anxiety-states later to be described were produced. In the kinds of fixation first mentioned, it does not seem that repression is necessary, in order that future adaptation may be hindered; but naturally where repression has occurred, it is much more difficult, if not impossible, for the person concerned to make steps toward adult feeling, since he is not only ignorant but is actually

prevented from knowing, by his own repressions, what is hindering him in that direction.

(b) THE INTER-RELATIONS OF MENTAL EVENTS WHICH PRODUCE SYMPTOMS

We are now in a position to understand a little how symptoms of nervous and mental illness arise. From a scientific viewpoint there is no difference in kind between 'nervous' and 'mental' symptoms (excluding symptoms due to organic disease). They are all mental symptoms actually—i.e. they originate in the mind, and however much they assume disguises, they are the outcome of some kind of mental disharmony.

We can readily appreciate how mental disharmony can arise, since the strongest impression usually received from any attempt to study mental processes is their enormous complexity. It is a universal experience, whether in mechanics, physiology or in sociology, that complex organizations go more easily wrong than simple ones. The complexity of mind is alone sufficient to make it likely that it is going wrong spontaneously in some instances; but when to that consideration we add the reflection, that any individual mind, especially in these days, has day after day to accommodate itself to an exceedingly complex, changeable and often difficult social environment, it becomes obvious that the chances of disharmony among mental processes are considerable. Nevertheless, such is the adaptive resourcefulness of mind, and so adroit the compensatory processes which it can bring to bear, that the majority of people's minds are more or less sound all or most of the time.

The essential basis of any mental disorder in this sense is a mental disharmony of some kind. This disharmony is usually called 'conflict', so as to give the more correct impression of mental forces at work, and not simply of a static mental pattern which has become disarranged. It is a useful generalization, not without exceptions, that no mental disorder, no symptom exists without conflict.

This conflict is essentially intra-mental, i.e. all the com-

ponent forces in the conflict are mental ones. It is quite true that external factors such as conditions of work, of emolument, of home life, and the like are often of the greatest importance in the causation of nervous and mental illness; but it is their representation within the mind and the contrast of them with the individual's wishes, his 'imagos', and his ideals, that constitutes a disharmony, and may produce symptoms if the gap is wide enough between the concepts of these conditions as they are and as the individual wishes them to be, and the consequent tension great enough.

Many a conflict, however, often the hardest to resolve, does not have any contemporaneous point of contact with the environment. The sketch of the component aspects of the mind and their development which has occupied preceding chapters gives some indication of the possibilities for conflict that exist within it. On the one hand, there are instinctive urges which may between themselves compete for primacy. On the other hand, are the impressions received from the social environment and their traces in the mind. Some of these impressions satisfy the instinctive urge, others do not; and when they do not there is conflict. Aware of some of these impressions from without, and of urges from within, and unaware of others, is the experiencing self, which feels discomfort when conflicts occur, and which from the material of the impressions gained from without constructs gradually an ideal self. Here again there can be conflict, between the urges directed by the ideal and the urges foreign to it.

However the conflict is staged, when repression of one or both sides of the conflict is not entirely successful, the discomfort experienced by the self appears as symptoms. The commonest of these symptoms are anxiety in some form (not anxiety in the ordinary sense only, but mental uneasiness in any of its allied forms, which will be discussed below), depression, bodily disability or discomfort, hallucinations, delusions and abnormal behaviour.

Anxiety in the technical sense of mental uneasiness of greater or less degree, and ranging in the severity of its

manifestations from an undue tendency to worry, through a fearful preoccupation with the idea of bodily and mental disease, or a phobia of closed or open spaces and the like, to the extreme unhappiness met with in the melancholias of later life, is always the manifestation of a persistent mental conflict. The conflict itself may be fully conscious but insoluble, e.g. marriage to a person no longer loved, or both terms of the conflict may be known to the subject, who avoids the issue, whereupon the tension or anxiety generated manifests itself elsewhere as anxiety about something else that there is no logical reason for being worried about (an example of 'displacement of affect'), e.g. worry about poverty by some one who is actually comfortably circumstanced: or one of the terms may be conscious and the other unconscious (as in the case to be illustrated later of a young adult falling in love, who remains however far more tied in his affections to a parent than he or she realizes): or both terms may be unconscious, as when some instinctive desire conflicts with standards so old as to have become automatic.

Anxiety disappears when the conflict is solved, whether the solution be satisfactory or not. Thus if the solution consists in developing a physical disability like a paralysis of the legs, which makes a valid excuse for inaction, anxiety disappears, and the classical 'belle indifference'—calm unconcern about a disabling affliction—of the hysteric results. Similarly a physical illness arising in the ordinary way may result in the temporary placidity of the anxious person.

In many cases anxiety about a difficult personal problem becomes displaced on to some different topic like the state of bodily health, especially of some special organ like the heart or the brain: whereupon the bodily effects of anxiety (see section on the physiology of emotion) become localized in the region of that particular organ. Which organ is selected is largely a matter of accident, of suggestion or physiological predisposition. In other instances the anxiety is displaced to the idea of a particular situation, like travelling in a train, either because an attack of anxiety once occurred there, accidentally in the first instance, or because that special

situation has some association or significance with reference to the conflict (see the instance of a phobia of women). Sometimes the idea to which the anxiety attaches itself is one which itself is closely related to the source of anxiety, i.e. to one side of the conflict which generates it—as when a person becomes afraid of knives really because he has a wish to commit suicide or a fear that he or she will injure some one, e.g. by accidentally putting poison in the food because in actual fact there is a more or less repressed wish to do so.

These are the manifestations of the type of anxiety that are met with in the psychoneuroses. In insanities (the psychoses) the sources of anxiety whether conscious or unconscious are projected : that is to say, they are given a pictorial representation in the outside world, as for example a belief that detectives are pursuing the subject, which is a delusion, the result of anxiety arising from a knowledge of guilt. This device of projection often fails, however, to relieve the anxiety, which continues to attach itself to the delusional results of this mode of expression of the sense of wrongdoing.

Other moods appear pathologically, especially depression, elation and apathy. Sometimes they are appropriate to the conscious mental content, such as the grandiose person who deludes himself that he possesses millions of money, and is in consequence elated ; or the depressed person who believes himself a great sinner. But the same effects may appear in consciousness without any apparent reason. In either case the intensity or persistence of such moods have to be accounted for. Depression can result from frustration or disappointment of ordinary hope or ambition or desire ; but is only persistent in some one who does not have the courage to look forward to another opportunity to seek consolation in other directions. Persistent depression on a largely conscious basis therefore occurs in persons with a childlike expectation of having a desire gratified, i.e. the frustration conflicts with a persisting infantile notion of omnipotence. They are, in other words, merely sorry for themselves. Depression dependent on conscious or at least unrepressed factors can also

occur where the provoking situation is conceived as intolerable, e.g. an unhappy marriage where divorce is out of the question. But it is much more likely to occur in such an instance when another factor enters—the belief that the intolerable situation had been wholly or partly of one's own creation. Then a knowledge of guilt arises and depression is caused as the emotional response to a feeling of guilt.

But depression, like anxiety, can occur when some or all of the factors are unconscious, as when the feeling of guilt is so intolerable that the knowledge of guilt is repressed, and only depression appears in consciousness; or when the depression arises from deprivation of some source of satisfaction, whether so habitual as to have become an automatic and unconscious 'part of oneself', or unconscious because forbidden. Thus the adolescent youth, overmuch attached without knowing it to his mother, finds the world depriving him of this close relation to her and becomes depressed, he does not know why. This last situation, the classical 'Œdipus' one, may be construed merely as a matter of the relinquishment of an habitual source of satisfaction, or as an instance of the result of an unconsciously guilty relationship (i.e. mingled with sexual phantasies which have been repressed).

Delusions and Hallucinations. When the emotional factors in a conflict are very strong, the self may avoid some discomfort by treating one set of factors as if they came from entirely outside sources. Thus, where the conception of reality is in some conflict with what an ambitious ideal ego would like it to be, one way of dealing with the matter is to repress the conception of reality and replace it by a private conception which complies with the demands of the ideal. In this way, a delusion of grandeur can be produced—one is an important person, perhaps the King of England, or a reincarnation of the Messiah. Events in the environment are then construed in the light of this delusion.

More often it is from the clash of inner urges with the ideal ego that discomfort (usually arising from a feeling of guilt) is experienced and the urges are 'projected', i.e. attri-

buted to the environment. The crudest examples are those in which people around are thought to make obscene remarks or gestures. This arises, for example, in the so-called 'Old Maids' insanity', when the patient construes the innocent actions of any man she meets as directed towards herself in an erotic way. She begins to think that certain men are pursuing her with intentions which her conscience or ideal is obliged to regard as immoral, although they represent her own secret and repressed wishes.

The commonest delusional belief is that of being persecuted—people are against one, perhaps actually plotting one's destruction. In this kind of belief, what is projected is not the feeling of guilt but the critical ego-ideal itself.

Hallucinations are the result of closely similar mental processes, but the projected ideas are perceived as voices or visions. Hallucinations are not necessarily evidence of serious mental disease. Their significance must be considered in relation to their setting. In an age or culture in which it is a matter of common expectation to have spiritual visitations, hallucinations are no evidence even of mental abnormality. Joan of Arc was certainly not insane. Even in our civilization there are still certain groups of people—spiritualists, for example—who accept certain experiences as phenomenal which the rest of us would regard as purely subjective. The greater suggestibility of persons when in groups sometimes permits the appearance of collective hallucinations. The Indian rope trick, which is said to be an hallucinatory occurrence, must depend largely on this. But even if an average man with average beliefs has a vision or hears a voice, the fact is not, if it occurs in an isolated instance, evidence of serious abnormality.

Like delusions, hallucinations can result from a projection of wish-fulfilling phantasies, or of the existing ego-ideal, which thus manifests itself as an accusatory or monitory voice. What makes the experience have such intensity as to give rise to something that is indistinguishable from a sensation, is doubtless the intensity of the emotion attached to the idea of grandeur or of guilt.

CHAPTER V

PSYCHOPHYSIOLOGY

THE RELATION OF MENTAL AND BODILY EVENTS

P*HYSIOLICAL Introduction.* It is customary to accompany a general account of the working of the mind with a description of the structure and functions of the nervous system and especially of the brain. There is some sense in this, for mental processes as we know them are certainly related to brain processes ; but the relationship is not so simple as it is commonly assumed to be. Considerable injury may occur to the brain without any resulting disorder of mind, but it is not yet sufficiently realized that disorder of mind frequently exists without any discoverable alteration in the brain.

The relation of mind to brain is an age-long problem, which it would be wearisome to discuss at length. It is enough, after mentioning some of the better known or more plausible theories, to adopt a hypothesis which will work for our purpose.

The traditional view of the relation between mind and body is that of *interactionism*, which claims that there is a something spiritual utterly different in nature from the body, but interacting with it, being affected by it and affecting it in turn. Another view labelled *psycho-neural parallelism* holds that mind and body are distinct and do not influence each other in any way. As Ogden puts it, the two streams, neural and mental, are like two clocks, back to back, keeping time but with their works in complete independence.

Still another view degrades mind to the level of a mere epiphenomenon, a by-product of processes which are regarded in this view as entirely physical, occurring in the nervous system. The Behaviourists have recently gone still further

and have disregarded consciousness altogether : all ' psychology,' according to them, is reducible to neuro-physiological terms.

Another view which Ogden favours and calls the ' double language hypothesis' regards neurology and psychology as being concerned with the same facts, but attempting to describe them in two different languages. Every remark in the one science can theoretically be translated into terms of the other. The two accounts deal not with different aspects of some further unknowable event, but with the very same event which is known in two ways : directly, in introspection, as when we are aware of an experience ; indirectly, in neurology, when through the interpretation of signs we infer an event in the brain.

Adaptation. Our working hypothesis depends upon a conception of living process as an adaptive one ; we assume that each living organism is involved in an unceasing attempt to adapt its inner needs to its outer environment, as well as to regulate its own internal arrangements. For the purposes of this adaptation, intricate processes develop in the organism, the most intricate of them being carried out by the nervous system, which consists of brain, spinal cord and nerves, the latter being, as it were, connecting wires, carrying messages to and from brain and cord to muscles, blood-vessels and glands. The nervous system itself is a delicately organized structure, of which the brain is the most complex part. If we consider the adaptive process of the organism to be carried out at a series of levels of increasing complexity, then we can regard the purely automatic nervous processes involved in the digestive function, for example, as being at the simplest ' vegetative ' levels. The next higher in this series, the sensori-motor or spinal level of adaptive activity, involves the muscles and the co-ordination of their movements by the nerve-centres and connections of the spinal cord ; while in the brain are conducted still more intricate and varying processes of adjustment—the cerebral level. ' Above ' this again are the most complicated processes of all, namely those which we call mental. The latter are concerned especially

with the adaptation of the whole organism to its whole environment and especially its social environment.

If in this way we think of an organism as built up in a series of levels of increasing complexity, we get an impression of continuity, mental processes appearing as the most complicated in a series of adaptive processes. In this way we can avoid being perplexed about the particular mode of relation that exists between mental and brain process ; and we can understand how disorder can arise primarily at any level, so that it is not necessary to presuppose brain disease to explain mental illness. But it is equally clear from this schema, that disorder at one level may upset function at another ; and that disorder of brain function may produce disorder of mental function, and vice versa. Therefore it is desirable to accompany our study of mental occurrences by a summary study of the structure and functions of parts of the nervous system.

The nervous system can be conceived as being, structurally, like a telephone exchange, with head- and branch-offices presiding over the connecting wires ; functionally, however, it is very different from a purely mechanical system. Only to a limited extent does it work automatically, i.e. invariably. The response which the nervous system makes to a given stimulus varies greatly with its own condition at the time and especially with the number and kinds of other stimuli impinging on it. Moreover, its responses have a purposive appearance ; they are directed towards some achievement in adaptation, and on many occasions the stimulus to activity comes not from without but from within the system itself.

Structural and functional Units of Adaptation. The structural unit of the nervous system is the nerve-cell or neuron, which consists of a cell body and its prolongations into terminal filaments, often of great length. The cell body under the microscope when fixed and stained by technical methods is seen to contain granules of stainable substance, which diminish in amount after the cell has been active. This substance is therefore supposed to represent part at least of the energy-reserve of the cell. Neurons thus constituted are

arranged in serial chains. It is virtually impossible to discuss the structure of the nervous system apart from its functions. One of the functional characteristics of a neuron is its polarity—i.e. the 'message' of functional change which passes along a neuron when it is stimulated, can pass as a rule only in one direction: in other words a neuron conducts in one direction only. The simplest case of a chain of neurons is called the 'reflex arc', which requires at least three neurons—one from the skin to spinal cord called the 'afferent' neuron, A in the diagram, because it brings messages from the skin surface to the spinal cord, a neuron in the spinal cord itself, the 'intercalated' neuron, and an 'efferent' neuron which conducts from the spinal cord to a muscle or gland.

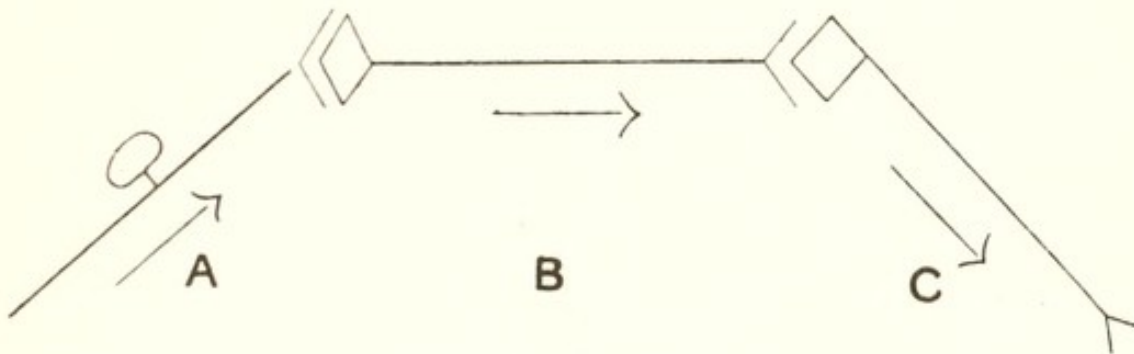


FIG. 7. ELEMENTARY REFLEX ARC.

In a chain of neurons it is usually supposed that there is a structural discontinuity between one neuron and another; the intervening structure (if it is a real and not purely hypothetical structure) is conceived as a membrane called a synapse.

The synapse, which may be simply an abstraction, covering the ionic phenomena which occur at the interfacial surfaces of two adjoining cells, is in this view of considerable importance functionally, because it has the property of offering greater resistance to the passage of the message or nerve-impulse that is passing along the chain of neurons, and it also acts as a junction between various neuronic arcs. It has to be remembered that the reflex arc is rarely as simple as described above. Usually there is not one but many an intercalated neuron in each arc and each of these neurons is

combined directly or indirectly with a number of afferent and of efferent neurons. It will be seen therefore that by variations in the resistance at various synapses, it will be possible for a message entering by the afferent neurons to take one of several directions, according to the arrangement of the synaptic resistances at the time. Thus we get the possibility of functional variability in the response that any afferent neurone gives to stimulation. When we remember that the spinal cord is a bundle of enormous numbers of nerve fibres (prolongations of nerve-cells) and contains also numerous nerve-cells from which many of these fibres are derived, it will be seen that the possible varieties of response to stimulus are enormous. The average human brain is calculated to contain 12 million nerve cells, of which 9,200,000 are in the cortex or more superficial layer of the brain. The theoretical number of possible combinations of even one million cortical nerve-cells in pairs only would be $10^{2.783.000}$ (Herrick). This is far in excess of any possible requirements of an individual throughout the longest life. It is probably also in fact limited by local conditions in the nervous system; but even if this is so, the number still provides an ample reserve. On the basis of this computation it is often said that no one ever uses anything like his full capacity for mental activity; but that is different from saying that every one is more intelligent than he appears. It is not entirely the number of thoughts and actions that constitute the amount of a person's intelligence; the quality is more important.

Variability or *plasticity* of response to a stimulus is therefore one of the principal marks of activity in the central nervous system, and this plasticity is the more marked the higher the level at which the activity occurs; at the mental level the plasticity of reaction attains its greatest development. Herein lies much of the secret of man's triumph over the rest of nature. The simple organisms have much simpler nervous systems; but not even the highest of the animals other than man has one-third of his equipment of brain-cortex. The range of possible response to external stimulation is by so much the less. When an animalcule

such as a Stentor comes in contact with a stimulus, e.g. a solid object which may or may not represent food, it can deal with it in only two ways,—either by engulfing it or by withdrawing altogether from it; and the number of external conditions which can serve as stimuli to such a lowly organism as Stentor is comparatively limited.

Stentor and its like can hardly be said to have a nervous system, but the cells which compose the animalcule show the elementary characteristics of nerve-cells, since they are excitable and conduct excitation, that is to say that a stimulus which they have received is passed to the other cells immediately in contact. Slightly more complex organisms like the jelly-fish have a rudimentary nervous system, consisting of a chain of excitable cells and their fibres, like the elementary reflex arcs which have been described as the prototypic nervous structures in the spinal cord in man and higher animals.

It is not enough, however, that a nervous system should show plasticity. Its activity must vary according to certain laws; otherwise, in the struggle for existence, an organism whose actions were not only variable but capricious would rapidly perish.

Time-Factor. One of the important determinants of the response a particular organism will make to a particular situation is the state of the organism as a whole at the time and especially the state of its nervous system. It has been shown, for example, that in the cortex and surface layers of the human brain, stimulation of a given point concerned with producing movements of the limbs, does not always produce the same result. The effect depends partly on the preceding stimuli.

Localization. Another of the factors limiting plasticity is the localization of function that takes place in the central nervous system. Different parts of it subserve different functions. Thus respiration and circulation are regulated largely by the hindermost part of the brain (the medulla oblongata): the control of position by the mid brain; and sleep, temperature, and water exchanges by 'centres' further forward, in the 'between brain' or diencephalon. The control

of muscular movements is affected by centres of groups of nuclei in the mid-brain, medulla and spinal cord. These centres are, however, under the control of higher, i.e. more complex and therefore more plastic, centres in the brain cortex itself, which control not the movements of individual nuclei but of entire limbs. Behind the motor centres in the brain lies an area concerned with sensation—not so much the appreciation of sensations such as pain, which can be felt even when the brain is damaged, but the appreciation of differences in the quality and intensity of sensations and their localization and discrimination from each other on the body surface. Behind this and separated from it by a 'silent' area, i.e. an area of cortex to which no special function has been assigned, lies the visual area. The central portion of this area has to do with the appreciation of light. Round this central visual area is an expanse of cortex which has to do with the perception of visual depth and distance, of relative position in space and with the recognition of objects seen. It is therefore called the association area of visuo-psychic area.

The function of hearing is located in the temporal lobe of the brain. Here also there is a central area for the appreciation of sound, and a surrounding auditory-psychic area for the recognition of sounds and words.

Speech is a very important function and depends on the co-operation of various functions, especially hearing, vision and movements of tongue, lips and throat. It is usual to describe speech as depending on the co-operation of a motor centre for the production of the required movements, near the centre for face and limb movement; an auditory centre in the peripheral auditory psychic area; a centre in part of the visuo-psychic area; and when associated with writing, a centre in the motor area adjoining the centre for arm movements. But the evidence goes to show that if any of these 'centres' is damaged the whole of speech function is impaired to some extent; in other words, speech depends for its integrity on the intact working of a very wide area of brain cortex. This is further supported by the fact that under

special conditions such as the stress of emotion words that otherwise seem to have been lost appear again. It is not that all words have been lost but rather that there is an increased difficulty in recalling them. This is important and applies not only to speech but to cerebral functions in general. The old phrenologist thought that all not only of bodily functions but of personal characteristics had a definite localization in the brain ; research has shown that localization of function occurs to some extent as has already been indicated, but that personal characteristics have no such local habitation ; while the most recent researches would make even the amount of localization that appears to have been established by experiment and observation, for the simpler intellectual functions (speech, etc.), less considerable than it has often been considered to be. It has been shown that efficient function depends not merely on an intact ' centre ' but also, and even more, upon the condition of the brain-cortex as a whole.

Importance of working of Cortex as a Whole. While this is clear in the case of human beings in connexion with speech, it becomes apparent also in animals. Experiments have been performed by K. S. Lashley with rats who were set to find their way through a maze (to food in the middle of the maze). When part of the cortex was removed it was found that the ability to learn how to find the way was not lost ; but the time taken to relearn the maze was, by the loss of portions of the brain cortex, increased to an extent roughly proportional to the extent of the area of destruction and independent of the particular area destroyed. Even after the entire cerebral hemispheres are disconnected, simple habits can still be learned as fast as before. This accords with the observation that rats, in whom the hemispheres are relatively small, learn their way through simple mazes practically as rapidly as humans.

That the cortex works as a whole, is borne out by the psychological observation of intellectual processes as well (if we assume that cortical and intellectual function are somewhere, somehow, related). It is a commonplace that we can attend well to only one thing at a time. The so-called ' span ' of

attention is said to cover five objects at a maximum ; but this is misleading if it is allowed to lead to the conclusion that the mind can have different topics of thought simultaneously. It can have but one distinct topic ; any other impressions or ideas are blurred or 'marginal'.

It has been suggested that attention and "point of greatest cortical activity" are closely related. This must not be confused as identical with the notion of the localization of cortical function. Spearman claims to have demonstrated by psychological experiment that the mind works as a whole. 'Every mind tends to keep its total simultaneous output constant in quantity.' He supported this with experiments along with Hart on a number of people comprising a curious

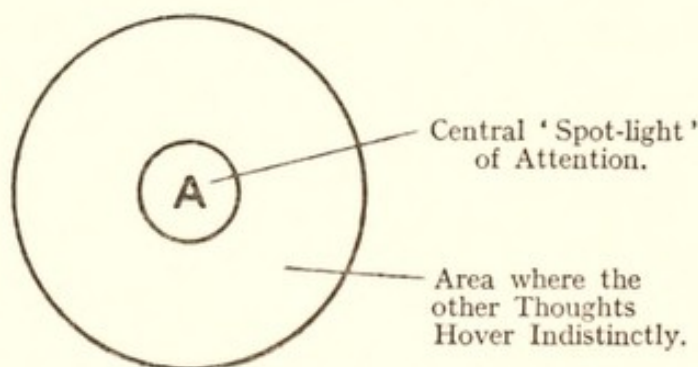


FIG. 8. FOCAL AND MARGINAL ATTENTION.

diversity of mental and brain diseases, and found that the diminution in their mental output was always generalized and never confined to one particular intellectual function. He concluded that the main damage may be attributed to a diminution of the general energy, this latter being derived from the whole cortex and lessened by injury to a considerable part. However the experimental methods in such work may be criticized, it is in agreement with the clinical observations that the effect of brain lesions is to cause a generalized falling off in intellectual function and not, say, of memory alone or attention alone ; but some of the conditions Spearman investigated experimentally do not usually exhibit either intellectual impairment or brain lesions.

Integration. Our picture of the central nervous system is, then, of a system of functional units, working together in a

hierarchy of levels of complexity, the lower and simple levels of function being under the dominance of the higher. This complex organization of function is usually called 'integration'. There is not only a 'horizontal' division of function in levels but a vertical division as well: i.e. there is such a segregation of a set of functions all the way up to the highest levels of brain-activity that it is possible to speak of a certain centralization of control. In a limited way the arrangement is like that of a telephone system, with numerous exchanges and sub-exchanges serving different districts, each exchange being under the control of a larger one, all being controlled finally from a single head-exchange. But the analogy is very loose, for in the central nervous system many of the 'exchanges' perform very different functions from each other (localization of function); and if any one of them is put out of action the others, especially those subordinate to it, may have their function not only impaired, but actually disordered. For example, destruction of the motor cortex of the brain tends not only to loss of ability to move the limbs, but to their becoming curiously rigid from the uncontrolled or 'released' activity of lower levels of the brain.

Complexity of Central Nervous Activity. The simplest level, such as that pictured in the elementary reflex with which we began, is seldom if ever allowed to function independently of the higher levels. In fact the elementary reflex hardly exist as functional units. There is always more than one intercalated neurone; and some of these intercalated neurones make widespread connections throughout the whole nervous system. They may ascend to make connections in the brain, so that an impulse entering at A may travel far and be modified variously before affecting C.

C itself is in connexion with a number of other nerve-fibres (B), chiefly from higher centres in the nervous system, and is much influenced by their activity. For example, some fibres (B) convey impulses which come from centres ('vestibular nuclei') receiving messages constantly from organs (the labyrinths of the internal ear) which give information about the position of the body in space. According

to the messages so received, messages are transmitted from the vestibular nuclei to the nerve-cells (C) so as to cause the movement of the latter which will correct the organism's balance. There are other impulses from other neurones playing upon C which come from centres controlling the 'tone' of the muscles. Muscles are elastic bodies and their tone is proportional to their resting length; the latter varies according to the general state of the organism, but depends especially upon impulses received from tone-controlling centres located principally in the mid-brain. In addition to such fibres connected with C there are others, which can

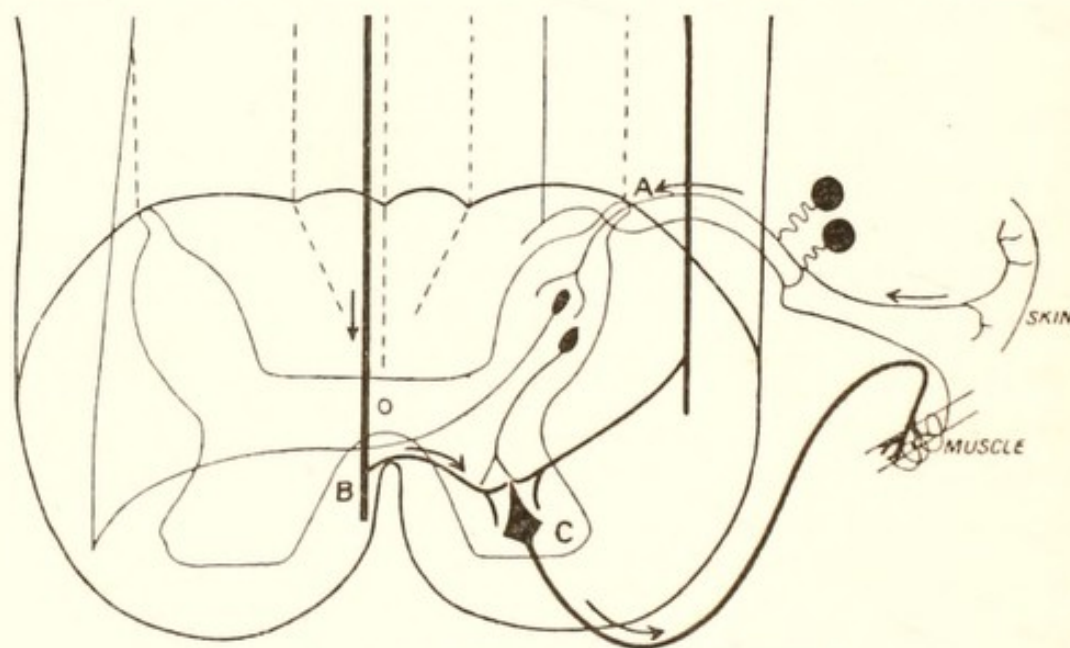


FIG. 9. SPINAL CORD IN CROSS-SECTION.
(Modified from Herrick's *Introduction to Neurology*.)

convey impulses which may block the passage of impulses of any kind into C.—these are inhibitory fibres and impulses, and we shall see later that such inhibitory functions are of the greatest importance. The activity of C at any moment is therefore determined by impulses received from all these sources at the time (Fulton).

If the conditions are as complicated as this at the simplest levels of neuronic function, the state of things at the highest level, the brain cortex, has to be left to the imagination: we can only marvel that such an unbelievably complex organization of function should be possible as exists in the brain and regulates all the activity of the body. Only when disease or

injury destroys some portion of the brain, do we ordinarily obtain a glimpse of the delicacy of integrated function which lies behind the smoothly running functions of the normal man. We can realize that a so-called 'centre' for any function is not to be thought of as a group of cells having control of that function, but rather a co-ordinating centre where a number of component activities of the function are brought into connexion.

Inhibition is an important property of central nervous function—perhaps, from the developmental viewpoint, the most important of all. This is the generalized function which all but the lowest forms of nervous organization exquisitely exhibit. Inhibition is a positive process, and means not merely the absence of obvious activity (excitation) but a state which definitely prevents for the time being any excitation arising; in other words, inhibition is a controlling function. It is already seen at the intermediate level of nervous activity, the sensori-motor level of reflexes, where the nerve supply of a moving muscle carries excitatory, while that of the opposing muscles carries inhibitory, impulses, so that the opposing muscles actually relax, simultaneously with the contraction of the antagonist. But this function is displayed most significantly in the control of lower levels by higher. The extent to which this inhibitory control is all the time taking place is best exhibited by the result of disease or injury of the spinal cord. The 'symptoms' of the disease or injury consist very largely, as Hughlings Jackson first pointed out, of nervous activities released from the control of the higher centres.

Let us take the simplest example. When the spinal cord has been partially cut across and has had time to recover from the shock of the injury, the reflexes, such as the knee jerks, become exceedingly active, so that a slight tap on the patellar tendon produces a greatly exaggerated jerk; while if the sole is tickled, instead of producing merely a flexion of the great toe towards the sole and a similar movement among the other toes, the great toe is extended (points upward away from the sole) and the entire leg is drawn up, while the

bladder may empty and defæcation may also occur. This is the so-called 'mass reflex'. If the injury or disease is at higher levels, corresponding phenomena occur. For example, if co-ordination and therefore control is interrupted at the level of the upper part of the midbrain, the limbs go into a state of rigid extension, from the uninhibited activity of the nuclei responsible for maintaining muscle tone. At a still higher level, if the connexion between the nuclei at the base of the brain which appear to be concerned with emotional states and the cortex are severed, there occurs, in children at least, a change in behaviour, which becomes impulsive and is no longer controlled by reflection or social feeling. This is what appears to occur in the chronic stage of 'sleepy sickness' or epidemic encephalitis. Such children are not only mischievous but apparently spitefully so; and what is of interest, they often regret this but seem unable to prevent the occurrence and repetition of such behaviour. 'Something makes me do it', or 'I feel I want to', are the statements that they commonly make. At a yet higher level, if the association fibres between the different centres of speech and between the centres themselves and other parts of the cortex are severed by a hæmorrhage or tumour, then, in the case, for example, where injury interrupts the connexion between the auditory speech centre and the motor speech centre, the patient talks jargon and, in spite of his knowledge that he is talking nonsense, is unable to control his utterance. When we consider disorders of the highest level of all, the level of what we call mental activity, we find delirium, the unrestrained and disorderly expression of the functions released from the highest control which is evident in logical thinking. It is also important not to identify inhibition in the physiological with inhibition in the psychological sense. Possibly they are sometimes closely connected in an organism's activity, but they are distinct phenomena which can at present only be identified with each other by a descriptive licence.

The ill-understood nature of inhibition has fascinated most of us so much that it has sometimes been dragged in where perhaps it is unnecessary. Pavlov employs the concept of

cortical inhibition at great length. He believes for example that both excitation and inhibition have certain properties which are of special importance and practical bearing when the working of the brain cortex is considered. In the cortex either of these processes occurring in one region not only projects itself along its special path but tends to spread outwards all over the surrounding cortex as a wave spreads over the surface of a pool upon which a disturbance is introduced by dropping a stone. Under certain conditions either process may spread over a large part of the cortex. When the spread of excitation is wide and sufficiently intense there is produced the phenomenon known as an epileptic motor fit. In Pavlov's view when the spread of inhibition is wide enough there is what we call sleep (*v. infra*). Sometimes the spread of inhibition in sleep although wide is not complete—for example, the motor cortex may escape inhibition and may in fact become excited while all the rest is inhibited. This is the physiological translation of what we know as sleep-walking. When the distribution of cortical inhibition is the reverse of this (i.e. the inhibition has lingered in the motor cortex), as sometimes happens when one has just awakened from sleep, then, although fully conscious, one cannot for a while move one's limbs. This condition has been called 'sleep paralysis'. It is not a disease but merely a physiological anomaly.

In sleep walking and in sleep paralysis we have the most obvious examples of the *dissociation* of cerebral function—in these instances an area of excitation apparently exists alongside an area of inhibition or at least of inactivity. Dissociation is a normal and necessary condition of brain activity. Each time a cortical area is excited the surrounding regions tend to undergo inhibition. Otherwise there would be a chaos of unrelated or even contradictory activity and resulting confusion of bodily movements. The tendency of any active area to induce inhibition in a neighbouring or even the whole area of the central nervous system was first shown by Sherrington in the spinal cord. He showed that even reflex areas which were far distant in the cord underwent inhibition

as a result of the activity of the latter. This phenomenon he called 'reciprocal inhibition' and it is a very necessary one to prevent chaos. If it were not for this reciprocal inhibition it would, for example, be possible for a dog to attempt to scratch itself with its right hind foot while its left hind foot was lifted off the ground for some other purpose.

It is a sound principle of logic and science, however, that hypotheses should not be multiplied unnecessarily, and perhaps we could sometimes go without the notion of inhibition. What is called an inhibitory state—an active process—may be sometimes nothing more than an absence of activity. Let us take sleep, for example, which Pavlov believes to be a generalized cortical inhibition. It has been shown by some experiments that there is a sleep centre, using 'centre' in the sense of a co-ordinating region, which is perhaps better called a waking centre, as is shown at length in a book on *Sleep* by the writer. In that book it was suggested that sleep is the result of the rhythmic elimination of the activity of this waking centre and that when the cortex ceased to be bombarded by stimuli from the waking centre or elsewhere, it somehow passed into a state of inhibition. But it was always difficult to understand why a positive process like inhibition should occur in response to a negative one, the *absence* of stimuli. It was in fact necessary to suppose that the cortex was always tending, by nature, as it were, to pass into a state of inhibition, prompted perhaps by the fatigue of the day acting as a stimulus. But it would appear more logical, as Denny Brown suggests, to suppose that the fall in activity of the waking centre simply allows the cortex to be inactive—and a person with a completely or nearly completely inactive cortex is asleep.

Fatigue. Another important property of the central nervous system often closely associated with inhibition is fatigability. Since a great deal is heard in these days of 'nervous' fatigue, especially in connexion with 'nervous breakdown', it is worth while examining the physiological facts. The psychological aspect will be briefly considered also as it is convenient, although doing so anticipates the general arrangement.

Fatigue follows exercise ; but in a nerve fibre itself it is a matter of the greatest technical difficulty to demonstrate any change at all as the result of exercise. This has lately been done, however, for at least certain non-medullated nerve fibres. (Medullated fibres, i.e. those possessing a sheath, compose the central nervous system. Certain nerve-fibres outside the brain and spinal cord do not possess a sheath.) But the energy change is so extremely small that on this and other grounds it can safely be assumed that nerve fibre itself, of which the bulk of the brain and spinal cord are composed, is practically indefatigable. It is otherwise, however, with the nerve cells. There is evidence—indirect evidence, it is true—of the fatiguability of nerve cells. It has been observed that after, for example, excessive exercise of the cells having fibres connected with muscles, the cells have lost much of their stainable substance ; this is presumptive of the fatigue of the cells, in the sense of a diminished capacity for work. But what matters in real life is not the cell nor the fibre, but the whole collection of cells and fibres comprising the nervous system. To obtain direct experimental evidence of fatigue of the latter is not at all easy. Experiments have shown that muscular exercise consumes enormous amounts of energy, as measured by the alteration of the 'metabolic rate' (rate of exchange of oxygen and carbon dioxide) : but similar experiments directed to discovering the energy consumption of the entire organism during purely mental work have failed to discover any metabolic alteration at all. The energy change involved in mental work must therefore be very small. Recently a new direct method has been devised, which consists in measuring the relative amounts of oxygen and carbon dioxide in the carotid artery (supplying the brain) and the jugular vein (draining the brain). A diminution in oxygen and glucose and an increase in carbon dioxide has been demonstrated in the jugular blood, indicating a utilization of energy in the brain tissues ; but it remains to demonstrate an increased consumption of oxygen during mental work. Probably any such increase will be very small indeed. Collateral evidence comes from an entirely different line of

experimentation of a psychological kind. This consists in measuring change in the output of mental work itself (e.g. change in the number of numerical additions done in unit time). This is a method beset by some fallacies, since boredom and other factors enter in ; but when allowance is made for them, it is found that the amount of specific objective fatigue, i.e. fatigue directly produced by a certain task and by no other, accounts for no more than 15 per cent of the whole falling off in mental output : that is to say, 85 per cent of the falling off in effective mental work can be abolished by transferring to another kind of mental work.

Even if the actual consumption of energy in small muscles, such as that used up in talking, is added to the energy consumption of the cortical work involved in talking, the total is exceedingly small. Sir W. Bragg calculates that it would take a million and a half people all talking for five minutes to produce enough energy to boil one cup of tea.

Evidently the fatigue of the brain that results from intellectual work alone is very small, and if even a slight change in the object of study is made, fatigue is very slow to ensue. This is an important topic because people have been accustomed to think of nervous fatigue or exhaustion or 'brain strain' or the like as the common and likely sequel of considerable mental exertion. A more critical examination of patients with 'breakdowns' designated in this way shows that in the very great majority of instances actual intellectual work has played but a small part, if any, in the production of the illness. Overwork of any kind, in the true sense, although often assigned as the cause, has usually been absent. Why, then, do such patients complain of feelings of fatigue or even of exhaustion? Are we to resort to the still older way of attributing the symptoms to 'imagination' and telling them to 'pull themselves together'? As a matter of fact the feelings of fatigue are neither imaginary nor simply controllable. Investigation has shown time and again that the patients have been under considerable emotional strain, and it is this stress, partly by its direct effect in producing fatigue of the body generally through the medium of the central

nervous system, resulting in over-tension of the muscular system (a peculiarly costly form of muscular activity), but much more by its indirect effect in diverting the patient's attention from his everyday tasks, that produces the fatigue. The proof of this lies in the effects of treatment. Remove the emotional stress and the fatigue disappears as if by magic, and in the shortest possible time. The 'cure' is sometimes so rapid, that one is tempted to wonder whether there has been not only no central nervous fatigue in the sense of seriously depleted energy reserves in the central nervous system; but whether there has been any fatigue at all even in the periphery (muscles, etc.)—whether there has been anything more than the subjective sensation. But it is important to remember that in all fatigue the subjective aspect is important. It is well known that in times of intense excitement, great bodily exertion may be undergone without any feeling of fatigue, to an extent that would be utterly impossible in normal conditions. In the dancing mania that beset certain Western European villages in the fourteenth century, young girls danced for hours without sign of exhaustion, and without complaint of it. In battle, feats of endurance otherwise unheard of are common. The circumstance of hypnosis may be made to show the same thing. There is a well-known ergographic experiment, in which a small weight has to be raised again and again by means of a string attached to the end of a finger, with the wrist fixed so that only the finger joints can participate in the movement. Normally the finger tires rapidly and after a few minutes cannot raise the weight one fraction of an inch. Nicholson at the Johns Hopkins Hospital by hypnotizing some negro subjects was able to prolong their ability to raise the weight by many times the ordinary duration. This is an experimental proof under strictly controlled conditions of the very great importance of the subjective factor in fatigue.

Probably part of the reason for the almost immediate recovery of certain subjects who have been held to be suffering from 'nervous fatigue' or 'nervous exhaustion' lies in the subjective factor, as well as in the relief from the actual

inhibiting or draining or diversive factor in emotional stress. There is a rebound in the patient's mind from anxiety to assurance or even happiness. But the reason lies also in that there is no such mysterious loss of energy in the central nervous system as has been postulated, requiring to be relieved only by long periods of rest ; but instead there is a store of energy waiting to be released. This is well shown by the effect of treating these conditions as if there were a definite loss of energy to be made up by rest. The patients simply remain tired, sometimes for years, if the emphasis in the treatment has been on rest. There is a story of a military hospital in the south of England which in the early days of the war undertook to treat soldiers suffering from nervous exhaustion on such principles. At first the soldiers were permitted only to lie out in the sun ; then they were permitted to sit up for a time, then to walk, gradually increasing distances ; but at the end of the war they were still tired. They had imbibed very thoroughly the suggestions of fatigue implied by the treatment.

It is not that rest does not have its place in treating nervous conditions in general ; and there are a few instances where exhaustion, chiefly of body, has been the principal cause of a mental illness. But in the vast majority of cases the exhaustion is not a physical depletion of the nervous system brought on by overwork but is the complete result of the emotional and subjective factors alluded to above. An illustration will make this clear.

A chemist of some ability complained that he had never been able to do more than forty minutes' brain work at a time. Any attempt at a longer spell of work was followed by a feeling of exhaustion. In working for examinations his custom was, consequently, to work for only forty minutes at a time and then to take an almost equal period of rest before going on again. He had found this both a considerable nuisance and a handicap, making work, especially for examinations, much more difficult than it should have been.

Investigation of his history showed that the symptoms dated back to thirty years before, when he was 13, and at

school in the headmaster's form. He was a bright boy, but did not do so well in this form, almost certainly because of his fear of the headmaster. The latter told the boy's mother that he had an under-developed brain. The mother foolishly communicated this observation to the boy. The boy himself, having observed that he gained weight in the holidays and lost it during the term, jumped to the conclusion that he was straining his (under-developed) brain. This filled him with alarm—he was at that time a timid, anxious youth at best, and he decided to work cautiously. His anxiety, unknown to him, however, proceeded to act as a kind of brake on his activity, making him feel exhausted if he worked more than a short stretch. The anxiety had gone on working automatically long after the incident had been forgotten. Remembering the incident under guidance and seeing the real cause of his fatigue was followed by immediate cessation of any abnormal fatigue effects when working.

Conditioned Responses, often called conditioned 'Reflexes'. The study of the ways in which the nervous system becomes organized or 'integrated' in a way that is useful for adjustment to the environment constitutes the borderland between physiology and psychology, i.e. between what we describe in physiological and what we describe in psychological terms. Thus the physiological counterpart of what we call psychological and instinctive action may be (or may not be as far as our knowledge goes at present) a system of reflex arcs, whose particular arrangement was preordained in the organism's ancestry. This represents one of the two chief modes in which the nervous system is built up, viz. by the arrangement of nerve tracts in an inborn pattern, just as definitely pre-determined as the differentiation of the tissues that go to form the heart or those that constitute the liver. But another mode of organization is what principally aids adaptation to a constantly changing environment and underlies (as far as we can conceive these things in physiological terms) most of the differences in the behaviour of different individuals of the same species. This is in psychological terms the formation of habits. In physiological terms a 'habit' used to be sup-

posed to be the functioning of a reflex arc which had been 'conditioned' by experience, i.e. had learned to work in a way not preordained from birth. But it has been shown that learning of a habit does not depend on anything so apparently simple as the formation of an extended reflex arc.

According to these older theories a habit was set up by the bringing of a number of reflex arcs into functional association. But this took for granted the 'law of exercise', which in a previous chapter has been shown to be invalid. The law of exercise meant the formation of associations by the forced passage of nerve impulses over paths which remained connected thereafter. Later experiments have shown that a habit may be carried out by means of afferent and efferent paths which were not employed during the process of learning, and that increasing practice leads to the formation of new paths. Also it is not a simple specific stimulus applied to a special sense organ that sets the habit going, but often it is some complicated 'pattern' of stimulus.

This cannot be accounted for by saying that a specific habit has been formed for each group of nerve cells in the child's retina that has been stimulated on each occasion. It is necessary to suppose instead that it is the pattern in which the nerve cells are stimulated that matters. It is not so much the nature of the individual stimuli, as the relationship between the stimuli, that determines the response. The analogy, except in the case of the simplest stimuli, is with the electric sign, across which a particular light-pattern passes according to the particular combination of switches operated, rather than with the simple 'press the button and the baby squeaks', which holds only for the most elementary responses of the nervous system, i.e. something traversing only a comparatively simple arc in the spinal cord and in the lower levels of the brain. This conception can be brought into relation with the conception of the 'Gestalt' psychologists, mentioned in the first chapter.

Pavlov looks on the physiological basis of habit in a different way. It has been asserted by Pavlov that the formation of a habit depends on bringing an inborn reflex response

into conjunction with some stimulus not formerly associated with it. Thus for example if you show a dog a piece of meat its mouth waters. The meat is the stimulus and the flow of saliva is the reflex response. This is an example of a so-called unconditioned (i.e. inborn) reflex (as a matter of fact puppies have to learn the response in the beginning: but it is the standard example). If now the dog is subjected to training, in which a bell is sounded a number of times and every time a piece of meat is presented to it, ultimately saliva will flow when the bell is sounded alone, without the exhibition of a piece of meat. This is a 'conditioned reflex' in contrast with the unconditioned or inborn reflex. The conditioned reflex is better called a conditioned response, for 'reflex' was first used for invariable inborn automatic responses and this has none of these qualities. It is not inborn; its occurrence depends on the absence of other stimuli which might conflict with it, and so far from being permanent it dies out after a time, of inanition as it were, unless the response meets at intervals with the normal satisfaction of meat.

The importance of this kind of process for the study of neuro-physiology is very great. Psychologically the concept most closely related to it is that of the association of ideas. The 'conditioned response' of the central nervous system, if extended to include responses of emotion as well as action, helps us to a clearer notion of the bases of human behaviour.

For example, Watson has shown that infants may become afraid ('fear response') of all sorts of originally indifferent things by accidental association with alarming stimuli (e.g. noises, see Chapter I). In adults certain 'symptoms' may depend on a similar process. Many soldiers after the war still automatically displayed the signs of fear at any sudden noise. In civil life the occurrence of acute anxiety (distress or fear) in a closed space may depend on some association between a closed space and the original provocative of fear. Too much has however been expected of the physiological conception of the conditioned response when it has been attempted to apply it to psychological occurrences. It remains an exceedingly important contribution to brain

physiology but is not yet very helpful from a practical point of view in understanding human beings.

The autonomic Nervous System. The processes described so far have had to do mainly with the external adjustments of the living organism. But just as any business organization must have, in addition to its working relationships with other similar concerns, a very intricate and well-managed department of internal administration and co-ordination, so the living organism has to have an efficient machinery of internal self-regulation. And again, as no business can make successful contact with the outside world without having completed a reasonably efficient organization within itself, so in the living organism the internal adjustments have reached and held, in the course of evolution, a state fairly near perfection long before the functions having to do with external adaptation have reached their full pitch of development. The inner adjustments have to do with the nutrition of the tissues, involving circulation and respiration, the regulation of body temperature, of water exchange and the like, and they are carried out by structures lying partly within but mainly without the central nervous system. The structures outside the central nervous system constitute the autonomic or sympathetic nervous system.

This consists mainly of complicated arrangements of nerve-cells or fibres, organized in groups or plexuses, each plexus presiding as it were over a certain functional region. For example, the solar plexus is concerned mainly with the muscles and glands of the intestines and co-ordinates the movements and secretions of these. Similarly, other plexuses control and co-ordinate the contraction and expansion of the bronchi and the blood vessels of the lungs. Arteries in general carry upon their walls a plexus of nerve cells and fibres which regulate their diameter and therefore the amount of blood they supply according to the local and general needs of the moment. This vast intricate network of the autonomic nervous system, while comprising as it were valuable local governments and sub-departments, is itself under the general control of 'centres' or special groups of cells, which lie

actually within the brain, at its base, in the region below the thalamus, in the zone of the third ventricle. The organization of these centres in all the higher warm-blooded animals is closely similar, since for the functions they perform they are equally necessary in the state of nature in all such beings. The centres for control of temperature, water balance and the like in the peri-ventricular region lie so close together, that it has not yet been possible to discriminate completely their minute geography. Further down or tailwards in the central nervous system, the centres for respiration and circulation are found in the medulla oblongata or hindmost part of the brain. These centres are the most immediately vital of all. An organism can get on for a brief space of time even with all the brain above this out of action, but a suspension of function for a few minutes of the medulla oblongata means death. Hence the selection of hanging, which dislocates the spinal column high up in the neck and pulverizes these centres, as a mode of instant and certain death.

The autonomic plexuses of cells and fibres are connected by fibres called preganglionic with the central nervous system. In other words, while the limbs are controlled directly from the central nervous system, the nervous connection of the viscera with the central nervous system is interrupted by a relay station.

Both in the central nervous system and outside it, the autonomic nervous system falls into two main portions with different functions assigned to them. These are the sympathetic and parasympathetic divisions. The parasympathetic is sometimes called vagal after the name of what constitutes its greater part, the vagus or 'wandering' nerve, which originates from a collection of cells in the medulla oblongata and 'wanders' into the thorax to terminate in branches which go to various abdominal organs, especially to the stomach and intestines, but giving off also branches to the heart and lungs on its way. There is another accessory division of the parasympathetic which is connected with the lower part of the spinal cord and distributes itself to the bladder, bowel and sexual organs. The two large

divisions of the autonomic or self-regulating nervous system have to some extent opposing functions. The action of the vagus on the heart, for example, is to slow it; that of the sympathetic is to accelerate the heart rate.

To some extent the vagus limits the internal activity of the organism and for this reason has been regarded as having an 'anabolic' function, allowing the reserves of bodily energy to be conserved and restored. The sympathetic, on the other hand, has been regarded as having a katabolic or energizing function. In contrast to the parasympathetic it is arranged for a diffuse discharge of impulses over many different organs and regions simultaneously. Stimulation of the sympathetic quickens the heart beat, constricts the arteries generally, increases the amount of oxygen-carrying corpuscles in the blood (by constricting the spleen), shortens the coagulation-time of the blood and hastens the recovery of muscles that have become fatigued. At the same time other functions such as digestion are inhibited. The combination is suggestive at once of a use in action. Clearly an organism which has to fight for its life or has to cope with some other physical emergency will be at a great advantage if its sympathetic can be brought into action. This is what in fact actually happens, as Cannon has shown, in severe pain, vigorous muscular exercise, asphyxia, exposure to cold, conditions of lowered blood sugar (hypoglycæmia) and strong emotional excitement.

There is a specialized part of the sympathetic nervous system which reinforces the sudden changes, namely the adrenal glands, the medulla or central part of which is composed of cells of origin identical with that of the post-ganglionic sympathetic fibres themselves. Adrenalin is a chemical substance nearly identical with the secretion of the core of these glands, and when injected into human beings produces nearly all of the above effects.

The parasympathetic, on the other hand, has a more local distribution, and this is related to the fact that the functions of the organs supplied by its fibres are not physiologically interrelated in a way that would be useful to the

whole animal. Thus constriction of the pupil and emptying of the bladder and rectum can hardly be described as 'serviceable associated reactions'.

It is important, however, as a precaution against assuming a greater natural isolation of the two systems, sympathetic and parasympathetic, than actually exists, to notice that in times of great stress the excitement of the sympathetic spreads over as it were into the parasympathetic, and leads to emptying of the bladder and rectum in addition to the ordinary signs of sympathetic excitement. This occurs most obviously in extreme fear.

Normally the sympathetic and parasympathetic act reciprocally with each other. For example, the acceleration of the heart during exercise is the result partly of sympathetic discharge and partly of diminished discharge of impulses through the vagus. This is analogous to the reciprocal innervation of muscles during movement of a limb.

It is an interesting contrast that while the parasympathetic is particularly concerned with the emptying of viscera such as bladder and bowel, the discharge of seminal fluid in the sexual act, as well as erection, is the result of discharges through the sympathetic.

The Physiological Correlates of Emotion. The expression (as distinct from the conscious experience) of emotion in man and animals is principally a manifestation of the activity of the autonomic nervous system. Whether these manifestations *are* the emotion has been considered in the first chapter. If some of the signs of emotion be tabulated, such as bristling of the hair, pallor or blushing of the face, and sweating, it is found that they are the result of discharges through the autonomic nerves, acting in the case of the hairs upon the small muscles which by contracting pull on the roots of the hairs, and in the case of pallor and blushing, acting respectively to contract or dilate the blood-vessels of the skin. Similarly with the inner bodily changes in emotion. Increased heart action, increased activity of the gut, or cessation of movement within it, are all, as we have seen, the result of autonomic nerve impulses.

It can be shown that under the influence of an emotion such as fear, not only do the gastro-intestinal movements stop, but the secretion of gastric juices is impeded or altered in quality. For example, an experiment showed that feeding a dog for five minutes produced in the following twenty minutes 67 c.cm. of normal gastric juice. But if the dog were first infuriated by the presence of a cat, similar feeding produced only 9 c.cm. of a thick mucous secretion. Beaumont long ago noticed similar effects in a man who had a permanent fistulous opening into his stomach through the abdominal wall, so that Beaumont could observe the process of digestive activity. The normal rhythmic movements of the stomach when empty and the secretion of digestive juices which results from the presence of food in the stomach, as well as the peristaltic contractions which carry the food onwards, are stopped in cats by the supervention of a mood of fear or danger. In human beings, anxiety, which is a minor continued fear, has the same effect. This tends times without number to a misinterpretation. The anxious person finds his bodily functions disagreeably upset, complains of 'dyspepsia', 'palpitation' and the like, and concludes that he has some physical illness or disease of some kind. I have known a woman operated on—a gastro-enterostomy being performed—literally because of her father's ill temper. She had complained for years of dyspepsia for which no medical treatment had been of any avail. A more careful enquiry into the beginnings of the dyspepsia would have shown that it had begun at meals, which were practically the only occasions on which she encountered her father. The father was extremely irritable. No meal passed without a scene. She came to dread meals and so she approached any meal with her gastric hunger contractions in abeyance and her gastric secretion impeded by autonomic impulses initiated by fear. Consequently she suffered a sense of discomfort after every meal. The food 'lay like a weight' in her stomach and she complained of actual pain which was ultimately misinterpreted as indicating the presence of an ulcer.

Conversely there is some evidence that a state of pleasurable

emotion facilitates the movements of the stomach. If the parasympathetic nerve supply to the stomach be cut off before an animal takes food, the tone of the stomach diminishes and gastric contraction does not occur when food is taken. If the nerve supply is not cut off till after food has been taken with relish the contractions proceed as usual.

The diffuse serviceable effects of emotion upon the viscera have already been referred to. It is worth noting that their effects are graded according to the degree of emergency. The glycosuria in times of great emergency varies in degree with the magnitude of the emotional disturbance. Behind the glycosuria and responsible for it is an increase of sugar in the blood, which is presumably the result of increased secretion of adrenalin.

Co-ordinating Centre for the expression of certain Emotions. Just as the heat- and water-regulating autonomic mechanisms have a central station in the base of the brain, so there is evidence that some at least of the bodily changes that make up the emotions have a central co-ordinating station in the same region. This has been shown in particular for the extremes of rage. It has been found that the manifestations of rage still appear in an animal in which all of the cerebral hemispheres and some of the basal structures, namely those above the headmost part of the hypothalamus and all but the tailmost extremity of the thalamus, were cut away from connexion with the part of the central nervous system below (tailward of) them, but the signs of rage failed to appear if the destruction went below this level. This seems to indicate that the central co-ordinating apparatus for the manifestations of rage are in the hypothalamus close to the vegetative centres. In an animal with a brain-lesion of the type described the signs of rage are peculiarly complete and easily elicited—in other words they have two of the essential characteristics of a pure reflex released from the control of higher levels. The rage reaction comprises two distinguishable kinds of experience :

- (1) motor : struggling, snarling, clawing, lashing of the tail and the like, and

- (2) autonomic effects ; erection of the hair, dilatation of the pupil, exophthalmos, sweating, rise of blood pressure and of heart rate.

The evidence for the existence of centres for the co-ordination of emotional expression other than rage at levels lower than the cortex is not obtained from animal experiment, since it has not proved possible as yet to demonstrate a connexion between, for example, signs of fear and brain injury in any special region, but evidence comes from clinical experience. Destruction of the cortical areas for movement of the facial muscles may still leave the patient capable of laughing and smiling. Certain lesions with paralysis of the muscles supplied by the cranial nerves (facial, tongue, palatal, and upper pharyngeal muscles) in pseudo-bulbar-paralysis are in fact characterized by explosive laughing and crying. The patient, however, feels no emotion ; he may in fact be annoyed by the uncontrollable, and apparently causeless expressions of emotion to which he is subject. On the other hand, when a tumour destroys or damages the thalamic or hypothalamic regions the capacity for emotional expression may be lost, while the capacity for voluntary movement is unimpaired. The exactness of the relationship of co-ordinating neuronic structure and physiological expression is shown by the fact that the patient with a onesided thalamic lesion is unable to smile with the opposite side of the face while retaining the capacity for smiling on the same side.

The evidence is in favour of co-ordinating 'centres' for the *expression* of some emotions being situated in the thalamic or hypothalamic region ; and that they are under the control of the cortex. But the emotional expression in the circumstances of disease is not accompanied by anything in consciousness that would be called an emotion of joy or sorrow ; on the contrary, the sufferer is merely annoyed at his compulsory exhibition. On the other hand there is some evidence that actual destruction of the hypothalamic region if sufficiently extensive leads not only to a loss of emotional expression but loss of the capacity to *feel* any emotion. This suggests, if true, that the basis of emotional *experience* as

well as co-ordination of its bodily expression is in the thalamic or hypothalamic region ; and that the function of the cortex is to regulate the occurrence of emotional states both in producing adequate opportunities for them, and in determining what circumstances shall excite them. The function of the thalamic and hypothalamic region in emotion is on the one hand to send down impulses to the viscera and related muscles, and on the other hand to send up such messages to the cortex as will give rise to a more definite consciousness of the particular emotion being displayed. The physiological organization involved in any emotion is therefore a complicated matter of cortical, basal and peripheral (visceral and skeletal) elements. The emotional expression has the quality of a pure reflex over which the cortex has a conditioning and controlling function.

The complete phenomenon—the emotional experience—what we feel as the emotion itself plus the expression of the emotion, depends on the entire mechanism being intact.

CHAPTER VI

HEREDITY

IT would indeed be a fortunate child that could choose its own parents: for there is much in heredity. Some would say that heredity is nearly everything. Most of the emphasis in this book seems to lie on the environment. But this is partly because in our present state of knowledge it is chiefly with environment that one can work with some confidence of one's knowledge of the materials. In the first and last resort, however, all that environment can do is to work with the material provided for it by inheritance, to bring out its possibilities for good, and to limit its potentiality for harm. But no amount of environmental aid can alter by one jot or tittle the hereditarily prescribed limits of development.

The fundamental fact about heredity is that each individual is the result of the fusion of equal numbers of elements from two different individuals (parents). These elements are called chromosomes and are contained in each cell of the body in numbers which are constant for each species. In ordinary body cells they are counted in pairs, but in the germ-cell only one member of each pair is present, so that the germ-cell has only half the usual number. The new individual, being formed by the coalescence of two germ-cells, has exactly the usual number of chromosomes for his species. Another fundamental point is that the germ-cells are set apart at the very beginning of the embryonic life of each individual—immediately the individual or 'zygote', formed by the fusion of two germ-cells from two different individuals, itself begins to grow by dividing over and over again, so multiplying itself constantly. The germ-cells so set apart pursue what is

virtually a separate existence in the body of the person possessing them. They in their turn eventually divide, producing more germ-cells which are the direct descendants of the original zygote, collaterally with the body of the now developed individual who carries and protects them. Hence injuries to the individual, such as the loss of an eye or a limb, can have no effect on his germ-cells. Only some indirect effect on the germ-cells is possible ; e.g. if the body tissues of the whole individual are injured, this may hypothetically lead to an alteration in his circulatory tissues (blood) which normally nourishes the germ-cells, and which, being then diseased, may alter them. The kind of injury that may be produced in the offspring in consequence when a germ-cell injured in this way unites with another germ cell from another individual to form a new zygote, is of importance to the much argued problem of the effect of parental alcoholism, for example, upon the offspring. This can only be discussed after the significance of chromosomes in transmission of abnormalities and defects to the offspring has been appreciated.

The chromosomes, which, even under a high-powered microscope, are individually but the tiniest blobs of specially differentiated protoplasm within the nucleus of the cells, are the bearers of all the hereditary characters of the individual. In the human species there are forty-eight chromosomes and each chromosome is compounded of smaller units or genes. These genes are arranged in definite order among the chromosomes ; so that each chromosome has as it were a definite pattern. This is a matter of considerable importance, since it is the gene which contains or expresses the unit-character which appears in the mature individual, as for example brown eye-colour. When two germ cells unite to form a new zygote or new individual, the chromosomes of each component cell or zygote range themselves alongside their corresponding member from the other, and in such definite order that corresponding genes lie alongside each other. Of each pair of genes one member is usually found to be dominant to the other, e.g., if the gene for eye colour from one germ cell is for brown and that from the other germ cell is for blue, the

eye colour of the resulting zygote is brown. Brown eye colour is said to be dominant therefore to blue eye colour, and blue recessive to brown. The same has been shown to hold for many other pairs of unit characters.

It has further been shown that when a dominant character is inherited from one parent and a recessive from the other, the offspring inherit the character in the following proportions. In the first generation all the offspring show the dominant character. In the second generation if interbred among themselves 25 per cent of the offspring exhibit the dominant character, and are purely dominant (i.e. have no recessive component). These are called pure dominants. Twenty-five per cent are pure recessives; while the remaining 50 per cent show the dominant character but carry also the recessive gene, so that while 'pure' individuals in appearance they can transmit, while not themselves exhibiting, the recessive character. This is obviously a point of much importance. For example, in the hereditary forms of mental defect, an apparently normal person may transmit the defect to some of his children. The foregoing account of the dominance and recessiveness of unit characters, and their distribution in a family, is a very summary presentation of the fundamental facts of inheritance according to the discoveries of Mendel, since confirmed and elaborated by other workers. So far as human beings are concerned Mendelian inheritance has been shown to hold definitely for certain physical characters and deformities; but only at present definitely for one mental disease, namely Huntington's chorea, which is transmitted as a Mendelian recessive. There seems little reason to doubt that the Mendelian law is capable of extension to many other known characteristics including intellectual capabilities and temperamental traits.

Genes have a singular consistency, as judged from their expression in physical characteristics. Every now and then, but relatively very rarely, there occurs suddenly in the development of a species a new characteristic or 'mutation'. The gene responsible has undergone some ill-understood change. Such mutations are sometimes favourable in so far

as they represent an advance in adaptive capacity. They have in fact a survival value, and being the expression of a gene they are heritable.

Apart from such mutations, it has not yet been shown that any change in its characteristics which an organism may acquire is heritable through successive generations of offspring. The poisoning or injury to germ-cells, for example by alcohol, which has been mentioned above, may produce a feeble type of individual in the next generation, but not one with a new hereditary character—i.e. no new gene is thus produced. The absence of evidence for the inheritance of acquired mental characters must not discourage us from attempts at improving the race. There is quite enough scope within the limits of the inherited capacities of most individuals, to make improvements in those individuals possible, and quite enough scope within the wide range of Mendelian characteristics to make purposive breeding with regard to mental qualities in men as hopeful as it is in horses and cattle with regard to physical ones.

Every one recognizes the fact of the inheritance of physical characteristics such as facial features. Sympathetic relatives are willing to see a close likeness to one or other parent in the inchoate features of the new-born infant. That mental characteristics, both intellectual and temperamental, are inherited equally with physical ones is not so commonly recognized, but has been quite definitely shown. Karl Pearson, for example, showed that the affinity for a certain set of mental characteristics between successive generations was as close as that between the principal physical characters of the same stock. For the extreme case of exceptional mental ability, Sir Francis Galton, the pioneer in this as in many fields of study, long ago showed that heredity was the principal factor. Galton painstakingly analysed the kinship of the English judges since the Reformation, and of 'the most illustrious statesmen, commanders, literary men, men of science, poets, musicians and painters of whom history made mention'. The result was to show that people eminent in all diverse chosen forms of activity were far more likely to

have distinguished relatives than persons of more average ability. Out of 30 Lord Chancellors, for example, 24, or 80 per cent, had eminent relations; while out of 256 other judges of lower degree only 90, or 36 per cent, had eminent relations. That this is not entirely the result of social influence is shown by the fact that a similar state of affairs is found to hold of musicians. The example of individual families in our own times supports Galton's views; as, for example, the Darwins, the Huxleys, the Haldanes, and the Churchills.

Sceptics will still point to the frequency with which the sons of eminent men fail to equal their fathers. This is the other side of the picture. There are a variety of reasons. Great ability, short of actual genius, requires opportunity before fame is reached. Furthermore, eminence implies success in life, and for the latter, temperament is important as well as intellectual capacity. The very success of the father may create unfavourable conditions for the offspring. The boy may be discouraged by the apparent impossibility of attaining the high standard set for him by his father; the latter may sour him by holding it too obviously before his eyes. Or the father may be so dominating an individual in his own household, that opposite traits of temperament may be developed in the son, who consequently lacks initiative. Not least of all such factors is the mother, who is responsible for the other half of the child's inheritance. While Galton failed to find proof of the popular dictum, that able men usually marry silly women—on the contrary he found that they tended to marry women who were in themselves exceptional—nevertheless it is unlikely that a distinguished man—or a distinguished woman—will find some one quite as able as himself as mate. Finally, there is Galton's law of 'filial regression'. 'The filial centre falls back further towards mediocrity in a constant proportion to dullness to what the parental centre has deviated from it, whether the direction of the deviation be in excess or defect.' In other words, the race is always trying to get back towards the average. Otherwise, as Galton points out, giants would become more gigantic in successive generations, and dwarfs more dwarfish still.

It is commonly supposed that great brains and poor physique are closely linked together. This is not true in most instances. At boys' schools it has been shown that the cleverest boys are more often than not good also at games. Galton undertook to select from any group of his eminent men 'even out of that of the Divines', an 'eleven' who should compete in any physical feats whatever against similar selections from groups of twice or thrice their number taken at haphazard from equally well-fed citizens.

At the opposite extreme, that of mental subnormality, the position is still more complicated; for while supernormal intelligence can never be an accident (except in the rare possibility of its appearing as a 'sport or mutation') very subnormal intelligence not infrequently is—as the result of accidental disease of the germ plasm, or of the young child's brain. The view has frequently been advanced that an accidental or at least heritable factor such as chronic disease like tuberculosis favours exceptional ability in those afflicted with it, for example R. L. Stevenson. But the most that such a toxin can do is to stimulate spasmodically an intelligence, or refine an æsthetic sensibility, which is already fundamentally possessed. On the other hand it is now pretty generally agreed that the severest form of mental defect (idiocy and imbecility) may crop up spasmodically in any family, where as a rule there had been no previous sign of inheritance of mental defect. With, however, the higher grades of defect (feeble-mindedness, the 'moron' type of defect) there is a distinct familial tendency. Just what proportion of feeble-mindedness is the result of an inherited factor is very difficult to determine; and the figures quoted by various authorities differ very much. Some feeble-mindedness is the result of accidental disease, as already pointed out. For the rest it has been frequently claimed that Mendelian inheritance of a simple recessive type is at work. But the work on which such statements are based has not been very convincing. Even if it were so, it would still not be possible to stamp out heritable mental defect by preventing the feeble-minded or carriers of feeble-mindedness

from being fertile ; since feeble-mindedness could still arise as a mutation in a previously healthy stock and this mutation itself would still be heritable. This, however, does not constitute an argument in favour of doing nothing to limit the fertility of feeble-minded persons.

The contrary view, the need for action, is only too well supported by such family histories as the following, for which I am indebted to the case-records of Dr. C. P. Blacker, secretary of the Eugenics Society.

Mother feeble-minded and epileptic. Nine children. The paternal grandfather died in the asylum. The father and other relations apparently normal.

- | | |
|---------|-------------------------------------|
| First | child feeble-minded. |
| Second | „ died in infancy. |
| Third | „ feeble-minded and epileptic. |
| Fourth | „ died in infancy. |
| Fifth | „ imbecile. |
| Sixth | „ idiot (dead). |
| Seventh | „ feeble-minded and epileptic. |
| Eighth | „ feeble-minded and epileptic. |
| Ninth | „ backward (too young to classify). |

Another bad case was that of an unmarried feeble-minded woman, aged 38, 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 to go into the house. Living with this feeble-minded woman was a low-grade imbecile sister, age 30, whose condition at the time of a visit was verminous. There were also five children in the house, ranging in age from 2 to 12. Three of these had been seen in school ; and all of them were feeble-minded. The head teacher complained of their dirty condition and said that 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. 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 responsible persons who knew the woman's history assured the visitor that all five were her own illegitimate children.

A better conception of the position with regard to mental defect and the desirability of some kind of control, if it be possible, of the reproduction of stocks in which it appears is obtained by studying the history and attributes of the other members not defective in the ordinary sense of such families. The notorious Kallikak family is one that is often quoted in this respect. A wider survey of this kind shows that mental defect is only one of a number of socially disadvantageous characteristics, and suggests that other heritable and socially undesirable factors tend to be associated in the stock with factors of intellectual defect.

The results of Lidbetter's study of the incidence of vice, crime, social inefficiency and mental defect in the population of London are the more convincing because of the way in which they were obtained. He found that his researches into the pedigree and associates of the persons concerned in these problems nearly always led him towards the same families. So emphatically was this the case that it has been found convenient provisionally to call the section of the population from which most of the subjects of his study were derived, the ' social problem group '.

That insanity is usually inherited is a widely held popular belief ; yet the relations of an insane person often state that insanity is unknown in the family. The truth lies half-way. A clear-cut inheritance of insanity in the case of an avowedly insane person is not nearly so common as is popularly supposed, but a family history of insanity is a more frequent occurrence than the members of such a family are willing to admit. This is a natural attitude in a community such as ours where even yet mental illness is regrettably looked upon as different from other illnesses and as a social stigma.

The difference between what constitutes a normal and what an insane inheritance is less than is commonly supposed.

Several sets of figures have shown that the difference between the hereditary tainting with mental disease in families some of whose members have been admitted to mental hospitals, and of similar tainting in the families of many random groups of normal people, is not more than 10 per cent. The real difference lies however in the direction of the hereditary taint. In the insane the mental disease is more common in the direct lines of ancestry than it is in the direct ancestry (parents and collaterals) of the same; while on the other hand the sane show a higher incidence of insanity among indirect relations—cousins. Some one has sardonically suggested that the occurrence of insanity among one's cousins protects against insanity in oneself or one's children.

With one group of mental diseases direct inheritance is especially obvious in a considerable number of instances. Some place the direct inheritance of manic depressive insanity at 33 per cent, i.e. if one parent is a manic depressive the chances are that one in three of the offspring will have manic-depressive insanity. I have seen a characteristic family in which daughter, father and grandfather had all suffered from manic psychoses. In many of those members of such a family in which a full-blown psychosis does not appear there are other signs of instability. Some authorities place the incidence of 'psychopathy' of great or less degree in families where there is manic-depressive inheritance on both sides at a very high figure indeed. By psychopathy is meant other forms of instability appearing as temperamental traits and frequently with such severity as to constitute a permanent although not necessarily crippling handicap in social adaptation, but not amounting to insanity; or alternatively, it means insanity of some other type than the manic-depressive one.

The older view of a polymorphous heredity of insanity is in fact gaining ground once more, i.e. the view that what is inherited is as a rule not a potentiality for one specific type of mental disease, but a potentiality to mental disease of a more general kind, which may manifest itself in different

forms, according to the circumstances produced by other accidentally concurrent factors.¹

Thus in successive generations of the same family there may appear manic-depressive psychoses, involutional psychoses, paranoid psychoses and early schizophrenias. But what constitutes a bad family history is not the appearance of a few cases of outspoken mental disease in numerous generations, but a large incidence of psychopathy in the sense already defined of social inefficiency: and there are certainly many families which while displaying one or two insane members, exhibit not that high percentage of psychopathy which some authorities statistically find, but a very considerable and even an unusual degree of social capacity in a large proportion of members. When, therefore, the question of the desirability of marriage arises, or the question of conception, it is necessary to know not only the incidence and type of mental illness but as much as possible of the character, disposition and abilities of the other members of the tainted family. The family history of the proposed spouse should also be elicited. The decision should then be based on the principles adumbrated above: persons both of whom have a heredity of a high percentage of mental illness in the direct line should not intermarry, a family with a high proportion of psychopathy should not marry at all, and families with certain types of mental illness—Huntington's chorea and mental defect of apparently heritable type—should also eschew marriage, or at least conception.

¹ A genetic explanation of this apparent polymorphism would however lie in the accidental concurrence in the same stock of different morbid genes from different ancestral sources.

CHAPTER VII

TEMPERAMENT

WE all understand in a vague way what is meant by temperament; but it has been found very difficult to define. The temperament of an individual is the sum total of those aspects of him which have to do with his feelings and emotions. We speak of the artistic temperament, and mean that the possessor is not only sensitive to æsthetic values but to everything else as well (except perhaps other people's rights) and is consequently easily encouraged in spirits and easily cast down. The temperamental side of an individual has to be distinguished from the intellectual. It comprises a distinct set of attributes, and is of great importance for adaptation to life. Some would say that temperament was of even greater everyday importance than intellect, and that, for example, an ounce of 'cheek' was worth a pound of brains. It is certainly true that the possessor of a superior intellect may be deprived of the proper enjoyment of its fruits; but fortunately it is far more common that superior qualities of intellect and temperament go together. The notion that genius and insanity are closely allied is little more than a popular fallacy. Even where temperament is in some degree defective, a superior degree of intelligence helps its owner to compensate for his shortcomings. At the other end of the scale, the individual who is so lacking in natural gifts of understanding as to be regarded as feeble-minded, is seldom a serious social problem in himself unless he is cursed also with an unstable temperament.

The variety of temperamental traits that can be more or less isolated from one another, such as timidity, sensitiveness,

cheerfulness and the like, is very great. The distinctions between some of them are artificial ; but it is important to make them as clearly as possible, since a given temperament is compounded of such traits in varying proportion. This introduces a quantitative conception, which is in accordance with everyday observation, e.g. that one person is more aggressive than another ; and it confronts us at once with a difficulty that is even greater in this field than we have seen it to be in the intellectual domain, namely the assessment of mental traits. In the temperamental domain such ' measurement ' has to depend a good deal on the observer's judgement, although attempts are now being made to introduce methods which will give a quantitative expression of such a characteristic as, for example, perseverance.

Given a quantitative assessment of different components of any temperament, it is permissible to speak of a temperamental ' pattern '. As every one knows, people differ in their temperaments or temperamental patterns, i.e. in the relative strength of the component traits. There are general resemblances to be traced among these patterns, so that mediæval writers distinguished four chief types : the choleric, the sanguine, the phlegmatic and the melancholic. This terminology was based upon the false mediæval notion of humours ; but the terms have passed into literature and their general meanings are well understood. Numerous attempts have been made to produce a more satisfactory classification, but not with much success. The fact is that apart from the lack of an exact measuring rod for the different component traits, individual traits of temperament are far too numerous and far too important for the individual to make classification of an entire temperament anything but extremely difficult, and even if it is approximately effected, of little use in the end. It is interesting that Pavlov in his work with dogs has adopted the old mediæval classification of the temperament of the animals with which he experimented. He found that the reactions in his experiments varied considerably with the temperament of the animal concerned. The melancholic type of dog passed much more

readily into a state of excitement than the phlegmatic animal would, when confronted with a difficult choice (discrimination of two shapes very much alike), but on the other hand it would be restored more rapidly to normal with rest and bromide; while the phlegmatic type of animal was not helped more quickly to recovery by bromide.

The best known of modern classifications of temperament is that of Jung, who divided mankind into two great groups, the extrovert and the introvert. The extrovert is described as open, frank, at ease anywhere, forming attachments easily, unconcerned and confident, and habitually cheerful. The introvert is hesitating, introspective, reticent and often on the defensive.

He further recognized categories of 'feeling' and 'thinking', the former referring to the intuitive aspects of the mind and the latter to the intellectual. He thus obtained a four-fold classification, of feeling introverts and thinking introverts, of thinking extroverts and feeling extroverts. Thus of present-day figures Mr. Lloyd George would be regarded as a feeling extrovert, and Mr. Ramsay MacDonald as a thinking introvert. Mr. Baldwin would rank probably as a feeling introvert and Mr. Churchill as a thinking extrovert. It is not very helpful. The tendency is to give the extrovert less credit for a certain degree of introversion than is his due, and it is certainly not safe to 'diagnose' a specific type of temperament from certain observed characteristics and to infer that the rest of the component traits will be there too.

Nevertheless, categories of temperament have a basis of observation and present, also, certain important relationships to problems of practical everyday life. No one, for example, should dream of appointing a timid, sensitive, unsociable youth as a commercial traveller, or a hot-tempered Amazon as a children's nurse. It is in the sphere of mental disorder that the study of temperamental traits has received most attention and borne most fruit. Working backwards, as it were, from the caricatures of normal temperaments that are seen in mental disease, psychiatrists have distinguished first

among 'candidates' for mental disease, i.e. people predisposed to it, and then among normal persons, certain general types, some of which correspond closely to Jung's introvert and extrovert extremes. Of these the most instantly recognized is the cacophonously labelled 'schizoid' or 'shut-in' type of personality. This is characteristically exhibited by the silent, reserved, sensitive person, who has perhaps a few friends, one of whom may be intimate, but who moves awkwardly in society. He has usually no 'parlour tricks' and his recreations tend to be of the solitary kind. He often prefers walking to more active exercise, and comparatively solitary pursuits to team games. It is not an accident of proximity of contact with Holland that made Scotland the home of golf. It is a game that is seldom played by more than two persons; it even can be played alone; and for the 'shut-in' person it has the supreme merit of presenting a perpetual opportunity of pitting oneself against oneself only, or what is nearly as acceptable to the schizoid personality, against an abstract 'Bogey'. For it is another characteristic of the schizoid that he dislikes acknowledging the competitive nature of existence.

I strove with none, for none was worth my strife.

Most poets are, as might be expected, of this sort. The author of *Ulysses* and the other modern misérables are even more so. Browning was a goose among the swans; an extrovert among introverts; or was he possibly an introvert struggling to be free of the shackles of his disposition? This struggle in people of less ability than Browning is sometimes a pathetic thing to watch; and never more than in the extremely 'shut-in' person who in a last desperate attempt to escape from the miasma into which his excessive self-preoccupation has led him, tries to be aggressive and to assert himself, declares himself to be a man, often a great one, and makes violent and phantastic love,—he who has never spoken a word of it before outside his own thoughts. For it is characteristic of this 'shut-in' personality in its extreme forms that there does not seem to be enough energy

or interest in others to make possible real affection, and still less the open declaration of it.

At the other extreme of the scale of temperament there is the 'syntonic' or cyclothymic type. They are the jolly *bon viveurs*, the men of affairs, the consistent optimists, the happy-go-lucky, the social successes and the hail-fellow-well-met, or on the other hand the people who are easily elated and easily depressed, who are dependent on those around them and reflect in their moods the circumstances of the moment and the attitude of their companions. The 'syntonic' or 'cyclothymic' have two polarities—the happy optimistic and the depressed types ; but they have in common a sympathetic and co-operative feeling for the environment. It is in this point especially that differences from schizoid aloofness lie. Like the schizoid, the cyclothymic temperament in its extreme degrees favours the onset of mental illness.

The active happy man becomes still more active, elated, commits serious errors of judgement, displays unguarded eroticism or undergoes a sudden religious conversion ; the depressive becomes more and more gloomy, unable to take any decisive action and full of forebodings both for himself and the world around him. In any case ordinary social responsibility is no longer possible for him, and he is usually nowadays placed in hospital until he recovers ; which, unlike the schizoid who has become mentally ill, he usually does do ; for having always had more contact with reality he struggles back to it more easily than the solitary day-dreamer.

There has always been a tendency to associate different types of temperament with different sorts of physique. Sluggish, matter-of-fact, easy-going John Bull, is usually depicted as of middle height, thick-set and rotund. Chaucer's scholar is 'as lean as a for-pyned ghost'. Relationships of physique and temperament thus hinted at are found to have some sort of statistical basis. Thus a cyclothymic disposition is found more often in association with a thick-set 'comfortable' kind of physical make up, and a schizoid temperament more often with a lean and hungry look. Just what are

determinants of a particular kind of body build, and collaterally of a corresponding disposition, as yet eludes investigation. At one time great hopes were vested by some in the endocrine glands. It was known that these have a share in determining physical structure ; and that disease of them, producing over- or under-secretion from them, was responsible for various processes of growth and development—the so-called ‘ Boneless Wonders ’ of the travelling circus side-shows among them. For example, excessive pituitary secretion produces in the adult lantern jaws and in youth lengthy limbs from overgrowth of the skeleton ; while tumours in the ovary or testes or the adrenals can produce precocious development of the sexual bodily characteristics. But it is a far cry from these observations to the correlation of temperament with particular quantitative and qualitative variations in the secretions of the endocrine glands ; and there is at present no scientific basis of this kind. The future, however, may hold much that is interesting and useful in this region, for it seems that the connexion between temperament and physique is closer than between intellect and physique. Since physique may some day conceivably be influenced even in its fundamental characters by physical agency, it is conceivable also that temperament may also be so influenced. The nearest approach we have at present to this is the effect of thyroid overdosage in favouring anxiety, and the similar effect of large doses of adrenalin (extract of the suprarenal glands) ; while some drugs such as bromide salts have a classical influence in inducing placidity in some degree. The seductiveness of alcohol, in this country, of morphia in the U.S.A., of Indian hemp in the Nearer, of opium in the Farther East, depend for their tempting influence on temperament. If a scale be constructed with introversion at one end and extroversion at the other extreme, then it can be shown that the effect of alcohol is to move some of the characteristic reactions of the introvert towards the extrovert end of the temperamental ‘ spectrum ’ (McDougall). But this does not mean that the introvert is a superior person to the extrovert, as might be inferred when we remember that the harmful

aspect of the nature of all these drugs depends on the fact that from the very beginning of their action they paralyse the highest functions. Alcohol allows to the introvert a freer play of functions which are always more readily available to the extrovert; but at the expense of the temporary loss of a critical faculty which the extrovert in his ordinary state retains but turns to different use.

There is a certain amount of evidence that a considerable alteration in temperament may occur during the course of an individual's life from largely extraneous causes. In children and young people generally such alterations are not uncommon, when the environment is altered for better or worse. The mollycoddled boy who clings to his mother's skirts and whose 'mouth wouldn't melt butter' is transformed into an aggressive, hearty young ruffian if he is lucky enough to find his feet at school. But the question of the modifiability of temperament by psychological means is a vastly important and practical one and will be separately discussed later.

Another important relationship between temperament and the more observable physical aspects of an individual is found in the amount and type of active movement with which a given temperament is associated. The output of energy in work or play varies enormously in different people. It is partly an intellectual affair. On the whole the ablest people intellectually are the most energetic. The prize-winners at school are on the whole found to be the most vigorous athletically, contrary to the usual view which associates bookishness with spectacles and spindle-shanks. But by a convention unusual activity is usually considered as a temperamental trait. Sometimes it is the expression of a harmonious temperament; in other instances it occurs as a morbid phenomenon being, for example, an expression of anxiety. In extreme forms, this kind of activity is seen in the agitation of certain melancholic patients, but its occurrence is an everyday matter in the lives of anxious people who overwork to allay their fearfulness, although they often fail to recognize this. The overwork is thus claimed as the cause

of their ultimate breakdown ; whereas it was actually the premonitory symptom of ultimate collapse.

A straightforward hypermotility is a normal expression of the abounding energy of childhood ; but some children are conspicuously above the average in this respect and their restlessness has a largely similar character. Thus, when it is not due to disease, as in chorea, chronic encephalitis or mental deficiency, it is usually regarded as a temperamental exaggeration and this type of child is technically labelled 'hyperkinetic'.

He (or she) forms a sad problem for schoolmasters. He distracts the others, asks innumerable questions, makes untidy copy-books, and plays truant, while his parents are perpetually on tenterhooks because of his wandering propensities.

It has also been recognized that there are individual differences in the quality as well as the quantity of movement. It is said of the cyclothymic that his bodily movements flow smoothly and rhythmically by nature, while the extreme schizoid's are jerky and ill-regulated. Since there is an observable connexion between a contented mind and a smoothly functioning body, and between peacefulness and rhythm, one accessory method of treatment that has been adopted for breakdowns in schizoid persons is the teaching of dancing, especially of the 'eurhythmic' type. Jazz music, on this principle, is a schizoid production ; its modern appeal might be related to modern unhappiness ; its broken measures corresponding to the schizoid's feeling of difficulty, bewilderment and discontent.

A great deal remains to be done with regard to temperament and its analysis. How far are such traits as timidity or obstinacy reducible data ? Or are they secondary formations resting on deeper and more fundamental characteristics ? The only way of solution is to go to their origin, usually in childhood, and there to examine the time and mode of their appearance. This can be done in two ways ; either by tracing them retrospectively in the case of adults, or by observing children direct. In a later chapter we shall examine

some conclusions of the latter method. By the former, it is not difficult to see how something which was potentially or embryonically present became accentuated even to pathological degree by environmental influences. The psychoanalytic school by the former method of retrospective enquiry in adults, has erected a complicated scheme of temperamental structure, in which the fundamental hypothesis is that all traits of temperament are derived indirectly from a few instinctive urges, and are either sublimations (socialized expressions of primitive trends) of these urges or reactions against them. The urges are considered to be those of sensuous satisfaction chiefly of certain erotic zones of the body, principally of the mouth, urethra and anus. It is supposed that in the process of growing up the child has to relinquish the open derivation of pleasure from stimulation of these zones ; that this is accomplished by training from the environment ; that each relinquishment in turn involves a battle between childhood desires and adult standards ; and that temperamental traits are in many instances the resultants of this strife. It is further supposed that the relinquishment of pleasure in each zone has its peculiar kind of expression in the subsequent temperament. Thus the results that may be derived from the imperfect relinquishment of an anal erotism which has been too strong to be lost in ultimate genital forms of satisfaction are tabulated by Flügel under the various headings of retention, production, manipulation, products, orderliness, cleanliness and control, and these are further subdivided, as for example under 'retention' :

1. Postponement
2. Defiance
3. Obstinacy
4. Miserliness
5. Love of possessions
6. Desire to collect
7. Dislike of waste.

The psychoanalytic view has much interest. But most observers find opportunity for the production of morbid

degrees of obstinacy, for example, in the mismanagement of any part of a child's upbringing, and not merely in the education of bodily habits ; nor do they find it necessary to postulate a primary miscarriage of education in the latter sphere as a necessary condition for the development of persistent obstinacy at a later stage.

The Judgement and Estimation of Temperament. From the practical aspect one of the most important points is the judging or estimation of temperament. It is now increasingly recognized that the old rule-of-thumb methods will not do. The employer who selects his workers on the basis of a single personal interview at which he professes to be able to judge what sort of person they are, often makes serious mistakes. Even in selecting people for a specific job, such as salesman, where the qualities that appear at an interview are presumably those most involved in the actual work, it is found that judgement of temperamental suitability based on an interview is often much at fault. The only satisfactory tests of temperament at present available are those of everyday type ; and for that reason, if they were always honest, testimonials would be better than an interview to base an appointment on. In medical work, the psychiatrist rests his judgement far more on the history of his patient than upon present appearances. Similarly in an attempt to estimate temperament in normal people, psychologists have adopted the method of collecting data from the friends and co-workers of the person under observation. Thus one observer (Webb) tabulated a series of traits such as persistence in the face of difficulties, cheerfulness and the like and had his subjects observed over a period on these topics by someone in daily contact with them. From the data compiled in this way, he claimed to have established, by mathematical reasoning not yet universally accepted, the fact that just as intelligence exhibits a central or general factor, so also does temperament. This pervasive general factor of temperament is most nearly called 'perseverance'.

Other Methods of estimating Temperament. Other observers have sought to counteract possible shortcomings of the

individual observer by having several people interview the same candidate and by collating the marks awarded by each observer for each trait. This was the method used in a recent study on vocational guidance. General agreement was claimed, but the method leaves much to be desired. It cannot rule out the errors implicit in the method of the personal interview. But the errors are corrected to some extent if the subject is set a series of tests to do under the eye of the observer. Much can be learned about the subject's usual attitude to problems and difficulties by watching the way he sets about a task. For this reason, a good deal can be learned about temperament from watching a person at work even upon tests of intelligence, especially performance tests.

Some have sought to introduce tests of a practical nature solely directed to eliciting temperamental propensities. For this purpose jig-saw puzzles have been used, and such a game as 'Guide it', which consists in trundling Sisyphus-like a small metal pellet by means of a bent wire up a slippery slope beset with traps, so that the pellet is apt to run incontinently back again to the bottom.

Students of handwriting have sought to find an index to character in the script of its author. But all such methods deal with too many unknown or ill-ascertained variables to make them valuable. The Will-Downey temperament test is perhaps the most systematic of tests based on handwriting.

No test of temperament is of any value unless conducted in subordinate conjunction with a knowledge of the life history of the individual; and the more intimate this is the more reliable the judgement of his temperament. This, you may say, is mere common sense. So it is; but the life history has to be gathered and considered from a special viewpoint as well as a common-sense one. This viewpoint is that of a person informed by experience not only in human nature generally but in the behaviour of those subject to 'breakdowns'.

Personality: The person we know in adult life as John Brown or Mary Jones is the resultant of the interplay of

all the factors that have been mentioned—heredity, temperament, intelligence, environment and so on—operating over the years of growth and maturity. Technically, John or Mary is a 'personality': not simply the additive resultant of all the factors we have mentioned, but a complicated product of their interplay. Usually the word 'integration' is used to symbolize the mature personality. By this it is intended to convey that the resultant is something new and unique that could not have been predicted simply from a knowledge of the nature of the component factors.

The familiar analogy is with the chemistry of water, which is compounded of atoms of hydrogen and oxygen, elements of very different quality from the substance resulting from their combination in a particular way.

The psychological notion of the production of individual personality contains in fact somewhat the same idea as the philosophy of 'holism' and of emergent evolution. The completed whole is more than or different from the sum of its parts. That is one reason why it would be still more difficult to breed in humans the right kind of people than it would be to breed the higher degrees of intellect.

The characteristic parts of a personality depend, as we have seen, upon the continuous operation of numerous processes—for example, the accentuation of some instinctive drives as a result sometimes of the frustration of others, or simply as a consequence of special training; the imitation of ideal persons; the halting of some attitudes at an immature stage, or a return to this stage from encountering some sort of discouragement; and the accentuation of some attributes to compensate for a felt lack of others.

When the result is a continuously successful adaptation to environmental conditions, we regard John or Mary as normal people. But it is not difficult for the processes at work to go wrong and to produce a lopsided or otherwise unadapted personality. Just as there are as many kinds of normal personality as there are normal people, no two ever being identical, any more than their finger-prints are identical, so there are as many kinds of abnormal personality

as there are of abnormal folk. But there are some outstanding general types of abnormality to which it is possible to fit most of the odd or unusual personalities which are encountered.

For example, there is the 'Peter Pan' type, the man or woman who will not grow up, but who prefers to be vain, flamboyant, self-centred, easily moved to laughter or tears, endeavouring to make himself or herself always the centre of attention, ready with excuses for shirking duty, and closely dependent on others for approval. This theatrical type of personality is technically called hysterical.

There is a well-known type of person who has to have everything 'just so'. His clothes are not so much in the latest fashionable cut as they are very neat, precisely pressed, and exceedingly clean. He does everything very correctly down to the minutest detail of his personal conduct and appearance, and if he is not satisfied with the way in which he has carried out some small matter, he has to do it twice. When he goes to bed he disposes of his clothes as carefully as if they were in a shop-window; and when he gets up in the morning he washes himself with such care that his face shines and his landlady swears that he 'eats soap'. At work he has the reputation of painstaking precision and perseverance. On a test with McDougall's 'Dotting Machine' he scores many more marks than the average man. This kind of personality is from its relationship to a certain type of neurosis known as 'obsessional'. The psychoanalysts regard all the above characteristics of this personality as reactions against an instinctive interest, felt undisguisedly at first in infancy, in anal functions.

Part of the huge list of mental attributes which they derive secondarily from anal erotism has already been given.

There is a well-known attitude, usually spoken of as that of being 'against the Government', which is sometimes the central feature of a peculiarly difficult kind of personality. People of this type are suspicious without provocation, antagonistic when no hurt is intended towards them, and self-opinionated in the face of obvious contradiction. 'They

try to bend the facts, rather than bend to them.' They are consequently very difficult to work with. It is not written in their testimonials that they are 'agreeable colleagues'. They tend to find insult where none is meant, and in general to read personal allusion into innocent events. Some of them feel in addition that they have an important mission in life, of which they are the central figure. Others harp much, in their own minds at least, upon some invention which they feel is bound to revolutionize the world. Personalities of this 'paranoid' type, as it is called, are fairly numerous. They constitute many of the cranks, inventors, religious fanatics and prophets, as well as the political criminals of every era—the man, for example, who shot at Mr. Spencer Perceval was of this sort. But the majority live and die quietly, merely known to their associates as difficult people.

Such types—and there are numbers more—represent fairly definite types of abnormal personality. They are often grouped together for technical purposes as 'psychopathic personalities'. Such people hover frequently on the margin of a definite mental breakdown and a considerable proportion do at one time or another overstep the margin. The majority, however, possess sufficient stabilizing factors to prevent this result, and the chief result of their abnormality is to interfere both with their personal happiness and their economic efficiency. There is little doubt that in the recruitment for any profession or calling a psychiatric examination could with great benefit be added to the professional examinations and to whatever examinations of physical fitness are in vogue. In this way a great many difficulties might be avoided, by excluding people who may be intellectually and physically up to the standard, but whose personalities are such as are likely to interfere with their usefulness and co-operation.

Psychopathic personality and mental or 'nervous' breakdown are stages along the same route. Some degree of personal abnormality may fairly be said to precede any mental breakdown, although usually it is not necessary for the abnormality to reach the pitch of development recognizable as a psychopathic personality, before an encounter

with some crisis precipitates a mental illness. On the other hand, a person with very pronounced abnormalities of character and conduct may go on long and even permanently without a breakdown, provided compensation occurs sufficiently in other directions, or that, on the other hand, by a lucky accident, special stresses of environment are avoided.

In these days of international difficulties, it would be of great importance to know whether certain nations differ from one another on the whole in the preponderating characteristics of temperament and personality of the individuals comprising them. Professor Seligman has recently devoted attention to this question as regards Orientals, and has come to the conclusion that they are on the whole of a more extrovert type than Occidentals. But systematic data on general differences between the temperaments of different European peoples are lacking. Only general impressions prevail, which are common knowledge.

PART II

ERRORS IN MENTAL DEVELOPMENT

CHAPTER VIII

CHILDHOOD

THE manysidedness of the processes of mental development has been briefly indicated in an earlier part of this book. Some of the ways in which this development may go temporarily or permanently wrong will be illustrated in this and the following chapters.

Many of the problems that come to the notice of those who study the mental hygiene of childhood can scarcely be regarded as betokening abnormalities in the child. They are very often the result of healthy innate tendencies operating in an unsuitable environment. This is specially true of the type of behaviour that brings children of the poorer classes to the notice of probation officers, and sends them to the Home Office schools. Truancy and wandering, for example, are often the manifestation of a perfectly healthy desire for freedom and adventure in a slum child who has nothing to compensate for the lack of these things in his ordinary life.

For convenience, children who exhibit problems and difficulties may be classified as Nervous, Naughty or Backward, while we remember that the same child may fall into all these categories.

(a) NERVOUS CHILDREN

'Nervous' is a misleading term, but it is so generally used that most people know what is meant by a 'nervous' child. It is either a timid, or a shy, or a solitary child, or an unusually

restless one ; or simply one who suffers from muscular twitchings. The latter kind of ' nervousness ' is sometimes due to a physical disease, as in rheumatic chorea (St. Vitus's dance), and choreiform movements can appear also in children who are merely debilitated. Probably the curious jerking which are so characteristic of rheumatic chorea can be produced by a particular physio-chemical condition of the body, sometimes resulting from a rheumatic infection, sometimes from other kinds of physical disease. But closely similar movements can occur as well from psychological unrest ; and in some cases the movements are of a compulsive nature—i.e. the result of a feeling of being compelled to make them lest harm befall, of which more will be said later.

There is one particular type of child which is most usually singled out by the designation ' nervous ' and which is distinguished both by its physique and temperament. Physically, as H. C. Cameron described him, such a child is unusually thin, with undeveloped muscles and a long narrow chest. Nevertheless, he is more active than the average, constantly on the go, quick over his meals, hurrying off to school or bursting with a desire to rush off to play. If he is quiet at all during the day except for meals or to read a book, his mother knows he is ill. He is often a small eater. What he does eat he eats too quickly, and he can with difficulty be restrained from getting down from table far too soon. Intellectually he (or she) is usually above the average, and may be top of the class at school. He is sometimes, but not always, a milksop, and though enterprising in some ways he is physically timid. He plays games energetically, but often, on account of his light weight and poor musculature, with indifferent success. Sleep is sometimes difficult, especially getting to sleep, and night terrors or some other manifestation of the ' glycopenic ' diathesis, such as ' bus or train sickness, are common.

In this type of child one feels that psychological and physical traits are alike dependent on something which for want of a better name we call ' constitution '. The difficulties, which are much less as a rule than the promise of such

children, are primary, and do not arise from faults in the child's acquired mental habits, or in his environment ; but they may be added to in a secondary fashion if the environment becomes too fussy and, in its endeavours to save the child from fatigue, makes him afraid on the score of health. Such children do well if made to follow a sensible and fairly regular routine which recognizes that their extreme activity is a healthy expression of their constitution and needs only ordinary safeguards. One sometimes finds them, although more intelligent than the average, restrained from school work, or put in a younger class, or debarred from a scholarship examination, in which they would readily succeed (and which in poorer children may be of vital importance for their future) because their thinness or pallor are, on account of their obviously excessive output of energy, attributed to 'overwork'.

This is a great pity, because the reasoning is wrong ; such children are happier, and therefore healthier, if allowed to work at the level of which their superior intellectual endowment renders them capable. Treatment should be devoted rather to making them fit to stand the demands which their energy and temperament make on them, and this can readily be done by insisting on a regime of so many hours for sleep, so much time for eating and an abundance of easily assimilated food. It has to be remembered that the energy requirements in terms of food even of the ordinary child are much greater proportionately than those of adults.

Timidity. There are, of course, varieties of 'nervousness' in children which have usually more of an acquired basis than the types just described. The timid child is most commonly the reaction of an over-anxious parent—usually, but not invariably, the mother. By her very behaviour and often by her actual words she suggests danger where it would never have occurred to him to suspect it. The other boys are 'too rough' or football is 'dangerous'—perhaps he once met with a mild accident—or he may catch a chill, and so he is muffled up in clothes which he feels will make him the laughing-stock of his fellows. Probably this kind of child

is on the increase, since the smallness of families makes the individual child more precious, and makes close individual care more possible.

The problem of the reaction of this type of personality lies therefore in the personality of the mother. Why is she over-anxious? It may be the maternal pride, limited by force of circumstances to an only child, leading necessarily to over-solicitude for its solitary offspring; or the mother in her turn may have been moulded by an over-anxious parent. But sometimes the over-anxiety is the result of the mother's emotions having no other suitable outlet than on her child—her husband may not be a satisfactory subject, and so all her interest has to be on her offspring. Darker pictures are not unknown. Paradoxically, some over-solicitude is determined by feelings that are the reverse of tender. A parent who is insufficiently mature in himself or herself may find the responsibility of a child too great to bear, and may be tempted to wish the responsibility away. But conscience will not permit this; repression of the wish arises; and the effort at repression results in a compensating anxious care of the child. A similar result can be derived not so much from the emotional immaturity of a parent, but simply that for one of various possible reasons, such as loss of love for the spouse, the child is not wanted.

Timidity of rather a different kind, with manifestations some of which are identical, can come from causes that are entirely within the child's own mind. There is evidence that fear is a function which develops in the ordinary course of growth. According to Gesell, a child of two months placed alone in a room may show no fear, while the same child at six months placed in a similar situation for the first time will show considerable agitation although no fearsome associations have in the meantime been formed in connexion with being alone. But actual accretions to the mental content, some gained indirectly from external observation, others (and the majority) from the clash of interests in the child's mind, are important sources of fear. The growing but abstract sense of insecurity, with increasing contact with the real world outside

the family, is a potent cause. The entrance of small difficulties and obstacles on the child's path, while they suggest the desirability of overcoming them, suggest also the possibility of failure. The child is apt to counteract such fear of failure by a resort to magic such as superstitiously minded people use—whether they be savages with their charms, soothsayers with their omens and charms, priests with their incantations, or the man in the street with prayers for things which will be to his own petty advantage. The child performs little superstitious actions, which counteract his fears. A few fears and a few actions which counteract them are normal for every child, but some children accumulate a great number of these and suffer pathetically from their domination. Such conditions probably depend on tendencies which are repugnant to the child's conscience, such as dislike or actual hate and a consequent wish for the death of the hated person. Some children have comparatively little compunction about such tendencies when they become conscious, but others with a more tender or more severe conscience react with fear which they counteract with magic actions, as, for example, doing everything three times or saying their prayers over and over again, or looking over their right shoulder, or missing the 'lines' on the pavement as they walk, as A. A. Milne's Christopher did in *The Lines and the Squares*. The fears of childhood which are not produced either by example, by experience of life and comparison of the self with the large and overpowering world, or by the elaboration of complexes based on primitive desires and fears within the child's own mind, must be few. The common fears of the dark and of animals are by some regarded as instinctive or primitive fears and are supposed to represent a phylogenetic or ancestral reminiscence. But if they were so, they should appear in all children, which they do not. Elsewhere we have described how some fears at least were generated (by association, e.g. a loud noise with an otherwise harmless perception), and it seems that fears of the dark, of animals, etc., hardly ever arise unless some association—the foolish talk of adults, for example, or adult behaviour in face of the same thing—

intervenes to give a secondary and terrifying meaning to otherwise harmless objects. Faulty discipline, which aimed at inspiring fear so as to induce good behaviour, was more often a cause fostering timidity than it is now. R. W. Thompson recalled his own experiences in these terms.

As I grew and every new sight inspired fearless wonder and the longing to touch, the don'ts of my nurse became correspondingly frequent, and my answering 'Why's?' always drew an answer. Cucumber seeds, I was told, would grow into cucumbers in my stomach. Bogey men lurked in cupboards. Policemen would get me. Coalmen were hot from the devil and black with the smoke of hell itself. Cats spread disease, and their soft coats must not be stroked.

The method of education of a child against timidity is plain in the first of the three principal cases, namely that of timid example. For fearfulness generated by contact with life and its difficulties, the antidote lies greatly in the security of the relationships to parents or to others who stand *in loco parentis*, and in the last analysis this is a matter of security of affection without over-protection. For the fearfulness of inner origin which arises from conflicts between the natural desires, loves and hatreds the remedy is not so plain; but again the antidote probably lies in the understanding and affection of the parents, who must be kind without mawkishness, firm without severity, even-handed and level-headed alike in their justice and in their love.

Shyness, like timidity, can have a variety of causes. Most usually, it is a reaction against the normal egocentricity. Some degree of shyness is normal from a very early age. But some children realize the social value of shyness as a medium of attraction, and make capital out of it, especially the little girls in whom it goes by the name of coyness. When shyness becomes morbidly exaggerated it means either that the normal toning down of egocentric feelings is not occurring fast enough, or that another factor has intervened—that of guilty feeling, causing shame which shows itself socially in shyness. Merely stealing jam from the cupboards does not produce shyness. Something more intimate and more seriously infringing the social code of thought and behaviour as

they are felt dimly or acutely by the child, is necessary to the appearance of excessive shyness as a character trait. Such shyness is undoubtedly favoured more readily by the obscuration with which adults surround sex ; so that masturbation, to use the simplest example, becomes a secret sin. Much can be learned about the guilty genesis of shyness by the retrospective examination of adults who complain of it, or of associated symptoms such as blushing. In these, a feeling of social ostracism over masturbation or homosexual practices or in relation to an Œdipus situation, is not uncommonly found to have been consciously or unconsciously at the basis of pathological shyness, blushing and the like,—although such factors do not seem as a rule to be important causes of the conditions till late childhood or early adolescence. But shyness itself is less common before these epochs: early shyness is probably of the purely egocentric variety.

The more ordinary forms of shyness which have been referred to already as depending on continuance of egocentricity at an abnormally high level, is associated in later childhood and adolescence with the all-too-famous feeling of inferiority. The latter itself may depend on a feeling of guilt, but it more ordinarily represents a reaction against an overweening egocentricity which is felt to be unbecoming, or which may be repressed altogether as inconveniently hostile to one's neighbours and provocative of dangerous revenge. Sometimes the inferiority has a factual basis, as in such crudely obvious physical disabilities as a lame leg or an unprepossessing appearance. More commonly a number of factors are at work to produce shyness, as in the following example.

Mary G. aged 13 was brought to hospital by her mother because she complained of headaches, and was irritable. She cried easily, and was very sensitive and reserved.

An inquiry by the usual methods showed that Mary was feeling herself at a disadvantage in nearly every sphere. She had matured in physical development unusually early, and she was sensitive as to her appearance, without understanding its significance. At home, her two brothers, both younger than herself, were happy and robust and teased her

considerably. They were also very much favoured by her father, who despised Mary, thinking her a timid and unattractive creature. Mary was definitely afraid of him, partly because of his lack of sympathy and partly because of his temper. Her mother was unhappy on account of the husband's attitude and temperament and had little control over her children. She tended to side outwardly with the father, instead of taking Mary's part. At school the child was slow and had the reputation of being backward. This, combined with the fact that she looked older than her class mates, was another point of sensitiveness. An intelligence test showed that she was actually only eight months below her chronological age. It therefore appeared that her actual performance at school was worse than it should have been, and it seemed probable that her diffidence helped to retard her.

The methods adopted were to encourage her to see that there were certain things like needlework which (as it happened) she could do particularly well and that although she might not be good at arithmetic and the like, her other talents of handwork would stand her in as good or better stead when she left school. Some explanations regarding her development were conveyed to her through her mother, and it was pointed out that other girls would overtake her in that direction in a few years. As regards her brothers, it was found possible to get her to take a kind of motherly interest in them, and one of them was himself brought to hospital on account of 'nervousness' which lessened Mary's feeling of peculiarity in that respect. An attempt was also made to get the father to take more interest in his daughter.

With other measures such as these pursued over a long period and following her after she left school, through vocational training, Mary ultimately became bright and even brisk in manner, and got on much better at home where she had developed a considerable motherly interest in her brothers instead of her old feeling of inferiority. She found herself most at ease, however, with older girls and in addition was very keen on her chosen occupation, that of lady's maid.

Seclusiveness is closely related to shyness but represents a

deeper degree of failure to adapt oneself socially. It depends probably on a further accentuation of the same factors that produce shyness ; but instead of dealing with his egocentricity by suppressing it and putting modesty in its place, the seclusive person preserves his high opinion of himself by withdrawing from the possibility of conflict and injurious contact with the world. This account of the genesis of some instances at least of seclusiveness is also supported by the converse case, where enforced accidental seclusion favours the appearance of phantasies of omnipotence to which children are in any event prone. The little girl heroine of *A High Wind in Jamaica* who in her strange place of isolation on a pirate ship exulted in the phantasy that she herself was God, is a curious literary example of this kind. But it is not surprising to learn that seclusiveness in children is favoured by parental influences. The readiest form is the injunction not to play with rough boys, but it is doubtful whether such an instruction alone would have any effect on the otherwise happy child. More important is the emotional relationship with the parent. Too much devotion of a parent to a child fosters its separation from its coevals ; but too little affection may have the same effect by making the child feel insecure, so that in reaction he clings more closely to the one person whose secure affection he most desires. It is one of the difficulties of human psychology that the same effect may be produced by apparently opposite causes. Violet C. was brought for advice because she had become uncomfortably and even absurdly devoted to her mother, being apparently content to be alone as long as she could feel that she was serving her mother in some way. Furthermore she talked excessively to herself, slept badly and at school was recorded as spiteful, obstinate, disobedient and idle. The child's attitude to her mother, however, was the most remarkable thing about her. She was apparently passionately attached to her, addressed her as 'sweetheart', 'darling', etc., and 'could hardly bear to have her mother out of her sight'. She would do anything for her mother and nothing for any one else. For hours she would sit crooning to herself

about her love for her mother. The child felt that every one was against her. She complained frequently of aches and pains. At night she would call out apparently in her sleep 'Mother won't be dead by morning, will she?'

In view of her backwardness at school, an intelligence test was done and gave a result of only 73 per cent.

The mother made an appearance of being very devoted to the child but was obviously enjoying the sensational nature of the child's condition. She proved extremely unco-operative, in fact, although pleasant and willing on the surface. She had married twice. Violet was the fourth of five children by the first husband and there was one child by the second.

In the course of treatment it was found extremely difficult to get the mother to agree to anything which would remove Violet from her. The stepfather, when he managed to escape the mother's eye, was helpful and agreeable.

The conclusion was that the mother's affection was more ostentatious than real, that the child felt this and was upset by it, and was perhaps upset further by an unconscious resentment of her own at her mother's attitude, and that she was trying to reassure herself both of her mother's affection for her, and her own affection for her mother, by her excessive display of devotion to her. After a great many attempts to wean the girl from her mother to outside interests in other people and things, a considerable amount of success was obtained. Violet ultimately found a job for herself, took a pride in her appearance, joined a Girls' Club and became free of symptoms. Incidentally her 'intelligence quotient' went up to 88, an increase of 15 per cent in eighteen months, showing that her performance in the first instance had been vitiated greatly by her unhappiness.

Dreaminess is a characteristic which is irritating to parents and pedagogues alike. The child doesn't attend when spoken to. 'His wits are wool gathering' and 'He has to be told everything twice' are complaints usually made of him. Phantasy has been discussed more fully elsewhere, but as a leading characteristic of children it deserves special notice. Children who indulge much in day-dreaming have this conso-

lation for their impatient parents, that they are usually among the more intelligent. So long as the day-dreaming does not interfere with work or play, it is not of great importance that the child should often live in castles in Spain. It is only when the normal activities of happy children are practically given up in favour of day-dreaming that there is cause for alarm.

Nervous Habits. There is a group of nervous habits such as thumb-sucking, bed-wetting, nail-biting, hair-pulling, which are usually called nervous. For example, thumb-sucking is usual enough in infancy, but it should be left behind after the first year. Some children fail to do this at all. Others abandon the habit but revert to it under stress. In the first case it can be looked on as a sign of immaturity, of persistent babyhood in one direction at least, and in the other case it is an example of regression. Such infantile persistence and regressions have a cause, and one of the commoner causes is to be found in the attitude to the mother. An unhealthy infantile dependence on her may often be found to lie behind such tricks. For example a boy of 12 was brought to hospital on account of bed-wetting. He was a timid lad, an only child, who did not play readily with boys of his own age. He seemed to be afraid of getting hurt at football or cricket. He had previously had normal control of his urine, but had begun to have nocturnal enuresis during the past eighteen months. He had also frequent nightmares. The result was that his mother had allowed him to sleep in her bed at intervals for many months past. On these nights he was always free of enuresis, but as soon as he was put to sleep alone, the bed-wetting would return. Treatment on the basis of these observations was soon followed by cessation of the habit.

Others of the nervous habits, such as nail-biting, nose-picking, hair-pulling, and facial twitchings cannot be regarded as specific regressions to an infantile past, since they are never normal stages of development. They mean some kind of mental stress, however; it may simply be a matter of a restless and over-anxious mind finding an outlet for part of its energy in one of these ways (since mental activity always

tends to issue in action of some sort—every one knows the mannerism of tapping with the fingers on one's desk, for example). In other instances these habits arise because they afford a kind of sensuous satisfaction that the child has accidentally discovered, just as it may accidentally discover that stimulation of the genital region produces sensuous satisfaction, only of a more definite kind. Such habits tend to be resorted to in moments of stress, and whatever the origin, the only way of treating the condition is by making a broad inquiry into the state of the child's health and happiness, in addition sometimes to training specially devoted to encourage him to be able to do without his habit.

(b) THE NAUGHTY OR DELINQUENT CHILD

Delinquency, as the term is customarily used, includes especially stealing, running away (truancy) and sexual misdemeanour; the minor sins of obstinacy, temper tantrums and lying are of the same lineage.

The causes of bad behaviour are many and varied. The point is that bad behaviour is always a reaction to something. It always has a definite cause. The difficulty is to find out what cause. In the old days the theory, as every one knows, was that badness was inborn and had somehow to be got under control by fasting and prayer and above all by discipline. 'Original sin' was the name of this doctrine. 'Spare the rod and spoil the child' was its familiar recipe.

Acquired Nature of Morality. Nowadays it is recognized that all behaviour is the expression of instinct; and that whether a certain form of behaviour is regarded as good or bad depends very much on the state of society in which the individual lives. What would be reprehensible in a European may be quite permissible in the code of a Sandwich Islander. Indulgence in some of the socially permissible customs of the Trobriand Islanders would cause any English child to be branded as preternaturally wicked. Of course, the fundamental instincts do not differ from race to race or apparently in historical time; they have been the same in the Egypt of the Pharaohs as in modern England. Only the modes in

which they are allowed to express themselves have been changed. What makes one action seem desirable and another reprehensible rests therefore ultimately in the judgment of society. But it seems that in any form of society there are certain expressions of instinct which would tend to arouse in a very direct fashion the antagonism or dislike of others, and which therefore will always incur general disapproval. Cruelty is one of these, although societies have at all times legalized some form of cruelty. It seems unlikely, however, that any one is born with a feeling for the consequences, strange as it seems, of cruelty. On the contrary, there is an instinctive pleasure in inflicting pain, and it has to be learned by every one that cruelty is wrong.

We all remember cruel Frederick :

Here is cruel Frederick, see !
A horrid wicked boy was he ;
He caught the flies, poor little things,
And then tore off their tiny wings ;
He killed the birds and broke the chairs,
And threw the kitten down the stairs,
And Oh ! far worse than all beside,
He whipped his Mary till she cried.

But, except in the degree of his cruelty, cruel Frederick was not really different from all the other little boys and girls who have ever been : he merely showed his tendency to inflict pain more than most ; and that only because he had not learned to control it or had not learned that it was wrong. Instances of ' cruel Fredericks ' in real life will be quoted later and in some of them reasons for the excessive display of tendencies of this kind will be made clear.

Training in Morality. It is the same with all other forms of misbehaviour with which parents and nurses are called upon to deal. Affection and spite, good temper and irritability, obedience and obstinacy, honesty and dishonesty, courage and cowardice, are all manifestations of the same inborn tendencies ; and which of each pair of them shows itself as part of a child's disposition depends infinitely more upon upbringing, upon what the child learns, than upon

anything else. Learning of moral values, moreover, does not depend only, or even chiefly, on explicit teaching, but still more on the daily life of the child. Moral maxims are of very little avail in comparison with the example of parents or nurses and teachers. Children judge us by our deeds, not by our words. In this they are often wiser as babes than when they become adults. Adults live so much by words that they come to attach a fictitious importance to them wherever they are found, and so thus come to be moved by sensational newspapers, shady financiers and mouthy politicians, and, latterly, even to be deceived by the professions and promises of their false friends. But children are not like that. The insane, who are in some other ways like children, are like children in this way also: promises, if unfulfilled, and wordy exhortations to do right, are of no use in daily contact with them. No more are they useful with children. By all those in contact with them faith must be kept and morality must be lived. The shock of finding that the words of their exemplars do not always coincide with their deeds, must oftener than we realize be a cause of the delinquencies of children. No one has depicted this shock better than Sir Edmund Gosse in the passage where he relates his first discovery of the discrepancy between his father's statements and the facts. Gosse was then a mere child and in after-life he remembered the incident vividly.

One morning in my sixth year, my mother and I were alone in the morning-room, when my father came in and announced some fact to us. I was standing on the rug, gazing at him, and when he made this statement, I remember turning quickly, in embarrassment, and looking into the fire. The shock to me was as that of a thunderbolt, for what my father had said was not true. My mother and I, who had been present at the trifling incident, were aware that it had not happened exactly as it had been reported to him. My mother gently told him so and he accepted the correction. Nothing could possibly have been more trifling to my parents, but to me it meant an epoch. Here was the appalling discovery, never suspected before, that my father was not as God, and did not know everything. The shock was not caused by any suspicion that he was not telling the truth as it appeared to him, but by the awful proof that he was not, as I had supposed, omniscient (*Father and Son*).

The futility of mere precept has been silently recognized in the oblivion which has overtaken literary works of the monitory type such as *Eric* and *St. Winifred's*.

'Good' Homes versus 'bad' as a training-ground in Morals. Probably the reason for the apparently greater proportion of 'bad' children in the United States of America is largely that 'broken' homes are a much commoner feature of their civilization. On this side of the Atlantic, also, a disproportionately large number of difficult children come from homes where a step-parent reigns. But it must be allowed that from bad homes there often come exemplary children; and from a good home there sometimes emerges a tragedy of difficulty in childhood and of good-for-nothingness or actual criminality in subsequent adult life; and this seems like a direct contradiction of our disbelief in original sin. Good homes may produce bad children, and bad homes good ones: what, then, is the use of psychology, or indeed of any special effort on the part of those who bring up a child? Will he not grow up as he was made, principally good or largely evil, as nature endowed him with a greater or less proportion of amiable qualities? The answer to the apparent fallacy about good and bad homes is that what is a good home in the accepted sense may be a very bad one psychologically; and that what is a bad one materially and in some degree morally may have sufficient counterbalancing features to render it possible for normal or even exceptionally healthy children to emerge from it. I know a certain overcrowded house in a rather squalid part of London, where the father knocks the mother about and gives her an insufficient proportion of his wages to feed many mouths, the number of which he nevertheless takes every opportunity to increase. One of the younger boys often alarms his mother by staying out late, or by taking himself off for the whole day, without giving her notice of his intentions. Similarly he sometimes slips away from school. But is he therefore, aged 6 as he is, too thoughtless to care for his mother's anxiety or too timid to face school? On the contrary the rest of his story shows that he

is self-reliant and resourceful. If he truants he never comes home without bringing something for one of the others—coupons for Jimmy—wood for mother—or chocolate for the rest of the family. His greatest pleasure is to be allowed to go out with mother. When at home he will go to the wood basket and tell mother when she is out of wood. If allowed, he will chop up some for her. This will keep him quiet for an hour. He will volunteer to help his sister wash the dishes, and was recently seen giving a younger one a drink of cold water, saying, 'This is what goes with dry bread'!

This was a 'bad' home in the sense of parental discord and pernicious example from the father; yet the mother's influence produced an unusually charming child.

In contrast, I suppose that the life of the *Barretts of Wim-pole Street* would be regarded as that of a 'good' home in the ordinary sense; but a life as ordered by that type of father is now so universally recognized as psychologically harmful that the conventions which authorized it have been abandoned. Incidentally, the father portrayed in that play exhibited in his own personality an instinct for cruelty that had never been properly mastered, but masqueraded instead as a parental rule of a severe mirth-destroying, intolerant kind. In less conventional society the same instinctive tendency can show itself in all its unpleasant nakedness.

A boy of 11, whom we may call Arthur, was brought to hospital because he had behaved in a very odd fashion. He had become timid and sensitive and instead of going out with his friends would sit at home and read a book. He would sometimes stand and scream, wave his hands and hide behind chairs. At hospital he carried himself in a perfectly normal fashion, and there seemed to be nothing in the boy's mental condition to account for his curious actions. But soon from the mother and the boy it was learned that the father was an exacting and cruel tyrant. He was grudging in his attitude to his children and jealous of any one's happiness. He would not allow them to show any affection towards their mother; would not have them remain in the sitting-room with him, sending them either to bed or to play in the street; and tried

to prevent his elder girl from playing with her friends. If they disobeyed him he would cut at them with a cane and had frequently hit Arthur on the head and even hit him with a cane across his face, for no reason at all. Of his wife he was still more jealous, and he repeatedly made impossible demands on her. It seemed very likely that the boy's odd traits were at least in part the defence of a timid child against his father's cruel aggression. Instinctively he chose a method of escaping punishment very like the madness sometimes deliberately and sometimes successfully assumed by adults to escape the judgment of their peers.

Fortunately in both the above instances of bad homes, the mother was an unusually strong character, so that the influence of the father's evil ways was constantly being counter-acted. Here example alone, and no amount of precept, would have enabled the children to develop standards of affection and decency ; and this example the mother in each case was by her fortitude able to give.

The Origin of Conscience. The influence of home in the civilization of every child's inborn tendencies for good or evil does not, of course, mean the influence of the four walls but that of the parents and those, especially nurses, who stand in a similar relationship. Parents and nurses are not only responsible for the presence of a moral sense. In an almost literal fashion they *are* the child's moral sense. As has been described in the first chapter, modern psychological research has shown repeatedly that the standard of morality to which the child refers his conduct and his thoughts is to a considerable extent what his parents and teachers have gradually made him feel, without the child, or indeed any one, realizing more than dimly what was happening. 'The still small voice' which we believe to be the voice of God, is really the voice of our early monitors echoing unsuspected in our adult minds.

It is possible to trace the development of this voice of morality through the years and even in a rough way to measure the force of its commands at different ages. It is important to have some such information as this ; because without standards how are we to know what a particular item of

behaviour means? Parents are apt to be disturbed when their child is detected in stealing. But if you ask any reasonably honest group of people whether they have ever stolen anything in their lives, the majority of them will answer that they have done so at some time in their childhood or early youth. The same holds for all other forms of peccadillo. The reason why the quite apocryphal story of George Washington's blamelessness in the matter of lying attained such world-wide popularity, is that every one felt it, from his own experience, to be untrue. Yet when parents, or others having authority, find lying or stealing or cruelty or sex misdemeanours among children, they are apt to assume that the child is wicked or insane according to their degree of fondness and proprietary pride.

Infants are quite unmoral. Yearlings have learned that there are certain things they mustn't touch ; but most of their moral education has centred round their bodily habits, especially feeding and their excretions and to a less extent their sleep. They have already been taught to feel something of the force of authority, of the need for obedience and for cleanliness. Are they not often exhorted in the tender years to ' Do your duty ' , so that in fact the earliest kind of morality is a good deal taken up with the management of bodily functions? Rather later, morality begins to be concerned with their behaviour towards others. The function with which moral teaching is most strongly associated is that of sex. Most people now realize that masturbation is indulged in by some very young children, in a perfectly innocent way ; but the matter is dealt with by more obvious signs of disapproval than any other offence against the rules of the young child's life. Hence morality and sex early begin that close association which persists so strongly that when morality or moral education are mentioned anywhere, people think of sex first of all, and immorality comes to mean, in popular language, not transgression of the moral code in general, but sexual transgressions in particular.

Standards with regard to stealing and lying usually have their beginnings later. Control over the normal childish

egotism is usually not attained till about puberty and often not even then.

It is possible to measure approximately the relative strength of the natural tendencies and the restraining influences impressed on the child's mind by training.

So-called tests of deceitfulness have been applied by psychologists to children. It was found that no child had a perfect score. There were all varieties of result in the tests from extremely high to extremely low scores of honesty. The kind of tests which were used were whether the children would cheat in examinations, whether they would cheat in marking their own papers, and whether they would seek to increase their score by peeping when given a test to do with eyes shut. This last matter was tested by giving a task which was impossible unless the child could see—success showed that the child had opened its eyes and had therefore broken the rules. The children were then tested after the tests had been given and it was noted whether they owned up to their lapses or not. On this basis it was found that 7 per cent of the children had cheated on three tests and lied about it, 15 per cent on two tests and had lied about it, and 19 per cent had cheated on one test and lied about it. Just over half (59 per cent) were honest all round. It has been found on the whole that intelligent boys and girls are more honest than the less intelligent, and that they exceed the average in truth, kindness, perseverance, prudence and foresight. (Murchison, *Child Psychology*.)

It is an interesting fact, however, that as far as lying is concerned, among American children at least, honesty does not necessarily increase with age. It was found that more younger children found lying wrong than older ones, and that older ones would often defend lying in certain circumstances on various grounds. Similarly the American investigators failed to find any evidence that cheating in school diminished as children grew older, nor did they find that children in American public schools became less selfish as they grew older.

Girls of the Austrian and American races were found to be given to a much greater number of conventional lies, such as

'Mother is not at home', 'Glad to see you', 'I had a fine time at your party', than boys. Girls were much more inclined to lies which may be called social lies, including lies to keep secrets, to conceal things, to protect others, to keep from offending and the like. Girls were found on one test to cheat more, and also on a homework test, where aid was obtained dishonestly at home. On the other hand, boys were found to be more often badly behaved than girls. With boys, stealing was the most frequent offence (70 per cent), while with delinquent girls the commonest offences were of a sex kind (62 per cent). These differences, however, may depend on the different moral standards set for the two sexes.

From the point of view of race in this investigation, children of Scandinavian or German descent cheated least, American children second, British third, Jews fourth, Italians fifth, Slavs sixth, Negroes seventh. The effects of environment and the amount of delinquency to be expected in various conditions have also been studied in systematic fashion. Undoubtedly poor training and discipline in the home is the most frequent factor (90 per cent according to Paynter and Blanchard). Companions are found to play a considerable part and this has been known since the beginning of time. 'Evil companions corrupt good manners.' In fact companions were second only to parents in their apparent influence.

Sunday-school children were found to excel others by only a small amount in their honesty. Thirty-one per cent of a group of Sunday-school children cheated as against 40 per cent of non-Sunday-school children. It is very difficult to say whether such a comparatively small difference has anything to do with Sunday-school teaching and whether it would not have been there in any case. What keeps a child honest also takes him to Sunday School.

An interesting result was obtained by Volker, who worked with seventy-five boys and trained some of them along Boy Scout lines in trustworthiness, while the others were given no special training in trustworthiness generally. At the end of the period of training he thought he had found that the

Scout methods had made a definite impression in fostering habits and ideals of honesty. (Murchison.)

It has been calculated that only about 1 per cent of 4,000 delinquent cases are directly motivated by the cinema.

In summary, our contentions have so far been these:

There is original sin no more than there is original morality. Actions that would be considered very wrong in our type of society may be the accepted thing in another. Morality has to be learned, and wrong is only possible with regard to the morality which has been learned. A child cannot be blamed if it has never been taught otherwise; and we shall see that some children are taught little but immorality, by unstable and unhappy parents. Standards of morality are constituted entirely by what we have learned consciously or unconsciously by the example or precept of our elders and companions. These standards themselves are not clear-cut conscious things. We don't, every time we act, summon up a picture of what is expected of us. We have more or less automatic, i.e. unconscious knowledge of what we have been taught. A moral sense develops gradually in every child and in some more clearly than in others, depending on temperament and training. The true moral imbecile, i.e. the person who suffers from such an inborn deficiency as to make the development of moral feeling impossible, is very rare indeed.

Obstinacy. Some examples will make these points clear. Excessive obstinacy is one of the earliest forms of anti-social behaviour. It is also one of the commonest sources of a poor reputation at any age of childhood and is a great disadvantage to its possessor if retained into adult life. It is a frequent source of confusion in some of its ways of displaying itself, for it can look like the manifestation of physical weakness. For instance, obstinacy about food can easily be mistaken by the inexperienced for lack of appetite due to physical disease. It frequently is so mistaken even by doctors in later childhood and adolescent life, especially in the classical 'starving girls' ('Anorexia nervosa' of Gull and subsequent medical writers). The *locus classicus* of this kind

of obstinacy is found in one of the Struwwelpeter rhymes in 'The story of Augustus who would not have any soup'.

Augustus was a chubby lad,
Fat ruddy cheeks Augustus had,
And everybody saw with joy
The plump and hearty healthy boy.
He ate and drank as he was told
And never let his soup get cold.
But one day, one cold winter's day,
He screamed out—'Take the soup away,
O take the nasty soup away!
I won't have any soup to-day.'

Now next day, look! the picture shows
How lank and lean Augustus grows,
Yet though he feels so weak and ill
The naughty fellow cries out still,—
'Not any soup for me I say:
O take the nasty soup away,
I won't have any soup to-day.'

The third day comes; O what a sin
To make himself so pale and thin!
Yet when the soup is put on table,
He screams as loud as he is able:
'Not any soup for me I say:
O take the nasty soup away!
I won't have any soup to-day!'

Look at him, now the fourth day's come!
He scarcely weighs a sugar plum!
He's like a little bit of thread,
And on the fifth day, he was dead!

This kind of tragedy has actually happened in adolescent girls, although not with the dramatic suddenness of Augustus. Obstinacy in many forms is encountered throughout childhood. In younger children it is said to reach a maximum intensity between 3 and 4, after which it is not often found in an acute form till about 13 or 14. It tends to spread, of course, from feeding habits to anything requiring obedience, and like many another anti-social habit, increasing in proportion to the amount of resistance it encounters. It derives from the childish egotism and represents the most essential

part of the clash between this egotism and the necessity of conforming to the demands of society. Obstinacy is a particularly difficult form of moral conflict, since it soon tends to persist of its own sake even independently of environmental provocation. However, it does tend to die gradually if external irritation is removed. Hence the motto in treatment is neglect of the obstinacy as such. Once the nature of the feeding difficulty is understood as the result of obstinacy, the motto in older children at least is treatment by neglect. If meals are refused, no notice is taken. The meal is resumed in the ordinary course, and supplementary requests for chocolate, etc., are ignored. Persistent disobedience must not be allowed to result in the obvious annoyance or frustration of the mother or nurse. Instead of keeping on insisting on the point, the mother who feels that she is not able to get her offspring's ready obedience has to let her child feel in a quiet way that she is hurt by it, but not angry or exasperated; has to let the child feel that some disgrace has been incurred; and has to examine herself to see whether she has really been exhibiting sufficient affection in her mode of dealing with the child. Every now and then one gets from a mother a confession that the child's behaviour has got so much 'on her nerves' that she hates the child at these times and even, as one mother said of her own feelings at times of flagrant disobedience, that in punishing the child she felt she could 'almost kill it'. Even a minor degree of a spirit of this kind is calculated to increase the child's obstinacy to a maximum.

Obstinacy means lack of affection on the part of the child for the parent, for the time being at least. Such lack usually comes from the child's instinctive feeling of a lack of affection from the parent. There is one small delicate-looking and very sensitive boy I know who will spend nearly an hour over a meal and will often leave it half finished, in spite, as the parents would say, of much coaxing. Behind this chronically recurring dispute about eating lies a long tale of unhappiness. When the child was born the father seemed not to welcome his appearance, and has ever since his birth preferred in

obvious fashion his elder brother. The children have noticed the preference, and have spoken openly about it. By an unfortunate arrangement between the parents, who did not understand the possible effect of the father's one-sided affection, it was the father to whom was assigned the duty of supervising the child at his meals. Presumably the mother had in her mind the object of getting the father to take more interest in his younger son. But the child, who would have taken his meals for love, would not take them from the father whose affection he knew he did not have ; and obtained his revenge by giving him endless delays over each mouthful. And the father for his part soon vented irritability on the child and doubtless felt more than ever that he was justified in preferring his elder boy to such an obstinate child as his younger son was turning out to be.

Persistent severity in the parents or nurse is very apt to result in permanent obstinacy of character in the child. In the cruder expressions of dislike which are found in some of the homes of the poor it is easy enough to trace the connexion between parental severity and childish negativism. But with the instances associated with a more cultured home life, the connexion is none the less strong although its expression is more subtle. For example, Simon J. age 5 $\frac{2}{12}$ was brought by his mother on account of a nervous habit of a curious kind. On going to bed he would put his arm up to and round his head (without actually touching it) and rock his head and arm at increasing speed until he was, to use the mother's phrase, hysterical. By this she meant that he seemed not to be able to hear when he was at the height of the habit, and could only be stopped by placing one's hand on him. The habit occurred every time he lay down and was also repeated if he woke up in the night.

The mother had completely failed to get him to stop this habit ; he seemed to persist all the more when she tried to dissuade him. The grandmother succeeded even less ; in fact the habit became worse when he was living for a time with the grandmother. His mother had taught him that it was naughty to move his head in this way because it was

against her wishes. She had brought him up very strictly and only relaxed when his baby sister arrived when he was about three. Apart from the habit, he was obstinate in other ways, and the only factor which seemed to account for his obstinacy being so marked was the early severity of his training. (Henderson & Gillespie.)

This conclusion seemed to be borne out by the effect of changing the methods of handling him.

Temper tantrums are a further and more intense development of the same tendencies as obstinacy. But they are often so dramatic as to become very alarming to the parents ; who may think that the child is going to have a fit, or alternately that it is seized with temporary insanity. Temper tantrums vary in intensity. Some are comparatively mild displays and result in being cross and perhaps kicking out at people, but other children will lay themselves screaming on the floor, or will throw missiles at their parents or nurse, or threaten to throw themselves out of a window or to cut their throats or to perform some similar dramatic act. Threats of the latter kind are specially alarming, but are tried out only by children who have already had reason to think that their parents will be suitably impressed. Willie C., age 8 years, was of this type. He was brought up to hospital on account of fits of screaming, violence and general unmanageableness at home. Both parents were completely ruled by Willie. Both said that they were sure that there must be something wrong with his brain to cause such sudden and severe outbursts. The father felt injured because the methods which succeeded with the older children failed with Willie. He was said to have behaved normally until the age of three, but since that time had often had attacks of screaming. The mother feared epilepsy was impending. For a year at the age of 5 he was sent to a convalescent home, and during that time was quite normal and very happy with his foster-mother : but soon after his return home the attacks of screaming recommenced. The boy had plenty of toys and a room to play in and was more than well looked after. His parents both watched his every action closely, and his father

spent hours trying to coax or bribe him into doing what was wanted. Notwithstanding this, the boy had attacked nearly all the family at one time or another, and in a tantrum had tried to pull out his father's hair. His attacks underwent a kind of crescendo, until he would refuse to go to bed for hours, would break up the furniture, and make for the window, saying that he was going to throw himself out of it. The result was that on some nights his parents hardly got to bed at all. On another occasion he appeared after an outburst with a red mark on his neck and intimated that he had been trying to strangle himself.

Behind all this lay the characteristics of two very inadequate parents. The father was a small man, insignificant in stature and personality, timid, indecisive and ruled by his wife. The latter was an unhappy, querulous woman, who boasted of her anxious care of the children. She related how her two eldest had died of meningitis, and how she constantly feared the same fate for Willie. She herself was frequently depressed and at times threatened suicide, screaming and brandishing a knife. At other times she would go to bed and refuse to get up at all for days. Her husband she accused of selfishness, untruthfulness and harshness, while at the same time praising her own virtues and bragging of her 'superior' social position. When an attempt was made to get Willie away from home she behaved in a foolish fashion, worrying first of all because she had no reports of him, and finally bringing him home against all advice. When a worker visited her home, she found the boy and his mother in each other's arms sobbing together. When told by the worker to stop, however, he promptly did stop and retired to a corner looking foolish. He has since been sent to a boarding school where the report is that he is perfectly happy and normal.

The force of parental example and discord could no further go. Weakness of discipline on the father's part and maudlin sympathy in a mother trying to get satisfaction out of an abnormally close attachment to her youngest child fostered, clearly, the alarming-looking temper outbreaks.

Lying is of two principal varieties. There is phantasy

and there is defensive lying. It is a poor commentary on the part of some parents who long for their children's confidence that when children do communicate their day-dreams to them they regard them as lies and are horrified. It is true that the day-dreams are not prefaced by a statement by the child: 'This is an imagination of mine.' He simply tells a story which he at least seems to have managed to believe. A small boy comes to school and says there has been fire-drill with a real fire engine; or he boasts to his friends that his father is a great builder of model ships. Parents apparently are often unaware that a child's phantasies are much more real to him than an adult's and that he has not learned to distinguish between imagination and reality. They have, however, usually themselves been taught or led to believe that this failure is culpable especially if the child goes so far as to put his phantasies into words. Sir Edmund Gosse recorded an unsurpassed example of this in his own mother.

When I was a very little child, I used to amuse myself and my brothers by inventing stories, such as I read. Having, I suppose, naturally a restless mind and a busy imagination, this soon became the chief pleasure of my life. Unfortunately, my brothers were always fond of encouraging this propensity, and I found in Taylor, my maid, a still greater tempter. I had not known there was any harm in it, until Miss Shore (a Calvinist governess) finding it out, lectured me severely, and told me it was wicked. From that time forth I considered that to invent a story of any kind was a sin. But the desire to do so was too deeply rooted in my affections to be resisted in my own strength [she was at that time nine years of age] and unfortunately I knew neither my corruption nor my weakness, nor did I know where to gain strength. The longing to invent stories grew with violence; everything I heard or read became food for my distemper. The simplicity of truth was not sufficient for me; I must needs embroider imagination on it, and the folly, vanity and wickedness which disgraced my heart are more than I am able to express. Even now (at the age of 29), though watched, prayed and striven against, it is still the sin which most easily besets me. It has hindered my prayers and prevented my improvement, and therefore has humbled me very much. (*Father and Son.*)

It is, naturally, the more intelligent child who indulges most in phantasy, but usually he keeps it to himself. When he

does communicate his thoughts, they often prove to be charmingly ingenious. For example, one of our young truants, aged 6, informed us that he had rolled down the street in a barrel, which suddenly said to him 'Bunk', so he got off!

Lying which is the result of confusing phantasy with fact cannot correctly be called lying; but it does pass later in many children into a form of statement more correctly called lying—although the moral obloquy of the term is still unjustified. A childish phantasy is presented as fact for the purpose of enhancing the child's prestige. It is a form of bragging common among the more ambitious and imaginative children, and is often actuated by a feeling of inferiority. For example, a feeble-minded boy of 14 with an intelligence equivalent to a child of 9, in seeking a job informed his prospective employer that his father, who was actually a labourer, earned £1,200 a year. When this kind of lying persists beyond early adolescence it becomes pathological, and in some instances attains enormous complexity. Such an adolescent, now properly regarded as a patient, becomes incapable of refraining from excluding his phantasies from his actual everyday life, and in consequence becomes completely unreliable. This pathological lying is fortunately rare and is usually intractable to treatment. It begins as an attempt at attaining prestige in the way already described; but the habit grows and obtains such a hold in some instances that real life becomes of secondary interest to the patient. Such an outcome is luckily very rare. Phantasy usually plays a diminishing part as the child grows older.

Defensive lying is commoner in later childhood and is always secondary to some other difficulty which the child wishes to avoid. It is frequently provoked by tactless adults, who in their zeal to establish that a child has stolen or played truant or has been otherwise guilty, press it with questions. To do so is a mistake. The natural tendency of any one is to avoid owning responsibility for a misdeed. It is only by long training and self-discipline that any one comes to assume willingly the responsibility for a transgression which has so far been concealed. To press confession on a child is to

invite it to lie ; and one denial has to be followed by another. It is much better to make sure of the fact and then simply let the child know that one is sure. The question then becomes not ' Did you do this ? ' but ' Why did you do this ? '—and not in a threatening manner but one that is obviously anxious to understand. There are very few children who have stolen or played truant or committed other misdeeds who will not respond promptly to this method of approaching them.

The other method leads at times to much unnecessary misery, not only in the children but also in the hearts of the parents, who conclude that they have reared not only a thief but a liar as well. Such reports as the following are the outcome of the inquisitorial (but well-meant) method and the mistaken attitude behind it.

An intelligent hard-working girl, always regarded as absolutely trustworthy by every teacher who has taught her. She has done well in every class and her charming manners as well as her willingness to be helpful have led to her being appointed monitor in every classroom. Although as monitor she has had access to everything in the room, there is every reason to believe that the stealing dates back only to the beginning of February 1932.

Jane was appointed one of the school prefects on February 1st. During the month of February there have been many petty thefts of cash—shillings, sixpences and coppers have disappeared from classrooms and packets of chocolate have disappeared from Staff Rooms, and Jane's Class Mistress's watch also disappeared. No one dreamt of suspecting Jane, who, because of her good character, was sent on messages all over the school. The petty thefts continued until 1st March. On that day the mother of another girl at the school called to inform me that a silk scarf had disappeared when Jane called at the house for her daughter. The scarf was subsequently found in Jane's possession and after many terrible untruths had been told about it she confessed to having stolen it. After many more lies she confessed to having stolen the teacher's watch and various sums of money (the amounts of which she cannot remember) and the chocolates from the Staff Rooms.

All this is very sad but the saddest part of all is her attitude of mind. She does not seem the least bit sorry, and every question I ask to try to help her is answered by the most terrible lies. She is sorry that I have told her father, but she did her utmost to prevent my getting in touch with him and even gave a false address.

Truancy is a special case of wandering, implying that school

or some other duty of attendance is being avoided. Both truancy and wandering are explicable in terms of the same fundamental tendencies and their frustration. They are much more common in boys than in girls. Truancy may be the outcome of a desire to avoid something unpleasant, and is then a matter of shirking, or it may, like wandering, be the outcome of enterprise and a primitive tendency for adventure. Sometimes, like lying, truancy is defensive; a boy steals something, is afraid to face the consequences, and stays away from home. Home surroundings may be so unattractive that the child runs away from them to find interesting things; or they may be so harsh and unhappy that the child stays away from fear. It sometimes seems as if wandering is in the blood; not infrequently a father will rather proudly confess that he in his boyhood wandered away from home without permission; but it is energy and an enterprising spirit which are inherited rather than a specific nomadic instinct. The child who is far more restless than his fellows, who is constitutionally 'hyperkinetic,' is a similar type. It is surprising how early wandering and truancy can begin. Some of our most inveterate truants and wanderers have been Londoners aged 6 or 7. For example Alan D., age 7, had been truanting for some time and had been accused also of lying. At school he would get into trouble through escaping from the hall. In the evenings he wandered away from home and would spin a pitiful yarn to strangers who, charmed by his cherubic appearance, made a great fuss of him. On one occasion he entered a strange house unobserved, went into a bedroom and was found asleep on the bed. He became well known to the police, who at first had sheltered the lost child and given him tea and cakes. On one occasion his brother had been out "with the Guy" and had received nothing; Alan danced the Charleston outside a public-house and collected a shilling. His restlessness, curiosity and tendency to make friends with everybody, no matter of what age, made him unpopular with the other boys at school, who would set on him, and his older brother had sometimes to rescue him from under a heap of struggling youngsters. At

home he was always in the way. At school he was often in disgrace and was made to stand in the hall with the placard 'I am dirty'—a situation from which he escaped by running out of the hall unnoticed and wandering away. His particular friend at school was a peculiar little girl of $6\frac{1}{2}$ who followed him about and tried to cuddle him, but he did not respond.

This behaviour seemed to depend more on his temperament than on his environment. It is true that the school authorities did not understand him, thinking he was mentally deficient, though his intelligence was average, and by other methods like the placard promoted rather than prevented his truanting. At home also conditions were far from ideal. Father had been 'nervous' since the war, that is to say he fussed about the fire, continually returned to see if the fire was properly out, and so on. The mother was burdened with the care of six children in a tiny house of four small dark rooms.

Accordingly it was felt that the training of his abnormal temperament would have a better chance away from home and he was sent to live in the country. He signaled his arrival by running impulsively at his hostess and hugging her. He then rushed indoors uninvited, seized one thing after another and then ran outside again singing. He made various little throaty noises, had many devices for getting attention, wept easily, could not concentrate and would run out into the garden and back again in the middle of a story that was being read to him. He celebrated his arrival in the village by calling on various houses and getting cups of tea and buns from the inhabitants. Next day he repeated the performance in the houses that he had omitted on the first occasion. He threw stones at the vicar's car, and broke some of the windows at the church. Nevertheless at the end of five months the report was that he had not wandered for over six weeks, although now allowed out without a body-guard. He came home punctually, did not cry over every trifling cut or fall, paid much more attention to his lessons, and had learnt to say his prayers. With characteristic enterprise, however, he had extemporized a prayer or two

—as ‘Thank you, God, for putting the primroses in the hedges’.

Truancy which results from shirking something is very common. An illuminating example of the complication of causes that can lie behind truancy was given by a boy of 13. The father of the boy in question presented us with a careful account of his history which he had written out. This was unusual enough, but the style of it was still more unusual. The account contained such phrases as ‘bar sinister much in evidence’—referring to the history of the mother’s family. It was also noticed that he called the boy by the name of Kant. When asked why, the father (whose surname was, shall we say? Brown) was mildly indignant and inquired why shouldn’t he? But he then vouchsafed that his boy’s mother called him Immanuel, so that his total equipment of names was Immanuel Kant Brown (or at least a name constructed on those principles). The explanation given by his father was that he happened to be ‘rather interested’ in the philosophy of Kant at the time the boy was born. Here lay the key to the boy’s truancy—his father had great aspirations for him, and he, being but an average scholar, could only produce average reports at school. The father let him understand that his achievements were very disappointing; the boy felt this keenly and school became so distasteful to him in consequence that he played truant repeatedly.

Stealing is a normal act up till puberty in our civilization. In times of stress, it becomes within limits a normal thing in adults. To ‘win’, i.e. to purloin, some useful article for oneself or one’s comrades was in certain ranks during the war an accepted and not socially reprehensible thing, however annoying it might be to the individual deprived of one of his more useful belongings. Travellers sorrowfully relate tales of the predatory habits of the less cultivated races with whom they have come in contact. In our own civilization there is a small social group, the habitual criminals, in which stealing is an accepted means of livelihood. These people are often not mentally abnormal; they are sometimes intellectually above the average; they have by mere early acci-

dent become antagonized to the social system and have adopted a different set of morals in one direction and no other. Bill Sikes may, like King Charles, or Mr. Hatry, make an ideal husband and father.

The important point for us is that few people can lay their hands on their hearts and say that they have never stolen anything ; but most can say that they abandoned it in later childhood or early adolescence.

Children steal for different reasons. Some steal purely from acquisitiveness. It used to be held that there was an instinct of acquisition. But a recent work has shown that if it exists it does not show itself more than feebly in any animal lower than man, and in him acquisitiveness can well be considered a special case of the egotistical tendencies. However this may be, a child sees a thing, covets it, and if not sufficiently constrained by fear of the consequences, helps himself to it in a natural way. Fear of consequences is the actual deterrent, and has to be learned. Usually he is taught that there is something 'low' in stealing and that it is mean to steal. But there are always places where considerations of meanness can with little or no sophistication be eliminated, and in these, it is the fear of consequences that alone operates. Stealing on this basis seldom persists unless it is neglected or mishandled by the child's elders.

One of the simplest motives in stealing is the gratification of a bodily desire, in children usually hunger. Children need a great deal of readily assimilable food. They do not always, even in the most careful homes, get enough of the most easily assimilable and combustible food, namely sugar ; and will be found to steal at first only sweets, then, growing bolder, money to obtain sweets, in order to satisfy a perfectly natural craving.

It is interesting how stealing goes for years unreprieved by careless parents, who feel, perhaps, that stealing in young children does not matter so much ; it is only when the child becomes older and they are brought face to face with the advanced social consequences of larger and more daring thefts, that such parents begin to take notice—when, for example,

stealing which began with isolated halfpennies from mother's purse develops into the theft of a bicycle from a neighbouring shop. Other instances of stealing are due to a desire for adventure or escape. Of stealing for adventure's sake an example has already been quoted. Stealing for escape occurs in children who find something too difficult and decide to run away. The following is quoted from Henderson and Gillespie's *Textbook of Psychiatry*.

William C. age 13 11/12 was referred to hospital by the Probation Officer on account of truancy and stealing, with the report: 'About four months ago he truanted successfully for a whole fortnight. When found out he ran away from home and slept out. He has done this four or five times since, sometimes staying away for several nights at a time. He never goes far away, but sleeps in the blocks round where he lives. He has also stolen from his younger brother's and sister's money boxes and has borrowed money from the neighbours on false pretences. . . .'

The father was a boiler-maker whose work took him much away from home. He was an intelligent man, much interested in his children's welfare; but, according to his wife, he had a bad temper. The stepmother was a pleasant woman who married Mr. C. when the second boy was a baby and the boys had been brought up to believe that she was their mother. She had one child, age 9. Willie had also a younger brother age 11. Both parents had become extremely worried over Willie. The father was very bitter about the effect of his delinquencies on the rest of the household and was very anxious that he should be 'sent away', i.e. to an industrial school. The house was in a rough district but clean and comfortable. The income was sufficient to prevent hardship. The children were mostly with their mother in their free time and were not given much opportunity of mixing with others. Willie had 1/- a week pocket-money, of which he spent 3d. and saved the rest for camp. He belonged to the Boys' Brigade, whose officers had often been out at night searching for him.

Willie had had an uneventful career until the recent outburst of truancy. His stepmother, however, had always found him more difficult to manage than the other children.

He was well behaved when his father was at home but inclined to torment the younger ones in his absence, while very resentful of teasing himself. At the Boys' Brigade he had the reputation of being unable to say boo to a goose.

His school report from a Central School (i.e. of scholarship boys) was that he was at the bottom of a class of forty, the average age of the class being 13, i.e. slightly younger than Willie. His marks at the various examinations had been Arithmetic—P ; Spelling 0 ; Algebra 0 ; French 17 out of 75. Totals of 317 out of 1,000 and 411 out of 1,000 were some of his results at the end of term exams.

The boy himself presented a reserved appearance at first ; but he soon talked readily enough. He declared that he truanted because he hated lessons and was always being given lines. Having stayed away from school he was afraid to go home, and so to provide food while he lived out he took it from home just before truanting from school. On the second last occasion his father had thrashed him when he returned from his escapade. On the final occasion which brought him ultimately to hospital, when he heard his father was coming, Willie took 2/6 which his aunt had given him to do some shopping with and stayed out all night. He was found the next day soaking wet and his aunt undertook to charge him with stealing.

He was very anxious to leave school and go to work, but he did not want to leave home. The impression was that of a timid, likeable boy, who was overdependent on his home, shy of friends and evasive of difficulties. An Intelligence test showed that with an I.Q. of 90, he belonged to the dull average group. In performance tests his results ranged from 10 (Dearborn) to 14 years (substitution test and Healy 2). Scholastic tests gave for reading, comprehension, 10 years, speed 11 years for three-letter words and 9 years continuous prose. In dictation he scored 11 8/12 separate words and 11-12 years running. These tests were made because an independent attempt had been made to apprentice him to the printing trade. They showed him unfit to be a compositor.

Physically he presented no signs of organic disease.

As his delinquencies had occurred since he had been demoted to a class below his previous one, evidently the easing of school work had little effect. It was accordingly recommended that he should leave school forthwith and go to work. The head master demurred and advocated his entering the third year in six months' time, but with the intention of working on the technical side and having opportunities for handwork instead of shorthand and other commercial subjects. The boy was much upset at this decision, and the stepmother removed him without further consultation with any one. He started work in an office and went willingly to evening classes, but at Christmas failed to bring home his wages for the week. When his parents pressed him he disappeared, slept anywhere he could and when found was put to bed by them for several days. It then transpired that a practical joke had been played on him at his work—he was told that he would be given handsome overtime for doing extra work before Christmas. He went to work an hour earlier every day for a week, and expected to get 4/- or 5/- extra on Christmas Eve, instead of which he received only his normal pay. He was dreadfully disappointed and apparently tried to realize his hopes by giving his stepmother 4/- which he said was overtime, and pretending that he would not get his week's pay till after Christmas. This of course involved him in a tangle of lies, and when he could not escape from the tangle he ran away again. He was found five nights later by his stepmother.

On this occasion work was found for him as a page boy and he continued at evening classes. Three months later he was reported to have remained well.

Stealing for personal Prestige. Children dearly love approval, and one of the easy ways to win it is, as they observe, by the bestowal of gifts. Hence a child, usually, I think, a girl, will sometimes be found to take money only to distribute the proceeds among her friends or to present a bouquet to her teacher. A flagrant example of stealing of this kind occurred in a choir boy. The choir master noticed that his charges were unusually flush of pocket-money. They were

all supplied with objects such as brand-new electric torches and the like. Inquiry revealed the fact that one boy had distributed two shillings to each of his comrades, being by far the greater part of the proceeds of his having pilfered a neighbouring shop.

Frustration of healthy instincts will sometimes produce stealing. An excellent example is furnished by a boy of 13 who was brought to see me by his mother, who was in great distress. He was the oldest child and the only boy in the family, and had been the apple of his parents' eye, but two years previously he had begun to steal anything of value which he found about the house. He stole his mother's money, his father's cigars, his sister's sweets. He was incorrigible; no punishment was of any avail. This hardened young delinquent, when interviewed, rapidly dissolved into tears. It came out bit by bit that after day-school, which ended about four o'clock, he was expected by his mother to do two hours home-work, thereafter to practise the violin (which he loathed) for half an hour, and thereafter to help his mother in the garden. If any leisure remained before bedtime he was allowed to play with his sister in the garden,—the village boys were 'too rough'. Nominally he had ample pocket-money for one of his years, 8*d.* a week; but 4*d.* of this he gave (under duress) to foreign missions, and the other 4*d.* he placed in his bank against the purchase of Christmas and birthday presents for the rest of the family!

Spite sometimes makes children steal from those they love. Sometimes a child steals not because it wants to acquire an object of value, but because the object in question is forbidden, and especially in a few rare instances if the forbiddenness makes the act seem particularly wicked. Such children complain that they feel bad or wicked at the time; they get 'bad thoughts' and feel they must do something wrong. Such marked examples are rare, and when they do occur sometimes represent disguised impulses of a sexual kind which the child tries to suppress and only succeeds in covering under a misdeed of another kind.

Stealing may be one of the signs of a weak character, but

a statement of that kind does not help us very much ; it is in fact question-begging. What produces the weak character ? The only hope of answering this is to investigate specific instances in the earliest accessible stages of their lives onwards.

A boy of 14 was brought to hospital because he had been stealing for a number of years, until finally he stole a bicycle and was charged at the Police Court. When he stole the bicycle he left a note saying that he would be 'away for some years', and went off to Portsmouth, which he reached with the intention of trying to get on a ship. When charged, he asserted that he stole the bicycle because he was 'fed up at home'. He added that his parents had done their best but it had had no effect. He was the fourth of five children of decent hard-working and altogether worthy parents who were enormously distressed at this incident. The boy had been the pride of his mother's heart as an infant, being very clean in his habits, walking and talking early, and earning the title of a 'brilliant baby'. There is no doubt that until the advent at least of his younger sister he was thoroughly spoiled, and this not only in the home. It happened that his home was very near the place of the father's employment ; and the father's fellow-workers made a habit of giving the attractive youngster small tips, so that from an early age he had more pennies to spend than the average child. 'Crooks', as he called them, were his heroes, and one felt that he might readily develop into a crook himself, partly because of the allurements, and partly because he had already, by his misdeeds and from his solitariness, developed a certain amount of antagonistic feeling towards society, which in turn had shown him its displeasure in several ways. Furthermore he was highly suggestible, and ready to purchase popularity by dishonest means, since he could not obtain his desire in that way by any outstanding gifts of ability or interest in others. Intellectually he had average accomplishments (I.Q. 103), but in tests of practical ability he was more adept (I.Q. 110). Emotionally, however, he was childish, not only in respect of his character, which has already been described, but in his

actual play also, where he would spend hours playing with water and squirting it hither and thither.

It is easy enough to surmise that his infantile egotism had been so much catered for that even at an early age he could not make the necessary reduction in his demands on society ; and not finding that he could satisfy these demands by his natural gifts he resorted to underhand methods. Revenge probably played a considerable part as well as ambition ; he showed signs of his vengefulness in such simple matters as bed-wetting, but it seems likely that it motivated other more intimate personal characteristics as well.

Jealousy, Spitefulness and Cruelty. These can be grouped together, because they seem to be closely related in their origins, their subjective quality and in the situations which provoke them. If they have one common factor which is more frequent than any other, it is that of hate. All three, jealousy, spitefulness and cruelty, arise only in the absence of love ; they seem in fact to be directly antithetical to love : and what is the direct antithesis of love but hate ? (v. Chapter I). Moreover, any analysis of the subjective experience that accompanies jealousy and the like, reveals a set of feelings that seem more closely akin to hate than anything else. This is a disconcerting discovery, because all of them arise most acutely in connexion with those who stand in close relationship to the child—brothers and sisters.

Jealousy is the competitive one of the three. It arises only when there is rivalry between children (or adults for that matter) for the affection of a third person, usually a parent, nurse, or teacher or some one standing in a similar relationship. The jealous child grudges his brother or sister a place in the sun of his mother's affection, especially if he has previously been accustomed to a very large or even exclusive amount of it. How often it happens that some kind of so-called 'nervousness' or bad behaviour dates from the arrival of a baby brother or sister ! I remember well the delight of one small boy when a long awaited younger brother arrived. 'Is it ours to keep ?' he asked almost in an ecstasy of delight. But the welcome is not always like this ; or if the feeling is

like this at first it does not always remain so, especially when it is discovered very soon that the new arrival is not simply a pleasant plaything, but a rival for all kinds of favours. Then the older child is perhaps caught pinching the younger or pulling out its hair. The ramifications of jealousy are extraordinarily wide and embrace far more than these simple manifestations. Jealousy underlies all sorts of actions where it could never in everyday circumstances be suspected. It may motivate, for example, such a variety of complaints as complaints of aches and pains, bed-wetting or lack of appetite (really refusal of food), temper tantrums or insomnia; in fact a wide diversity of symptoms and forms of bad behaviour, which so far we have considered only under the head of obstinacy. The aim of such symptoms is to monopolize the attention of those whose exclusive love the child desires. If they succeed in their aim they continue; if they do not succeed they are added to until sometimes the final state is mystifyingly far removed from anything which would point to the original cause.

For example, a child was brought to hospital because she was very disobedient, screamed frequently and was repeatedly sick. From an early age the mother found her impossible to manage. Tender years are no guarantee of tender feelings. This little girl was born of healthy and intelligent parents after an easy pregnancy and confinement. She was a very much wanted child, but was brought up fairly strictly, not being picked up, for example, when she cried. She was easily weaned and was reported as having given no trouble until the birth of her baby brother (when she herself was 18 months old). At this time she went for two weeks to stay with her grandmother, who made much of her (she was the first grandchild). When she came home she found not only Michael, but Michael occupying her cot. 'From that moment', in her mother's words, 'she was a changed child'. She became difficult to feed, and so disobedient in every way that the mother sat down in despair and wept. Having wept, she took the child to a doctor, who suggested jealousy as the cause; but the mother simply would not believe this. When

seen at hospital the child showed that her antagonistic behaviour had become largely automatic—she displayed it to those at hospital from whom she had nothing to gain by being perverse, and who knew not Michael. She refused to speak at all at first, although showing no evidence at all of fear. She refused also at first all tests of intelligence that involved speaking. She gave up trying very quickly and said ‘can’t’, and yet she was in fact an exceptionally intelligent child, with an intelligence nearly 18 months in advance of her years. It was interesting that all her answers centred round herself. ‘What’s this?’ ‘Me, my bread and butter.’ ‘What blows?’ ‘Me, a whistle.’ ‘What cuts?’ ‘Me, with scissors.’ This was plain enough evidence of her desire for the limelight. The mother added that the child was very spiteful with her younger brother, who was placid and popular. But this was an ‘early case’. It is axiomatic that the longer a mental habit continues, the more widespread and the more obscure become its ramifications. Few people would suspect jealousy behind such esoteric phenomena as spirit rappings, but the origin of a recent spiritualistic sensation in a London suburb was none other than a small girl’s jealousy of her younger brother.

This small girl of 9 years of age was sent up to hospital by her doctor. The parents complained that spirits inhabited the child and caused nocturnal rappings. They had spent a terrible month of constantly disturbed nights, and had the house examined by carpenters, builders and plumbers in the effort to locate the disturbance. Finally the child showed symptoms of acute illness and was taken to her doctor, who referred her to hospital for examination. There she admitted without hesitation that she had made the rapping noises by hitting the wall of her bedroom with the back of a shoe which she had secreted for the purpose. The history turned out to be that of a little girl of normal intelligence who suffered from acute jealousy of a half-brother and much trouble of mind over a stepmother whom she was supposed to think her own mother, when all the time the wedding photo of the real mother hung in the best parlour and the child regularly

visited her maternal grandmother and her mother's grave. The parents were totally unable to accept these facts of the explanation given of the child's behaviour, and the family moved to another district as soon as they could manage it. Although many hours' work was spent on the family they persistently complained that their child had received no treatment. It might perhaps be added that the rappings ceased after the first visit to hospital.

'Poltergeists' are often associated with quite young children, and while not all such incidents are rooted in jealousy, they are usually based on a child's accidental discovery of an easy limelight with adults more credulous and simple-minded than the child itself.

Spitefulness in children can depend simply on jealousy or a desire for revenge or can be a direct manifestation of that tendency to cruelty which is born in every one and which is so well depicted in the rhyme of Cruel Frederick. As an example of spitefulness resulting from jealousy the case of Kenneth, aged 8, one of twin boys, will serve quite well. Kenneth's mother complained that he was spiteful with his twin brother, that he frequently fought with children outside the home, and took away their toys. In addition to this he had the alarming trick of lighting pieces of paper and putting them in his mouth. He was very obstinate 'even when paid to do things'. On the other hand, if punishment was even threatened he screamed the place down. At school he was backward and often in trouble. Sometimes he would be sent outside the classroom for bad behaviour; while his twin was made a monitor. Kenneth's mother was of a worrying disposition and very protective of Kenneth, who had had a good deal of illness in the first few years of his life. For the first six years of their joint lives, Stanley, his twin, was brought up by an aunt; but then the twin came to live in the same house and the trouble with Kenneth promptly began. He could no longer monopolize his mother's attention, and what made matters worse from his point of view, his brother was a good deal cleverer at school. This was all the harder to bear as they were in the same class. Kenneth took to

punching the other children, thus asserting himself by his pugnaciousness where he could not score either in ability or manner either at home or at school. The mother took what we considered the wisest course of sending Stanley to his aunt's, whereupon Kenneth proceeded to behave much better.

The type of spitefulness which is to a considerable extent a manifestation of pleasure in cruelty, is usually very limited and transitory unless actually encouraged by faulty home conditions, and consequently is overcome readily in the early years by changing the environment. Few children could have had a worse start in life than George F., age 7, of whom it was reported at school that he spent most of his time scratching, biting and attacking other children. He had to be kept sitting apart and could never be allowed in the playground with the rest. Neighbours complained of his uncontrolled temper outside the school. His history was as follows :

George has always been difficult. As early as two years of age he would try to take his cousins' toys and would 'go for' their eyes when they objected. This has been his usual pattern of behaviour both with children and adults whenever he was thwarted. He was even said to have 'gone for' a policeman until the latter took a step towards him, when he ran away. He seems to have talked pretty freely with his mother and told her of his father's behaviour with him ; but otherwise he has no friends, as no children will play with him, nor do their parents allow them to be with him. He does not visit any relatives as he always upsets every one.

When a social worker called at the house George was very defensive, but later showed his toys. The only actual word he spoke was 'good-bye', but his actions were friendly. On the second visit he took very little notice of her, but occupied himself very busily with games of his own invention or with pencil and paper. He was very reluctant to show his toys as a rule, for fear they should be taken from him.

The worker asked whether he had made any remarks about his visit to hospital. His mother said that after the doctor had left the room on the completion of the physical examination George had banged his fist on the couch and said : 'I hate that doctor, if he touches me again I shall kill him'.

Of the same doctor he said: 'That doctor is potty, he whistles'.

The mother seemed to have little affection for him. His father was in a mental hospital, but before he went there he set the boy a very bad example.

The boy was sullen and scared at the first interview with the doctor, and at several subsequent interviews never spoke a word, but made signs, being evidently still frightened. He was ultimately sent to a foster-home, where, after several attempts at defiance, met by unfailing retribution coupled with affection, he became happy and showed an enormous change in his entire attitude. The social worker's report then read:

George came in from school—a bright cheerful boy full of interests. He could be heard chattering to the foster-mother all the way upstairs. (He did not know that the worker was there.) He came in smiling, remembered her, had quite lost his defiant expression, smiled and looked like any other child.

Very soon a variety of other factors complicates cruel or spiteful actions. The mere force of habit soon becomes important, and so the unkind actions spread to other departments of the child's life, and persist long after the original provoking situation has ceased. There is another frequent complication. The child discerns that violence, originally spiteful in origin, is an enormously effective way of creating a sensation and so proceeds to be violent as an end in itself. One small girl age 8 found that she only needed to brandish a knife in order to impress the household with a wholesome fear of taking steps against her. Instead of resorting to discipline they diagnosed madness.

Sex Misdemeanours. Most people have by this time learned of sex manifestations in infants and quite young children, but a great many are too confused in their own views of sex to be able to cope with it understandingly in their offspring. Some sex is wicked; therefore all sex is wicked—that is their illogical argument, only they do not state it clearly to themselves in that form.

There are only two ways in which children can discover sex, either by accident for themselves, or from information imparted by others. The others who impart information are usually their friends, schoolmasters, or clergyman having charge of them, in that order of increasing vagueness ; seldom the parents. I doubt whether one young person, child or adolescent in a hundred in the generation before the one now being born, received any sex instruction at all from their parents, except, in the case of girls, some information about menstruation, usually far short of what is required.

The nature of sex 'misdemeanours' in children will be readily understood from the account already given of the sexual interests of children. The best preventive of an excessive interest is a sensible upbringing, so that the child obtains such information as suits its age and stage of development.

(c) 'BACKWARDNESS'

'Backwardness' and 'dullness' denote delay in intellectual development, and are reserved technically for the milder degrees of mental (intellectual) defect. The deeper degrees of defect and their legal definition have been referred to in the chapter on Intelligence. In this section our attention will be confined to the manifestations of backwardness in the sense just defined. Backwardness may be only temporary or only apparent. Where a child is unhappy for any reason, he may have difficulty with lessons in school, may have to be placed in a class lower than the average for his age, and may make a poor score in intelligence tests : for the conditions of the latter do not necessarily eliminate the play of emotional factors. Localized but continuing backwardness, i.e. in a particular subject, like mathematics, can depend on a unhappy relationship to the teacher who first instructed the child in this subject. A failure to grasp a subject which is due to fear in the first place of the teacher imparting it, is mistaken by the child for difficulty inherent in the subject itself and in his own personal stupidity.

Some children suffer so badly from an absence of stimulus

that they remain backward for a very long time: their real ability may never be discovered until they leave school, or till some fortunate chance encounter with some new person who recognizes the situation. This is the extreme instance of what is very common: that many children seem less intelligent than they are, by comparison with others who have had better educational advantages—advantages in the true sense of a home atmosphere where the parents are not only sympathetic but definitely alive to their own responsibility in personally educating their children, instead of leaving the matter entirely to the schoolmaster they hire to teach them. Orphanage children probably suffer more in this way than others. A survey of the vocabulary, for example, of orphanage children shows that it is poorer than that of children of similar age and social status living in their own homes.

Willie D. showed the combined effects of lack of stimulus and that lack of affection of a personal kind which is sometimes so great a loss to the orphanage child.

When a visitor saw him in an orphanage school Willie D., age 11, was reported to look as though he were of low-grade mentality. His clothes were untidy as compared with the other boys, and the master said that he was one of those whose shoe-laces were nearly always undone. His class work was dirty and untidy and his attempt at the standard of the work for his age was an entire failure. He was heavy and slow, but very fidgety, and for that reason had been given a double desk to himself. There were apt to be disturbances among the others near him.

Yet when his intelligence was tested on the Binet-Simon scale, he scored an average mark which was confirmed by his score on performance tests. He had, however, a specific disability in reading. Why had he seemed to the school authorities to be defective? The answer was given partly by his history and partly by the results of treatment. He was coached specially in reading, and far from being dull and difficult he proved a most co-operative subject, and took a real interest in the work. In addition a kindly adult

male who was on the administrative staff of the orphanage began to take a personal interest in Willie. The latter's response was very striking. From being dull and morose-looking he became a smiling agreeable youngster, who took a pride in his appearance and tried hard to please. He had simply lacked any one standing in a kindly parental relationship, who would take an interest in him. His parents had deserted their children while Willie was still little more than an infant, and had not distinguished themselves by their care of him before that. At the orphanage, being of a quiet and unaggressive nature, he was simply overlooked among so many.

More rarely, ability which is actually exceptional languishes and masquerades as backwardness because it is unrecognized and the child is left in a class in which only work of a standard much below his capacity is expected of him. He wilts, or gets into mischief from boredom.

Children who suffer from some handicap of the special senses, such as deafness, defective vision or, what goes very readily undetected, word-deafness and word-blindness, often pass for backward or actually defective in the technical sense. For instance, Isaac J. was at a special school for mentally defective children. His parents felt that there was something wrong in this, as they were very proud of his signs of apparent ability and they brought him to hospital for examination, as they were not satisfied that the school authorities fully understood the position. He proved to be about stone deaf; but on intelligence tests such as one can give to deaf children he scored 160—a score that in some circumstances would have placed him in the class of potential genius. It was the effect of the sensory deprivation resulting from his defect of hearing that had made him appear on the surface mentally defective.

Physical illness, unless it actually injures the brain, like meningitis and epidemic encephalitis, is not an important cause of backwardness. Debility from any cause naturally interferes with a child's intellectual performance, but when the debility disappears, the intellectual leeway is made up.

A long series of investigations by Dawson and Conn shows that the only illness of the group they examined, including most of the acute infections, which appears to produce lasting intellectual retardation in children is epidemic encephalitis.

The great majority of instances of intellectual backwardness in children are permanent and the result either of inherited or congenital factors or of disease affecting the brain in early life. The severer degrees go by the name of dullness, feeble-mindedness, imbecility and idiocy in that order of increasing severity. The signs of retardation in general are direct and indirect. The direct signs are what the term would denote—in young children there is a generalized delay in development of the abilities to stand, walk and talk and to learn habits of cleanliness and personal care. In the severer cases of backwardness approaching feeble-mindedness the child fumbles badly at dressing himself, cannot remember more than one errand at a time, fails to bring home the correct change, and has great difficulty in learning how to read the time. In milder degrees the child is slower at learning these things than the average. In any case, concentration is poor; the child's attention wanders more readily even than the average youngster's. He tends to choose companions from children younger than himself.

When the dull child goes to school, he is of course slow in learning, but it is curious how often his backwardness goes unobserved or is misunderstood. Even actual feeble-mindedness is not infrequently overlooked till the child is near the age of leaving school, when so many years have passed that might have been spent usefully in acquiring knowledge and skill within the compass of his defective abilities.

If backwardness, whether due to generalized mental defect or to localized defect like word-blindness, goes undetected, the results are apt to appear in indirect ways, in quarrelsomeness, truancy, stealing, and other forms of misbehaviour, which reflect the child's own unhappiness, lack of interest in school and feeling of difficulty in lessons. For example: Charles N., age 11, was recorded as absent-minded and

dreamy, quiet and listless. He was brought to court for being concerned with a gang in school breaking and placed on probation. He was, however, the youngest of the gang, and gave no trouble at all on probation. At school he was in a lower standard than the average boy of his age. His home was seriously overcrowded, but his parents were kind and he got on well with his brothers and sisters. He was in fact a harmless little boy whose intelligence score showed him to be in the backward group, being more than 10 per cent less than the average normal. This accounted for his backwardness at school and the fact that he seemed absent-minded and listless in class, since the work was too hard for him and so failed to secure his interest. Temperamentally, however, he lacked energy and initiative: which in combination with his inferior intelligence made him readily suggestible.

This summary survey of the causes of the types of problem encountered in the mental hygiene of childhood has covered the field partly from the aspect of the inner urges of the individual child—especially such general urges as his self-assertive tendencies (including display and pugnacity), his desire for affection, his innate tendency to imitate, his suggestibility, and his local urges such as thumb-sucking. It has been obvious, however, that it is only by an artificial separation for descriptive purposes that the environment's share can be kept from protruding itself at every turn—its share in thwarting some tendencies and in unwisely stimulating others.

The most important and the earliest part of the environment is of course the family. There is universal accord in assigning to the mother the premier position in this respect, because upon her attitude, whether over-anxious, too affectionate or too cold, submissive or domineering, timid or courageous, healthy or hypochondriacal, calm or irritable, depends to a considerable degree not only the happiness but the nervous health of the child. Similarly, but to a lesser extent, with the father. Brothers and sisters, nurses and the like have

sometimes more influence, sometimes less ; they are capable of being substitutes for either parent in the child's mind, and so may come to have added importance. Some psychologists have attempted to work out a special psychological 'fate' as it were for each place in the family—according to whether one is the eldest, youngest, etc. There is some slight evidence that eldest children are more prone to psychological difficulties ; but the statistical fallacies are great. Only children are not such neurotic creatures as they are popularly supposed to be. The weight of statistical evidence is against their being more subject to serious breakdowns than the average child or adolescent, but they are undoubtedly more apt to have certain disadvantageous psychological traits which have been summed up by Hutchison as 'only-childism'.

Next in importance to the home as a promoter and fomentor of nervous maladjustments is the school. This is not simply a matter of intellectual ability ; factors primarily emotional connected with school life are equally important. It is true that signs of nervous unrest must frequently result from the failure to realize that a child is not intellectually equal to the work set for him ; or that he has a localized disability such as word-blindness. Much more rare is the instance where the work set is not equal to the child's capacity, and the latter becomes in consequence bored and restless. But very frequently also nervousness in some form comes from the child's failure to fit with his fellows at school, from shyness or timidity or dissimilarity of tastes or a feeling of inferiority with regard to games. The personality of a schoolmaster or mistress may be sufficient to make the entire school life a joy or disgust to the child.

CHAPTER IX

ADOLESCENCE

THE period of adolescence extends roughly from entry into the 'teens' to leaving them; but many people are still adolescent in mind long after they have reached physical maturity. Just when adolescence may be said to begin, and when gradually to end, is an individual matter. Girls are usually a year or two in advance of boys in beginning and completing their adolescence: that is in accord to some extent with their, on the whole, earlier physical maturity: but it depends still more on the greater relative importance of the reproductive function in them, which keeps them in closer and more intimate contact with the ultimate purpose of anyone's being—'to hand on, to still another bewildered generation, the torch of conscious life'.

The present-day tendency to prolong the period of education or pupillage tends to prolong also the adolescent attitude of mind. Not to graduate from the university till the age of 22 or, as in some of the medical schools in America, till 26 (on the average), and not to begin to earn one's own livelihood till several years after that, must have a retarding effect on the development of a youth's personality, compared with the conditions in, for example, Sir Walter Scott's day, when one might graduate in Arts at 16 and when to be 40 was to be an old man. In different walks of life in the same era the age of maturity differs. The boy who goes to work in a mine when he leaves school, the girl who has to mother a group of younger brothers and sisters as soon as she can take any responsibility at all, reach adult ways of thinking sooner than the high-school adolescent or the university graduate. They have their period of adolescence telescoped,

as it were. We have even met men and women in whom the telescoping was so complete that retrospectively their adolescence was scarcely recognizable. They seemed almost to have become little men and women in a year or two, from the compulsion of events.

The chief characteristics of a normal adolescent are hope, affectionateness and a desire for social contact. The hopefulness of adolescence knows no bounds. The youth's day-dreams are of ambition; the maiden's, even in these days of equal claims and similar education, usually of a lover. The boy dreams of being a soldier or sailor simply, but the youth is to be a general or an admiral, or a statesman or a great physician. The ambitions have become more specified. They centre no longer merely round decoration or power, but round prestige and its possibilities, or admiration, first by the populace and later by the ladies. The specific topic of the day-dream depends mainly on environmental influences—people, books and cinemas. The normal dream of a certain section of the youth of Chicago is to be a gangster, or a little later to be a politician with a right to use his office for taking bribes. This is an extreme case; but the same kind of influence shapes clearly enough the day-dreams of youth elsewhere; for example, John M. in the last chapter undoubtedly fancied himself more as a gentleman crook than as anything else.

The suggestibility of youth is extreme, and comes more readily from older persons who for some reason are highly esteemed. Normally the father should fill the position of maximum prestige until well on into his offspring's adolescence. But it is notorious that the growing youth 'knows better' than his parents. This is a phrase that his parents may use to reproach him with; but it is a two-edged weapon. He does in fact know better oftener than they would admit. Growing up consists partly in a growing disillusion about the omniscience of parents; and the youth is not to be blamed if simultaneously with his discoveries of parental fallibility he considers his own views more sound than theirs. Not all parents are fitted to fill the arduous role of guide,

philosopher and friend even to a passable extent ; and many of them manage to forget their own adolescence nearly as successfully as they forget their childhood. When the father no longer suffices as an oracle, or in the more trying role of model, the boy turns to another male relation like an uncle or even to an older boy. It is the age of hero-worship. Legends accumulate round the object of respectful admiration. Stories about him are cherished. His clothes, his mannerisms, even his gait are imitated. Little things are done to attract his attention ; if the hero shows no sign of response, then the less stable because emotionally more tense and limited type of adolescent is capable of strange tricks to arouse compassion. Even suicide may be contemplated or actually effected, with the thought that after he is dead the neglectful one will take notice and be sorry that he had not done so before. This is perhaps a commoner motive with girls. Usually it amounts to no more than a threat. Thus a girl of 13 who was unpopular at school developed a fervid affection for a prefect. The latter did not respond. The girl wrote a letter saying that if the neglect continued she would strangle herself. Another very intelligent and imaginative girl became very fond of the captain of her school. The latter was friendly but was not prepared to give her exclusive companionship. The consequence was that the girl made some knife wounds in her throat to the effusion of blood. Actual suicide from such a motive is not unknown. The film 'Mädchen in uniform' had, I believe, in its unaltered version, suicide as its climax. This piece of German realism was cut out and a softer and less artistic ending substituted to the British public. Nevertheless, a few months later details of a similar suicide were published in all the papers.

Normally, however, the hero or heroine serves as a useful model at least for a time, until this particular pattern is outgrown and a new ideal chosen. The average youth or maiden does not put all his eggs into one basket ; the person admired is not for long the sole object of affection. It is only the adolescent who is failing to form the other social

relationships as well, who thinks of death as sweeter than life without the beloved object.

Adolescent disillusionment is, however, common enough in a wider sense. It is a sentimental kind of despair, with much self-pity which derives its strength from disappointment that the world generally is found to be less satisfying than the environment of childhood and the earlier adolescent phantasies of self-importance had led the boy or girl to expect. The adolescent enjoys his melancholy. Even death is contemplated as pleasant, though usually in a highly academic way. Very few who are not suffering from an actual mental disease go so far as the youth who opened one of his arteries and nearly bled to death, not because he felt depressed, but because life as he saw it seemed 'futile'. It seemed better to him to die virginal in mind, before a longer life had time to add to the pleasant contemplative sadness of his disillusionment the sordidness of actual experience.

Probably, however, the disillusionment that proceeds to the extremity of suicide has a deeper basis than sentiment. There is some reason to see in the case of such a youth an earlier or deeper cause of disappointment. The earlier attachment to one or other parent, or to both, has been more intense than usual, and the discovery of the real father and his fallibility has been made with a more acute pain. There may be an even deeper unconscious cause of depression; but this deeper origin becomes clear only in adolescents who exhibit signs of the recognized mental diseases. In them the suicide or self-mutilation that occurs sometimes has its reason in a desire to atone for a supposed sin; superficially the sin is masturbation as a rule; more deeply the sense of guilt may be from an affection of the classical type of Oedipus for his mother, for which only death or sacrifice can atone. 'How weary, stale, flat and unprofitable, seem to me all the uses of this world.' Hamlet, in his family relationships, is essentially adolescent, and his melancholy is of the deeper adolescent kind,—deeper because its sources are largely unconscious, which is the reason why the play has always appealed so movingly to the dim imagination, without the

auditor being able to say exactly why. The gloom of this type of adolescent is shadowed forth in his poetry and his prose effusions, which are often about death—not death as a thing dreaded as it is in the morbid variety of aged man, but as something having a not unpleasant fascination. They write, for example, like this :

Red, Red, Red, colour of life,
Colour of life blood, colour too of death,
When life blood spills in the last earthly strife,
And wearily it draws the last faint breath.

This type of melancholy seems to be the doubtful privilege of the more intelligent type of adolescent, if at the same time he happens by temperament to be emotionally more intense than the average. Probably those of average intelligence feel it just as much ; but it is less evident, since they are less able to express it : furthermore, having less conceit of themselves as writers, they get no amusement from putting their feelings on record.

It is on the whole a phenomenon of later adolescence. The comparison of the pupils' contributions in a school magazine are in interesting contrast in their cheerfulness to the pessimism of the same young people as novelists in their early twenties. For example, this contribution is by some one in Form IVA (i.e. age 15 or 16) :

MEETING AT MORNING

Round the bend of a sudden came a car
And the driver looked over the windscreen's rim
And straight was a path to jail for him
And the need of a heavenly harp for me.¹

The ingredients of death, but a cheerful kind of death. Compare that with this written almost certainly some years after leaving school :

. . . my life changed and my spirit too,
The world was too much with me late and soon.
Harsh rain replaced the gentle dew,
Breezes were gone and storm winds blew . . .
Clouds hid the sky that covered me,
Life seemed designed but to subdue. . . .¹

¹ With acknowledgements to the *Glasgow High School Magazine*.

The contact with life casts a shadow over the early feelings of untroubled hope. But fortunately with most adolescents traces of the early optimism lend a cheerful irony, and this shows itself in the second set of verses.

Adolescents must have their audience. Even their gloom and their suicides are sociably conceived. Nothing is more important to an adolescent, or a more crucial touchstone of his future, than his relationship to what is not very euphoni-ously called his 'herd'. He must have some part in a group of coevals or be miserable. It is said that at about the age of puberty the average adolescent shows a tendency to withdraw from his fellows for a period; but the period of withdrawal must be very short. The necessity of being one of a crowd shows itself, of course, even in late childhood, but the increasing need for it in adolescence is illustrated by the type of games which become so popular then. Team games are the rule.

To belong to a group implies several things which an adolescent desires. It means social approval, for one thing, even if the society which approves is a very narrow one, and may itself be cast out from the larger society, as the Chicago 'gang' is. To be excluded, on the other hand, means a feeling of difference at least which is uncomfortable. This is intolerable even in herds of animals. Galton, it will be remembered, remarked the uneasiness of temporarily isolated South African bison.● In humans, exclusion usually fosters also a feeling of inferiority. If the excluded individual, on the other hand, reacts not by humility and self-criticism but by an attitude of superiority, the results are actually disastrous. Of some people of this type the future paranoiacs are made. A feeling of inferiority if not overemphasized is a sign of grace; but a superior attitude if it becomes habitual gives little hope of happiness.

Inclusion in a social group confers another boon—a sense of security. This is a special need of the adolescent's, since he has to pass from the protection of his family into the wider world. To become a member of a group represents not only an expansion of the feelings and relationships which

he enjoyed within the family circle, but is in addition a safeguard against feeling too great a loss when the ties which bound him to his parents are loosened. The group guards him (or so he feels, largely unconsciously, in the sense of not defining the feeling) against the hostility of the world at large. Conversely, if no group embraces him the adolescent feels this hostility unduly. Oversensitiveness is one of the results of this ; in extremer instances a feeling of persecution develops, and if it be continued long enough, that way lies insanity.

All this discussion is no mere empty theory ; it can be verified time and again from the history of patients suffering ultimately from nervous or mental disease. In an appendix will be found the autobiography of one who has tasted all the bitterness that can befall the lonely child and youth and who ultimately came to reside in a mental hospital.

Every one prefers to be alone sometimes ; but continuous solitariness is always an enforced choice. To boast that one's own company is best is to make a virtue of necessity. But much usage makes the position bear less hardly, and the adolescent may manage to console himself with heroic assiduity. This he does mainly by day-dreaming in excess, which is not the least important of the morbid results of exclusion from the group to which he would naturally belong. The principal types of day-dream have been recounted in another chapter. The consequences of too much day-dreaming in a solitary youth or maiden need alone be exhibited here. It is not, however, suggested that excessive day-dreaming and solitariness are alone sufficient to produce such disastrous results as are about to be depicted. It is only suggested that they involve a danger of such results, especially if a third factor, hereditary or individual, be added.

Harry was 15 when he first came to my notice. He had not been getting on well at school, and had been kept in the same form three years in succession. He was physically small and immature and not at all good at games. The other boys mocked him at times, for he did not seem to be good at anything, and they found he had not the muscular

strength to retaliate when they provoked him, or the mental agility to make fitting replies to their gibes.

But Harry came of a distinguished family and was secretly both proud and humiliated—proud of his ancestors, humiliated because he seemed so little able to emulate them. His feeling of humiliation was accentuated by the attitude of his father, who never ceased to let his disappointment in his son be felt. Harry secretly worshipped his father who had a distinguished career before he retired. An echo of the family tradition was preserved in the boy's middle name, which was, shall we say, 'Nelson'.

At school it was noticed that Harry became more and more wrapped up in himself after his failure in promotion. What was happening was that he was abandoning himself to his day-dreams of prowess, physical and mental. Soon he became so abstracted in them that he lost contact with the real state of affairs; seemed no longer to take it as actual, and behaved in a way that appeared to his schoolmasters merely idiotic, since his manifestly high-flown happiness had no substantial basis. Hence he was brought to see a doctor, to whom he said, 'I'm getting better—getting better at games—tennis, cricket and everything. My brain is getting clearer, I feel I am growing. I am hearing better and can understand music in a way I have never done before. Even languages are getting easy for me. I get headaches, but that is because my head is growing too.' He was lying in bed when he said all this, throwing his arms about and making gasping sounds. He explained that his muscles were developing and so was his chest. Needless to say there was no evidence of any sudden development: on the contrary, the signs of puberty were scarcely the average for his age. He added that he was happy, but indignant, the latter because his father, he felt, should have been knighted. Typically also he felt that the other boys at school had been talking about him, but no longer in a derogatory way, but because they too (as he believed) had noticed his sudden maturity.

The poor boy's mind was deranged. All that he said was untrue. To such a pass had his solitariness, his feeling of

inferiority, and his sensitiveness, greatly accentuated by his isolation from his fellows at school, brought him. Isolation alone could not have brought him to it, but it gave him the opportunity of brooding over causes of unhappiness nearer home, till in self-protection he devised his romantic day-dreams and then began to live in them.

It may be said that in Western civilization adolescence begins with one crisis and ends with another; both are avoidable. A wiser culture would see to it that both crises were the exception and not the rule. The first is the acquaintance with clear-cut knowledge of sex; the other crisis is the breaking of the bonds of home, which too often is more of a rebellion from infantile dependence than an initiation into adult life.

The sexual life of the adolescent is apt to be stormy, since he usually comes upon puberty unprepared. The vast majority of persons who are now adults received no sexual instruction worthy of the name from their parents or teachers at any age; much less at the time they were entering their 'teens'. It is an extraordinary commentary on our modern notions of morality, that the first word breathed to a boy about sex by his parents may be a hurried warning about the reputedly awful effects of self-abuse, given in a taxi-cab on the way from the station to the portals of his first public school; or in the case of a girl, on the eve of her marriage, when she may be told that 'whatever her husband does, it will be all right'. These vague and mysterious words are an actual quotation. Some young women do not receive as much, although on the whole they hear more about sexual functions from their mothers than boys ever do from either parent, since most mothers appear to warn their daughters to expect menstruation, and even give some indication, usually very vague, of its significance. All this applies more to past than to the present generation of adolescents, who are informed in a slightly higher percentage than any preceding generation for the last seventy years at least. Naturally the vast majority of children and adolescents pick up scraps of sex knowledge for themselves, but equally naturally

it is a patchwork structure and apt to include some serious errors and misconceptions. Too often when the bare but accurate details become known, the adolescent boy or girl receives a painful surprise. It means a revaluation of this world, and especially that most intimate part of it formed by his own family circle. That his parents should have concealed an important matter from him, or actually muddled him by their answers (babies in bottles, or in doctor's bags, or under gooseberry bushes and so on) is bad enough ; it is perhaps more upsetting to think of their own relationship to his own being. Of course the average adolescent recovers from the shock, and ultimately seeing their difficulties, develops a half-humorous, half-pitying tolerance in his mind towards these well-meaning people, his parents. But some react by a complete reversal of their previous attitude of aloofness from these matters, and increasing freedom becomes a kind of obsession to them, or they rebound from interest in the opposite sex altogether as something bestial, or, more often, resort to homosexuality. The sense of wrong engendered by the current beliefs about the harmfulness of masturbation (*v.* Chapter I) accounts for much misery among the youthful of both sexes, but especially boys. The feeling of guilt may be so profound as to produce not only depression and hypochondriasis (fear of harm to bodily self) but 'ideas of reference', i.e. ideas that people are looking at one and talking about one.

But the psychical effects of erroneous conceptions about the effects of masturbation are more limited than those which follow from homosexual factors, and misunderstandings about these. Homosexuality is, in certain environments, the principal manifestation of sex during adolescence. It is important to distinguish clearly the two senses in which the term 'homosexuality' is used. It is often employed in a purely technical way, applied to close friendships between persons of the same sex, or more commonly the affection of one person for another of the same sex, whether it be returned or not. Such affection or friendship need not, and in normal circumstances does not, have any physical component in

fact, and very often not in phantasy either. Such friendships are normal and necessary to every adolescent. They are the source of much happiness and good comradeship, and even of great mutual devotion. They give rise to some of the most disinterested actions of which young people are capable, and are less complicated, with fewer disasters, than most other forms of adolescent affection. It was this type of affection, begun in youth and continued into adult life, which made David say of Jonathan: 'I am distressed for thee, my brother Jonathan, very pleasant hast thou been unto me; thy love for me was wonderful, passing the love of women.' The last qualification is, however, an adult addition; although it might have been added by an adolescent, with a quite characteristic assumption of all knowledge and a characteristic adolescent cynicism, based perhaps on a more or less unconscious dread of heterosexual affection.

Affection of this kind may be between contemporaries and is then frequently mutual. Not uncommonly it is for some one older, usually some one in authority, outside the family, especially a schoolmaster or schoolmistress. Commonly also it passes painlessly when other interests develop. While it lasts, one of its products is hero-worship. A number of novels have portrayed examples of this sort. In a previous paragraph examples have been adduced of the abnormal results in the shape of suicidal threats in more intense attachments of this kind. Handled wisely, however, such forms of affection cause only beneficial or at least harmless results in ninety-nine cases out of one hundred.

There is however another kind of homosexual relationship, which may have nothing at all to do with affection, and a great deal to do with sex. It is produced very much by environmental conditions, especially the proximity which occurs in public schools, and the kind of atmosphere of example which obtains in many of them. This type involves physical practices, usually mutual masturbation, and usually in the first place taught by an older to a younger boy. It is particularly the 'prettier' type of boy who is singled out for this kind of attention by his seniors. The effect is often

most unfortunate. It not only produces a profound feeling of wrongdoing which may continue into after life ; but it may have a considerable share in retarding or preventing the development of a whole-hearted interest in the opposite sex. When first learned, however, the practices are conscience-burdened *per se* ; later in adolescence they may occasion additional misery because of the obstacles they place in the direction of developing heterosexual interest, as well as the shame that is socially attached to physical homosexuality. The burden of conscience and the shame are greater for youths than for maidens, since somehow our civilization at least dislikes it more in men than in women. Women are permitted friendships of a closeness and intimacy which if they occurred in men would at once be suspect.

The hindrance to heterosexual interest probably comes partly from the fact that earlier habits are prepotent over later ones of a similar kind. The early direction of sexual interest into a homosexual channel keeps it away from a heterosexual one. There are, however, at least two types of homosexual. There is the youth of effeminate appearance, long and anointed hair, a mincing gait, a wasp waist, and some obvious affectations in dress. He is aware of no heterosexual interest whatever. Usually he is an æsthete, interested often in the decorative arts or in women's clothes. This type of homosexual is no more responsible for his own peculiarities than the rest of us.

There is evidence that the reason for his effeminacy is to be sought in unconscious factors inhibiting what would otherwise have been the normal development of interest in the opposite sex (*v.* Chapter I). People of this type seldom feel any need for treatment. They have no desire to be made heterosexual and they often make the best of their position by a kind of bravado, by which they consider themselves as belonging to a type superior to the rest of mankind. They point to the undoubted fact that though they do not engender offspring of their bodies, many homosexuals of the 'pure' type (i.e. untouched by heterosexual inclinations) have been artistic creators of considerable achievement.

In the female the corresponding opposite is the tomboy girl who enjoys boys' games, prefers boys' company, develops a mannish style of dress as well as a masculine attitude and becomes devoted to younger girls whom she guides and protects, and in general plays a masculine role. This is more often motivated by a long-standing wish, conscious or unconscious, to be a boy, activated by a feeling of inferiority which she feels in relation to her brothers, or to other boys. In other instances the source of the 'boyish girl' is a direct rebellion against her own sexuality, which, from psychological accident or faults of upbringing, she abhors.

The other type of youth who has practised homosexuality has been homosexual largely by opportunity and finds himself capable nevertheless of interest in the opposite sex, but is troubled by the division of his interests and by the fact that all of them are not directed towards girls. For this type there is hope of ultimate happiness in marriage.

All through adolescence runs a current of heterosexuality. The affection is at first usually of the monastic kind. The youth worships from afar. The maiden has to find a fairy prince. But normally the distance between the lover and the "princess" type of object narrows. It begins to be possible to think of the beloved not only as a princess or a prince but as a wife or a husband. Consequently also a curiosity about sex is replaced by a curiosity about experience, and many adolescents of both sexes these days (there is nothing to be gained by shutting one's eyes) obtain some kind of experience. Virginity, even with girls, is with modern conditions much less common than fifteen or twenty years ago, not only in such chaotic societies as the United States, but in the relatively stable social organization of this country. It is said of the Trobriand Islanders that there is complete freedom between the sexes during adolescence, i.e. social permission (or rather tolerance, with a deliberate blind eye to what is happening) for promiscuity. The British Islanders are not so far from this promiscuity among their youth as some people think, although far from social permission of it.

This freedom does not prevent neuroses in those who permit

it to themselves, and its failure to act prophylactically is usually not dependent on the persistence of a social taboo, but on deeper factors of earlier or entirely different origin.

The other crisis marks the end of adolescence or the beginning of the end. This is the breaking away from the parental home, at least in the spiritual if not the actual physical sense of living elsewhere than under the parents' roof. It is the emancipation from dependence, moral and material, the assumption of complete responsibility, and the renunciation of the privileges which surround the child and the adolescent. Too often the process is a rebellion instead of a gradual emancipation. Dr. Samuel Gee once remarked that 'some parents are foolishly fond of their children', and it is this foolish fondness which gives pain to themselves and considerable unhappiness, sometimes lasting, to their offspring.

What chance or early happiness has a youth like this? :

Sidney T., age 18 years 11 months. This young man was brought up to hospital because of his dreamy and childlike ways, and was said to be unable to do anything unless some one was with him. If left alone he sat and mooned. When out walking he would often stop and stare at nothing at all and then go on. At home, in the same way, he would often stop whatever he was doing, whether dressing or working, and would sometimes sit talking to himself. If given shoes to clean he would spend the whole evening doing one pair and was in every way reported as being very slow. He clung to his mother's apron strings and was very upset if she called any other boy 'son'. He cried easily, was inclined to grumble and sometimes exhibited bad temper. If sorry about anything he would come and cry on his mother's shoulder.

His history threw a certain amount of light on his behaviour. He had never been allowed to play games on account of ill-health, although this did not appear to have amounted to anything more than a tendency to catch cold easily. He was said to have had a bad heart, but there was no evidence of this when we examined him. He had been anæmic for a time, but this had been cured. However, his reputed poor health had prevented his taking part in games with other

boys, with the result that the boys laughed at him and teased him and he made no friends.

He was said to have been caned twice at school and on both occasions to have developed what was probably erroneously called chorea, or St. Vitus's Dance, immediately afterwards. He had belonged to the Scouts but gave them up. At one time he attended a church club but would not join in the games but sat in a corner and cried.

Physically, when he came to hospital, he was in fact quite free from organic disease, but was very tall and very undeveloped.

The real clue, however, to much of his behaviour came from what was discovered about his mother's attitude. She had babied him to an extraordinary degree. He was not even allowed to wind his own watch. His mother had taken to washing him and bathing him, as she had observed to her dismay that his neck was dirty on a state occasion.

His mother especially, but also the entire family, were quite convinced that he was abnormal and the mother was somewhat ashamed and anxious to hide from the neighbours how different he was from others. At the same time she was very proud of the patient's devotion to herself and thought she meant more to him than to any of the others. She recounted with pride how he told his father that it would be his mother whom he would miss when he left home. She was certain that his delicate health had been at the bottom of all the trouble; she had been delicate herself and so was able to understand him, and was convinced that he would have broken his heart through his sensitiveness if she had not looked after him as she had.

The boy began to improve not only in his happiness and conduct but also in his general health as soon as she began to act on our instructions, and the boy actually, to her surprise, developed a definite ambition to get away from home and live in a hostel.

This is a grotesque but not an exceptional example. Other, far more subtle instances of parental dominance and envelopment keep on cropping up in any psychiatrist's consulting-

room. Very often the conflict between submission to parents on the one hand, and on the other hand the natural wishes and desires of adult life, has such deep sources in the past history of the childish and adolescent eras that, in the manner of the iceberg, only a fraction appears on the surface of the adolescent's consciousness, and a neurotic illness is produced. A girl of 19 exhibited the hysterical results of this type of conflict neatly. Her symptoms consisted of so-called choreiform movement of the head and neck. These movements had begun just after a young man whom she knew well had departed for a foreign country. She had been going about with him occasionally for two years, and he had been pressing her to marry him. He was anxious that she should return with him to his post abroad, and shortly before his departure she had refused him. She could give no definite reason. She was very fond of him, and the necessity for making a decision had thrown her into a state of extreme hesitation for some time. About the same time as his departure, she dreamt that she was on a station platform (the station at which she saw him off) and that suddenly the platform tilted and was covered with green snakes. In the dream she was very much afraid. The other side of the picture was given by her relationship to her home and especially to her mother. She was an only daughter and her mother's principal companion. Her mother, although she did not openly object to her daughter's marrying, was more than reluctant to lose her to any one else. The young woman was very much tied to her by affection—so much tied, in fact, that while more interested in the young man, she said she 'would never leave her mother'. The tug-of-war between her filial affection and her natural desire for marriage was severe enough, however, to give her both her dreams and her hysterical chorea. In the dream, sex was symbolically represented, and accompanied by conscious fear, and association of the railway-station with the young man's departure showed in what particular quarter the danger was apprehended. The symptom was the expression of the tug-of-war; its true symbolic significance can only be guessed at; but its effect

in disabling her, although she remained at home, was a measure of the strength of the other side of the conflict, the desire for marriage.

Pseudo-emancipation is a deceptive phenomenon unless the signs are known. It often happens that the adolescent leaves the parental roof, and is apparently managing for himself. But he drags with him his customary feeling of dependence, and longs for evidence of the affection of older people who shall stand in the same protective relationship as his parents did, or (perhaps more frequently in this connexion) that he longed for them to give him. Consequently some suitable substitute for father or mother is chosen without any consciousness of the reason for the desire, and dependence in an emotional sense is as complete as ever, carrying with it perhaps as much handicap for independent and satisfying life as ever was implied by dependence on the actual parents. The normal upshot is that after a few disappointments with much heartburning and lowness of spirits the adolescent realizes dimly what is happening and ultimately adopts a more self-reliant attitude, choosing his objects of affection from among his coevals. But sometimes, especially where the resulting disappointments and conflicts have produced a neurosis, the process has to be induced and facilitated *in vitro* as it were, by placing the young man or woman in an environment where these difficulties are technically understood and an attempt is made to show the patient, as he is, what he has been attempting to do and why it has brought him no satisfaction. It is, however, necessary to bear in mind that some degree of transfer of affection from parents to older persons outside the family circle is a normal stage in development. Only when the new objects of affection and esteem have to be strictly homologous with the old 'imago' of the parents, does the problem become pathological.

The next step following the development of affections towards persons outside the family circle is the progress towards the adult type of love that makes happy marriage possible. This progress also is often hindered by the drag of past loyalties to parents and other older persons who

have served as parent substitutes. The result of such a conflict between the older and more infantile attachment and the newer attempt at an adult affection, shows itself in such a hysterical condition as was displayed by the girl described on p. 230 or in a psychoneurotic anxiety-state such as was displayed by a young man who complained that every time he met a young woman in the most ordinary social way, he had a violent attack of fear which he could not explain, but which caused him to seek constant refuge in solitude.

Work. No less important than the establishment of individuality and independence, and naturally bound up with them, is the choice of a career, which must usually be made either in the teens or early twenties, or in that still later adolescence which is characteristic of young University men, who suffer from living *in statu pupillari* till they are some years over 20.

One of the most glaring gaps in our social organization is the haphazard nature of the arrangements for placing those who have just left school or college in the career for which they are best fitted. A study of the determinants of choice of a career in a number of boys leaving school was made by Valentine and Ritchie, with these results. The boys, principally 15 or 16, were asked to write down in confidence the profession, trade, or occupation which they intended to follow, stating carefully their reasons and the persons who influenced them most. Certain precautions, such as anonymity, were taken to ensure as much frankness as possible in the answers. The feeling of special aptitude came only fourth on the list of reasons, and even here the actual facts did not by any means give a sound reason for the choice. This feeling was often based on a liking, and capacity for, certain school subjects. It is a reliable guide only when the occupation involves work very similar to that done in school,—as for example, carpentry, engineering, chemical analysis, and draughtsmanship. But a liking for carpentry will not ensure happiness and success as a surgeon; nor, on the other hand, would a real enthusiasm for chemistry reconcile a boy to the work of a pharmacist, who may spend most of

his time 'handing patent medicines over a counter'. Among other reasons of an allied kind were those based on an ignorance of the real demands of the chosen occupation. Thus, one mother had suggested that her son should become a dispenser, because he was 'rather good at Latin'! Other boys had ambitions to be bank clerks because they were good at mathematics. Errors of this kind are less serious than some which we have to deal with, as they could readily be corrected by properly informed advice. The most frequent basis of all for choosing a particular kind of job was a fancied liking for the work. Next in order came 'good pay', and third on the list was 'security'.

It is not, therefore, surprising to find that occupational misfits and 'occupational instability' or frequent change of job is not a rare factor in adolescent or even adult discouragement, and in mental breakdowns. It should be said, however, that both occupational misfit and especially occupational instability are probably more often a result of antecedent emotional or intellectual inadequacy than a cause of it.

Occupational Instability. The most readily understandable case is that in which a mentally defective (usually feeble-minded) person is dismissed from job after job before his infirmity is properly recognized. We have known such a lad have sixty jobs in two years. But the emotionally unstable person, whether his emotional instability depends on the family constellation and upbringing in the ways already discussed, or whether he is of the temperamentally defective type of person in whom the causes are congenital or inherited, is equally likely to change his job, not so much because he is dismissed from it as because he lacks perseverance and is always fancying that he would be happier at something else. Such instability of aim is sometimes fostered by the over-indulgent parent, who has done much in the first place to produce it by leading the boy to expect more or less unconsciously that all his elders and superiors will spoil him as his father and mother did.

Occupational Misfit. This is more frequent and in a way more disastrous than occupational instability. It is service-

able to make a distinction between these two terms, occupation misfit referring to those cases in which the subject is reasonably stable in himself and does not suffer from any serious lack of emotional or intellectual assets. In this sense, misfit is more serious, since it denotes a waste of good material. The youth who might do well in a career for which he was temperamentally and intellectually adapted, rusts in discontent and mediocrity. It is not enough to say that 'genius will out', that a good man always comes to the top. Genius is very uncommon, while merely superior ability is far more likely to assert itself if its start in life is well chosen.

It is not my experience that actual nervous breakdown in adolescence is common from this cause; the optimism of youth carries the burden well enough: there is always hope of better things in the future. It is in adult life and middle age that the effects of occupational misfit begin to be felt. Prospects prove illusory, the work is boring, having been long now mastered; inertia as well as lack of apparent openings elsewhere make it difficult to change, besides unwillingness to make a temporary financial sacrifice and live on what would have been sufficient in adolescence; other ties, of marriage, have been formed, with their corresponding responsibilities. Also for most men it is difficult to begin to envisage a new career after 30-35. Only a Ford or a Freud has the courage or ability for that.

Nevertheless there are some instances of adolescent breakdown in which occupational misfit has played a considerable, although very rarely the only, part. For example, a young man came to hospital complaining of exhaustion and of slowness at everything. His occupation was, shall we say, that of a shoemaker. He had lost his last job because his employer had found him so slow; and other jobs had been lost for the same reason. He was then 31, unmarried, and had worked at his trade since he was 15. He had very few friends, but had become accustomed to his loneliness. I asked him why he had so few friends and he replied that he had not been at home for some years, having been forbidden the house by his father unless he would eat humble pie and

apologize for daring to quarrel with him some years ago. It was difficult to see by what serious offence this rather mild young man could have raised such wrath ; he did not drink, nor use foul language, nor did he even permit himself to smoke. The father, on the other hand, was one of those ' strong ' characters, the son being his complementary opposite, probably as a direct result of the lifelong parental domination. His trade was not that of his own fancy, but of his father's. The latter had insisted on his being a shoemaker, ' he would see the wisdom of it later on ' ; and a shoemaker's apprentice, willy-nilly, this boy of 15 had become. Thus he was forced into an occupation for which he had neither inclination nor aptitude, and had thereby perpetuated his unhappiness and his inefficiency. One does not do things easily against the grain, one does them neither as well nor as quickly. His slowness at work was the result not simply of lack of aptitude but of distaste as well. It is true that the victim rebelled at last, but what slow drudgery might not have been spared, and what happiness gained, if the father had been less uncompromising ! A similar state of affairs is sometimes exhibited by the person who puts himself in an occupation which he can compass perfectly well, but which is much beneath his ability. For example, a young woman, a telephone operator, complained of attacks of faintness and dizziness which occurred at her work. Physically she was perfectly sound ; intellectually she was considerably above the average and had won a scholarship at school ; but on leaving, she had to take a post which would bring remuneration quickly, as her father was dead and her mother was largely dependent on what her daughter could earn. Her desire to be a schoolmistress was thus frustrated and she became a telephone operator. The technique, such as it is, was easily mastered. This done, the work became merely monotonous, giving her ample time to ruminate over her frustrated career, and later (in the sequence which is common) on her health. The usual hypochondriacal consequences ensued.

Those who suffer in this way usually fail entirely to realize the very real part played by their occupation in their break-

down. Paradoxically, where a person complains that his work is unsuitable, and blames his profession for his difficulties, one usually finds the actual causes elsewhere. There are not many neurotic patients who will not say that they loathe their work; but the intensity of their dislike for it is the result of blaming their job for their more personal difficulties. On the other hand, there is an immense number of people who cherish a sweet phantasy that they would have done much better for themselves in some other career; and this is often the basis for the negative advice to younger people to avoid that line of work. Definite occupational misfit can therefore arise in this way: that the person concerned believes, incorrectly, that he is better fitted for something else, and this causes discontent with his lot and inefficiency in his work. A youth of 17 recently showed this very well. This boy, who had been employed as a clerk by the same firm since he left school, had applied for a grant of money to enable him to give his whole time to education. He was a keen worker, had always been very ambitious and had taken evening classes regularly in subjects which his employer had told him would be useful in business. He began to realize, however, that his prospects were limited in his present occupation and he conceived the idea that he was at a great disadvantage in not having had a University education. He therefore proposed to do one term at a public school and then go to Oxford. He believed, with some justification, that if his father had not been killed in the war he would have been sent to a University; and he felt that he was entitled to the same chance as he believed that his father could have given him.

Reports from his evening classes showed that he was very regular in attendance and very industrious, but that his general knowledge was poor, his progress at a foreign language unsatisfactory, and his essays in economics 'not of the best'.

At home he had always been serious, obedient and rather solitary, quiet, and shy. He always refused to have anything to do with any one who was not a social superior.

An intelligence test showed that he scored 89 per cent on the Binet-Simon scale, which, when all allowance had been made, showed that his ambition was far beyond his capacity. He had hoped to enter one of the Services. He was advised to enter the ranks and work his way up as far as he could. One hopes that in this instance much unhappiness, culminating probably in a breakdown, may have been averted.

The modern methods of averting occupational misfit have been mentioned in the section on the measurement of intelligence and temperament.

CHAPTER X

ADULT LIFE

EVERY adult has to face difficulties from two sides ; from within and from without, from his own past and from the circumstances which he encounters from day to day. He carries with him the scars of past conflicts as well as the confidence born of past triumphs.

From another aspect, it is as though the mind of every adult were historically arranged in strata, after the manner of a geological formation. The earliest, or to use the psychological term, the infantile strata, are the deepest : the uppermost layers are the deposits of the more recent experiences. The uppermost are like shifting sands ; they have not yet been welded together into a coherent whole by the influence of emotion and habit as the deeper layers have.

At irregular intervals the stratification is interrupted where upthrusts have taken place, either from the result of pressure from the depths or from conflicting pressures in the same layer. The upthrusts are ' faults ' in the strata, from which tremors readily radiate throughout the entire mass, and which may be likened to general emotional disturbances affecting the whole conscious surface of the mind, like depression, elation or anxiety ; or the faults allow to appear a volcanic manifestation of some pent-up emotion from the deeper layers, the very depths of the mind, in the form of a phobia or panic.

Yet another simile, borrowed this time from Freud, will help to illustrate, from another angle, the complexity of adult mental structure. Excavation of such a city as Rome shows, one under the other, the foundations of a series of cities built at different epochs. This is complicated enough, but before one can say this resembles the ' structure ' of the mind, we

have to imagine Rome with many buildings of the earlier foundations still standing among those of the present day, so that part of the city's activities are carried on within the limitations of primitive edifices, which moreover obstruct the efficiency that should be derived from the most modern buildings.

Yet all these figures remain inadequate because they are too static. For mind has that characteristic which Bergson declared to be typical of life as opposed to material things. It is always a 'becoming'. There is a constant flux and change as time goes on. The earlier layers of experience modify the later ones and in turn are modified by them. There is a coming and going among the different strata of experience; and historically different modes of action are brought to bear according to the circumstances encountered, or more especially according to the general state of integration of the mind at the time. The modifications of the earlier by the later have not always been progressive or continuous; nor is the progress simultaneously achieved throughout the whole domain. There are irregularities, patches of advance and patches of comparative recession. The clear-headed financier may be uneasy about spilling the salt.

It is not very difficult to trace the effect of early experience and influence in the causation of adult unhappiness, or in that supremely futile example of adult misery which is exhibited in most types of neurosis and mental disease. The easiest factors to trace are those which originated outside the individual, in the behaviour and attitudes of the people, especially of the family, who have surrounded him; the hardest are those which have worked with apparent spontaneity in the depths of the individual himself. Special processes have a kind of momentum; a trifling circumstance sets something rolling which goes on down the avenue of years of feeling and thought till by accretion it becomes a massive part of the individual's make up. It may even become greater than the rest of the individual's personality and may swallow him up in itself like a parasite that begins by clinging to and ends by enveloping its host. There comes to be a relentless inevit-

ability about the process of engulfing, so that an individual who begins by realizing what he is about at the instigation of his complex finds himself more and more at its mercy, and ends by identifying himself with it, like the grandiose egotistical hero-villain of *Hatter's Castle*, who began by seeking to dominate the society of the little town of his birth, and ended by ruining himself and killing half his family. Such a man's history is directly homologous with that of the person whose childish egotism goes unchecked and grows until he believes himself King of England.

However, although the possibilities of purely internal strain and stress are great from the beginning and the intrinsic momentum of a complex is great too, experience also shows that, in the beginning at least, environmental factors usually play a considerable part in laying a faulty foundation on which the adult's personality is subsequently erected. No one who has had to do with the history of neurotic or insane adults can fail to be struck by the frequency with which oddities of parental training and example play a part. Truth is assuredly stranger than fiction, in the private lives of many of our fellows.

The Influence of early Habits. It is simplest to begin with some direct examples of early influences, chiefly parental, producing signs of unhappiness and symptoms of neurosis in persons of adult years.

The early formation of habits, which may or may not be closely akin to physiological conditioning, means that all objects, i.e. persons with a similar meaning to the individual, tend to be reacted to in a similar way, unless conscious correction steps in or further experience erases the habit.

It is partly for this reason that the modern methods of psychotherapy depend on retracing the patient's history in minute detail, so as to discover the prototypes of the patient's present behaviour. These prototypes are found especially in the relationships to the early family circle. The self-same jealous affection, anxiety, obstinacy, domination, submission, selfishness, timidity and the like which have been described in the chapter on children are found repeatedly in disguised

and complicated forms in the nervous and mental illnesses of adults. They have become stereotyped, so that the neurotic is still a child in many ways. But instead of punching his hated brother in the eye as he wanted to do as a boy, he envies all men more successful than he ; instead of openly defying his parents he goes about with spitefulness in his heart towards his employers (parent substitutes) and develops a compensation neurosis on slight provocation ; and instead of merely being selfish and doing whatever he pleases, he drinks excessively to cover the frequent effort at self-abnegation involved in married life. The spoiled child, become a woman, feeling she cannot get her own way as of yore, develops aches and pains and so attains her end indirectly but with even greater effectiveness of a kind. The timid youngster, accustomed to all kinds of protection from an anxious mother, grown up, wants all the time to make his income secure, does not allow himself a holiday, or chooses a safe job with a pension attached ; hoards his money, marries an older woman (mother substitute), limits his family, is afraid of travelling in trains or buses, and consults doctors from time to time for symptoms which are purely the result of his anxiety.

A middle-aged chemist presented himself with the following complaints, and the belief that he had injured his brain. He complained of feelings as of water running down his head and legs, jerking of his limbs on waking, attacks of falling, without hurting himself, and prostration.

His family history was that he was an only child. His mother was very nervous and ran away immediately after marriage. She came back, but was ' worried to death ' by her husband. She was very frail, and died when the patient was still a youngster. The father was a successful business man who retired early, saying that business was no longer worth the trouble. He was domineering, tyrannical and hypochondriacal, and was very old. He had had falling attacks in which he did not hurt himself, and had also threatened to throw himself out of the window. Frequently he summoned his son to his ' death bed ' but always revived. He lived alone for many years and cooked his own meals. He

finally had a housekeeper, but for a time the patient (even after the latter's marriage) did some cooking and cleaning for him.

The patient attended a school until he was 12, but was removed after a small misdemeanour. He had been kept short of pocket-money. He attended day-school for a time and then began to train for the Civil Service, which ultimately he 'funked', so that at 17 he went home to help his father, who persistently bullied him. Against the wishes of his father, who desired that he should live as a 'gentleman at large', he resolved to train for a profession. His father declared that he would never pass the examinations; but he succeeded in doing so. He met a girl and wished to marry her, but his father opposed it. It was nearly ten years before he resumed the battle, but at last he married, still against his father's wishes. During the honeymoon he was very moody, took very cheap lodgings (he was in fear that his father, on whom he was largely dependent financially, would cut off his income), and on a summons from his father went to him for several days without explanation.

Gradually he began to suffer from the symptoms mentioned. He went to a foreign Spa, but a telegram from his father to come at once as he was 'dying' interrupted his sojourn abroad. His father was simply in the midst of another dramatic episode. The patient continued to consult specialists for his feeling of weakness and malaise. He became increasingly depressed about himself, gave emotional displays, saying that he was paralysed and about to go mad, falling down (without hurting himself), taking tender farewells of his wife, and on one occasion climbing his bedroom wall and singing.

When admitted to hospital he lay quietly in bed, answering questions promptly and to the point, but at times he was very restless, looked distressed, and on several occasions behaved in a dramatic fashion. On the most notable of these occasions, from being apparently depressed and miserable and agitated about his sins, he suddenly got up and danced dramatically, saying 'Let us be merry' and smiling in a

forced, dramatic way. He also fell once and inquired the reason carefully. His only topic was his ill health and the reason for it.

The outstanding general features of his illness were his hypochondriacal attitude and his dramatic exhibition of symptoms. Both of these were directly copied from the paternal example. It is true that his dramatization was more refined than his father's (a fact to which he himself drew attention as proof of the genuineness of his symptoms), but he was a well-educated man.

As for the factors which caused him to have symptoms at all, they are also referable to his father, his incomplete emancipation from whom, both effective and financial, was largely responsible for the misfit which was so apparent from the beginning of his married life and which was largely responsible for his ultimate breakdown. The hand of his father was also seen in another important factor—his lack of definite occupation. Jointly to his mother's early over-solicitude and his father's hypochondriasis he owed his reaction pattern of apprehension about health.

It is generally supposed that it is the mother's rather than the father's influence that makes a milksop of a boy and a fussy hypochondriac of an adult; but the patient just described owed most of his disadvantages to his father. The next patient was more in the general tradition.

He was a man in the middle thirties and complained of headache, insomnia, giddiness, 'dullness in the head' (which 'did not seem to react to new impressions') and depression.

His father had been 'very nervous' and used to complain to the patient of similar symptoms, saying that he felt dazed. He was an anxious, miserable, insignificant little man, whom the patient's mother was said to have married only after much doubting and persuasion. The latter was a fussy, irritable, active woman, who made all decisions for her husband.

The patient was a very nervous child. There was a continual atmosphere of strain at home, owing largely to his father's condition and to money difficulties. His mother was restless and nagging. She had 'come down in the world'

and would not permit him to play with the village boys, of whom he was terrified and who used to take advantage of his timidity and puny physical frame to frighten him. There was only one family of children with whom he was allowed to associate. They were older and often away at school, leaving but one boy whom he frequently played with. His mother discouraged him also from mixing with the boys at school, as they had 'a rough accent'. The patient felt that by them he was considered a fool at games, but not at work, where he excelled them. At seven his mother showed him an open grave and 'told him about death'. At this time he made his mother promise that when she died he would be killed and buried with her 'in a way that would ensure his resurrection'. He was for a time after this preoccupied with the idea of eternity. The religious discipline of home was strict, family prayers occurring twice a day and no play being allowed on Sundays. There were no boy's books in the house, which was stored with volumes of the type of *The Mourner's Comforter*. The patient was fond of being by himself and of reading, and a governess was obtained for him. At 15 he passed an exam. for a post in an office and subsequently lived in London on his meagre pay. He continued to be fond of solitude and study and got through his exams. for promotion easily enough. He spent his evenings in classes and at religious work. Not infrequently since childhood he had throbbing headaches. He remembered a servant who worked in spite of a headache and he wondered how he would be able to carry on in the world with a headache. In the early twenties he had very bad headaches, felt depressed and was sent on a sea voyage. He had until this time scrupulously avoided theatres, dances and social enjoyment of all kinds, and had taken an earnest part in religious affairs. But on his voyage he had 'a new vision of life' and changed his attitude considerably. No doubt the emancipation from home influences and the mild sense of adventure in the voyage caused this. After a period of two months in which he felt perfectly well, and during which he became engaged, he broke down with the usual symptoms and the marriage

was postponed for some years. He continued to have episodes of headache and depression about once every two years until the year of his marriage. Since that time he did not suffer so much, but felt that he was becoming duller, that he had less energy and that he was deteriorating as his father did.

Although the family history points very strongly to a hereditary illness of an affective type, the patient's mode of thinking and feeling was very much coloured by memories of his early environment. Even when well (for him) he lacked a feeling of assurance. He had never known a care-free family life and deplored the lack of it. The question of illness was always in his mind, more or less consciously, and he remembered vividly his father's dullness and lack of initiative, anticipating the same decline in his own faculties. Calculated to increase the gloominess of his trends was the kind of religious training he received. Nothing was more likely to accentuate his tendency to retire into himself, to examine his own feelings, and to increase his lack of self-confidence, than the policy of seclusion from 'rough boys' and of general protection practised by his mother. The first attack of definite anxiety would not in all probability have recurred had he received any definite instruction in sex matters (in place of none). His maternal attachment, to some extent inevitable in view of his father's condition, was fostered by his mother's injudicious attitude of solicitude, protection and actual dominance. If he had an innate tendency to nervous and mental disorders, his early training fostered it and converted it from a possibility of morbid reaction to a confirmed habit.

Such unhappy people illustrate the influence of general unhygienic environmental factors on the production of unhealthy personalities who under stress, such as bereavement, engagement, marriage, disappointment in career and domestic difficulties, break down with definite nervous or mental illnesses. One of the noteworthy points is that few of such people are healthy personalities, even at their best. They are in a sense always ill, because they exhibit at all

times habitual reactions of a practically useless kind acquired by example, precept and imitation from their parents, teachers and coevals. The illness consists in a further use and elaboration of such reactions (symptoms) along with the revival of others previously learned.

It can be shown that there are specific correspondences between the kind of parental or other home influences that are exerted on a child or adolescent and the kind of neurotic symptoms that he subsequently develops. The imitation of hypochondriacal complaints which has already been illustrated is a banal example of this interdependence. There is space only to indicate one other variety. The following instance represents the results of the relationship between a domineering father and a submissive son whose submission was closely associated with an excessive attachment to his mother. The genesis of this maternal attachment was, however, a much less obvious thing than the causation of his submission, on other grounds, to his father.

An American of middle age complained of depression, irritability, feelings of pressure on head, fatigue and jerking of limbs. The father had been a silent domineering man who bullied and overawed him in his boyhood by his size and reputation. His mother was also of a domineering type.

At school, by order of his father, who was agnostic, he was not allowed to participate in the school religious observances. This led to ostracism by the other boys, who could not understand this abstention. His father also kept him from Sunday-school and he spent Sunday afternoons in solitary walks. He was clever at school, took prizes, and under pressure from his father was pushed on at school so that he was always much younger than his classmates. He felt timid of these elder boys and was bullied by them. His clumsiness at games did not help. On leaving school, he entered an office on his father's advice, but was 'treated with contempt' there and felt depressed. His father took him away from it after four months and sent him to study abroad. He took his degree after four years there and was happier and healthier at the University than ever before or since. He then entered

an office and changed after a time to another employer on his father's advice. (There was no prospect of experience or promotion in his previous job.) When war broke out the patient hesitated about going because he felt that it would be 'disloyal to his mother' (who was of enemy nationality). Finally, with grave doubts, he enlisted and obtained a commission, but was soon invalided home with symptoms of 'shell-shock'. He recovered and remained well until after the war, when he broke down and entered hospital for twelve months. His symptoms consisted in dislike of 'closed spaces' and 'the general difficulty a neurasthenic has in facing the world and earning his bread and butter'. He became engaged to a maternal type of woman and immediately afterwards obtained a post in another office. He was depressed and diffident during his engagement, but he succeeded in marrying. In the office promotion was slow. Within about a year he felt that he had been too optimistic about his pay and his prospects. His pay, with a war pension, was just sufficient to meet expenses.

The condition for which he ultimately came to hospital developed gradually over a period of three years and consisted in an increase in some of the symptoms for which he was pensioned after leaving hospital and in the addition of some others. He complained that no one in the office was interested in the things—art, literature, etc.—in which he took delight. He felt that he was an underdog exploited by the wealthy capitalist class. He was irritable towards his wife, but every week he visited his mother and listened to her advice.

On admission to hospital he was mildly depressed and at times he wept in reciting his woes. He was extremely sensitive about his ability to maintain social appearances on his salary and it was in connexion with this that the Socialist trends noted above appeared. He very frankly admitted that his symptoms were psychological in origin.

All his symptoms readily disappeared while he was in hospital. He discussed his problems readily and had in general a dependent, somewhat emotional attitude, tears

coming to his eyes readily when discussing his difficulties. He adopted the view that his symptoms were sustained partly for sympathy and that they were provoked by his shirking the responsibilities which marriage had brought him.

This patient had been constantly guided by his father till long after adult years were reached. Sufficient emancipation was attained to enable marriage to take place, but not happily, and a breakdown followed the father's death, which occurred some time after the patient's marriage. He had been ailing since marriage, since he found it too difficult to sustain the responsibility of marriage without the paternal guidance.

It has been said that a comparatively insignificant turn of events may be sufficient to set going a process which may evolve spontaneously into an important part of the personality and may ultimately form the main characteristics in the individual. Some or most of these characteristics may be unhealthy if the process proceeds too far by its own momentum, or if it be exaggerated by some accidental circumstance, or fail to be balanced by some other healthier aspects of the personality. The most obvious example of an intrinsic process of this kind is the exaggerated development of self-centredness, egocentricity, narcissism, the will-to-power, call it what you will, which results in its minor degrees in vanity, selfishness, conceit, and in its more intense developments in grandiose pomposity, Kaiser Wilhelmism, actual delusions of grandeur, and other manifestations of what has been described in a previous chapter as the 'Jehovah complex'. There are two stages of development of this complex which may be distinguished for convenience of description: the stage in which the individual is striving to be of unusual importance in his own eyes at least, and the stage where he has arrived at a belief in his own importance. The first stage is that in which most of our so-called 'neurotics' as well as most 'normal people' are engaged. Neither succeed in being so sure of themselves that some awareness of inferiority, of shortcomings not only from their ideal but even from that which they assume to be the average, does not exist alongside

the striving for acknowledged superiority ; but the neurotic differs from the normal in having both the feeling of inferiority and his seeking after superiority intensified. Consequently he has to compare himself with nearly every one he meets, and with his contemporaries especially to be continually measuring himself. This leads to critical derogation of others, so as to enhance his own prestige—a self-inflating device which the Americans picturesquely describe as ‘ hoisting one-self up by one’s own boot straps ’—but it has its disadvantages too, in that usually he becomes more acutely aware of his own failings. He knows quite well, although he will not admit it to any one, not even to himself, that his criticism of others is based on his own feeling of inadequacy. In his envyings, strifes and jealousies he finds no real satisfaction. On the contrary, the remoter kind of ambition of which these are the inevitable accompaniments, leads to unpopularity without and heartburnings within. It may develop further along two somewhat divergent lines. Either the discrepancy between the goal of ambition and the actual attainment is felt very acutely by the neurotic person, and the result is a chronic feeling of humiliation and inferiority ; or the gap between phantasy and reality is disregarded by the device of persuading himself more and more of the legitimacy of his own opinion of himself. The latter result is obtained at a far greater cost to efficiency and real happiness than the former. For the humble-minded there is always hope ; but your superior person has usually to be left to stew in his own juice. Usually the superior person goes through life committing the mistakes that arise from inability to criticize oneself, and still less to take criticism kindly from other people. In rare instances the phantasy of superiority grows so large and so important that it comes to be believed in preference to facts crudely obvious to every one else and so produces delusions of grandeur. The reason for a superiority-feeling attaining this degree of elaboration and reality-value, lies sometimes in the existence of an underlying and imperfectly repressed feeling of inferiority of great intensity which demands compensation. The more it is repressed by the device of inventing fictions to

contradict it, the more the victim of his own pride has to go on bolstering up the originally conceived superiority in face of the unpleasantness of real experience.

There is another way in which a 'Jehovah-complex' may be derived, and this is far more usual than asserting one's feeling of superiority. This method consists in protecting it by withdrawing one's conception of oneself from criticism. A person with this attitude shirks competition because he fears being beaten. At school he would not run races lest he come in last; afterwards he will not do anything unless he can do it well,—meaning, better than any one else. There is one kind of perfectionist whose work must be so good in his own eyes that he actually does nothing. Socially, the god-like person is shy, because social contact might bruise his egotism. As to marriage he cannot definitely choose any girl, because no girl can be worthy of so wonderful a creature as himself and because also she might get to know him too well and so find the gaps in his armour. For another reason also he cannot find a wife, because he has always the thought that if he married one girl he might meet others who would have made a much better match for him. In courtship, he cannot say, 'You are the most beautiful girl in the world', because he knows that there may be another more beautiful somewhere. He would like for this and similar reasons to have dissolution of marriage made easy, or at least to have a harem, which would include as many women as would have in the aggregate all the possible virtues and charms.

A Jehovah-complex makes a man sensitive, because he expects to find that other people do not love him as much or think of him as highly as he does of himself. Frequently also he is reserved, because the thoughts of a god when communicated to the vulgar are as pearls before swine, and the easiest way to a reputation for wisdom is the way of silence. 'Strong, silent men' are silent often because they have nothing to say, or if they do have something, are afraid to say it.

Some of the implications of the opposite view of oneself, that of inferiority, have already been set forth. Where the

inferiority arises originally not simply from comparison with an unattainable ideal but in association with a feeling of guilt for some supposed and forgotten (suppressed) misdeed, the motive of self-immolation may colour many of the important decisions of adult life. Marriage is sometimes entered upon by such a person without love, because he, or she, conceives that duty lies in the fact of marrying out of compassion [*sic*] for the other person. After marriage he may deny himself physical satisfaction, because it is felt to be sinful. In his work the same type of person fails to reach promotion, because he deems himself unworthy ; and hangs back where he might succeed. His friends say he has no 'push'.

Instead of a diffuse, partly conscious cause of maladaptation there may be a wholly unconscious determinant, and this may be either diffuse or local. Such unconscious determinants of symptoms have usually become unconscious because they have been repressed. Sometimes it is very difficult to know what makes such unconscious determinants begin to operate, after long periods of latency. At other times it is clear that some environmental fact, such as marriage or the prospect of it, has operated to set the repressed material ablaze. The simplest case of this general type is illustrated by such an instance as the following, where a single incident in childhood became forgotten but re-emerged indirectly in adult life as a fear of any one with eye-glasses or spectacles. To catch sight of any one so equipped caused a panic or even sometimes loss of consciousness (fainting). It was found that at the age of 4 this young man had met with a severe accident which caused blindness for a time. The recovery of his sight had been despaired of, and the child had known this at the time. However, he recovered completely, and the incident was forgotten until a psychological investigation undertaken for the cure of his unusual phobia revealed the incident. The recovery of the memory was sufficient in this instance to prevent recurrence of his attacks of panic or loss of consciousness. The precipitants seemed to be stressful circumstances—the death of a parent, change of occupation, and physical ill health.

It is, however, unusual to find that a neurosis in an adult is the result of a single psychic trauma like the foregoing. More often, where the neurosis results from repressed factors, these factors are closely associated with the affections, the loves and hates of early life. The precipitant in such instances is very frequently the prospect of forming new bonds of affection, especially the typical adult bond of marriage. States of morbid anxiety are extremely common during an engagement or its equivalent. For example, a young man may find himself developing a morbid fear of meeting people. Soon he finds that he cannot meet any one without a (to him) inexplicable panic, becomes inert in consequence and keeps to his own room for fear of the discomfort involved in everyday social contacts. Inquiry shows that the panics first occurred when he encountered an attractive young woman of his own age of whom he was becoming fond, and that this subsequently involves all young women, then women in general, and finally any one of either sex. Analysis shows that he has never taken any professional post which would be likely to mean a permanent separation from home. It is then discovered that the 'home' means principally his mother, whose influence still very deeply affects him, consciously as he knows, as well as unconsciously as he does not know. But his unconscious attachment is unearthed when, to his immense surprise, he has a dream in which his mother and he himself have had a child. It is the very strong attachment to his mother, which is thus demonstrated in the dream, that is preventing his making any friendships with marriageable women, and in the usual diffusive and over-protective way of neurotic symptoms causes a fear of all women. This phobia is the outcome of the conflict of old and new loyalties, with the victory, until treatment is instituted, with the former.

The problem of nervousness and mental illness can be tackled also from the standpoint of contemporary difficulties; although it is a moot point whether any one breaks down only in face of these and without some such handicaps from the past as have already been described. These difficulties

can be classified under the headings of marital, domestic, occupational and financial. Difficulties arising in connexion with marriage and married life are the most important. Apart from the predisposition to breakdown from earlier and undissolved attachments, the seeds of marital maladjustment and consequent neurosis are frequently present before marriage. The desire for marriage is normally compounded of affection and passionate feeling, to which is added sooner or later a desire for children. In the male, a passionate desire for possession of the beloved object usually preponderates considerably at first over the desire for children; but in women this preponderance is much less considerable, and indeed in many women it never exists. There should also be a certain amount of knowledge of the nature and function of marriage.

But in numerous instances in both sexes, the minimal amount of knowledge on these matters does not exist; and ignorance can lead to considerable difficulty, misunderstanding and unhappiness, not only in the earlier but in the later days of married life. States of anxiety, and depression, as well as hysterical symptoms, are common results of ignorance of sexual functions and technique. But this is not by any means the sole rock on which a marriage can founder. It is not even the usual cause. Perfect love casteth out fear; and a real affection can triumph over difficulties of that kind. The greater difficulties occur when for some reason or other both persons contracting to marry are lacking in affection.

This may depend on an unhappy choice, when either party is capable of normal affection towards somebody but not towards the particular person he or she is about to marry. But more often it depends on an immature development of the personality. The latter is too much bound up in himself or herself, or in earlier objects of affection, to be able to bestow the amount of affection on the other partner that is necessary for their common happiness. The other partner feels the lack of affection and becomes unhappy or actually depressed; but, if himself mature, does not become ill. It is the partner incapable of complete affection who is more apt to enter the

pathological realms—irritability, anxiety and the like. He or she may also show morbid jealousy (a projection of their own desire to go elsewhere) or depression, the conscious reflection of a wish to have the marriage undone. The husband may become alcoholic or go with other women, simply in order to express his hatred of his wife for inveigling him, as he now considers it, into marriage. For similar reasons the unaffectionate wife may become promiscuously interested in other men, or become depressed or show any of the other symptoms of unhappiness misunderstood.

Financial losses are much more apt to precipitate a mental illness in men than in women, as might be expected : and they operate principally in that way with men past middle age. Financial loss not only represents loss of security, but touches a good many men also upon their self-esteem, money having been the standard by which they measured themselves, so that loss of it becomes a great injury to their pride and self-confidence.

The psychological Changes of later Life. What a man should have come to possess in his later life has been well described as 'honour, love, obedience, troops of friends'. To grow old gracefully means to become less and less interested in oneself and one's ambitions and more and more in the prospects and affections of the new generation. It means confidence in oneself born of real experience, a feeling of security resting on achievement, and large funds of affection for others. Perhaps not many people achieve this degree of maturity even if they become nonagenarians. The psychopathology of later life is characterized by restriction of interest, increasing selfishness, too much concentration on health, too much care of money and an undue apprehension of death. When upon such an attitude there impinges some real disaster, but often even independently of any great external trouble, the signs and symptoms of distress result in an exaggeration of these unhealthy characteristics. The depressed elderly person is hypochondriacal, querulous, anxious and full of the fear of death. As a recent centenarian remarked, 'I hate everybody. I can't walk and I can't see and I can eat nothing but slops.

I have been wishing I were dead these last fifty years'. Remorse takes the place of comfort in contemplating the past, and the ghosts of past sins raise themselves as delusions of unworthiness and fears of appalling punishments.

These are purely psychological consequences of increasing years. Physical decay produces its effects on the brain, but not as a rule till old age, when memory begins to fail as the result of degeneration of the brain cortex, and with its decay mental energy and attention flag also. There are more bizarre results of the failure of higher (cortical) control. Instinctive tendencies that have been socialized or altogether repressed emerge on the surface. One old woman tries to bite the hand held out to her in greeting; another hoards any little thing, even to bits of newspaper in her pocket or about her person; yet another aged dement will play with his excreta as long as he is permitted to do so. Sometimes effects akin to those of age are anticipated by disease. The best known disease of this kind is general paralysis of the insane, the result of syphilitic infection attacking the brain in the prime of life. It is the cortical decay, with its psychological correlation in loss of judgement, that makes possible the bizarre delusions of this disease.

Conclusion. What, on the basis of the observations collated in this book, would be the first principle of a sound mental hygiene? Not complete freedom, certainly; but first of all personal idealism with which all the other requirements about to be enumerated could be associated. Upon these, in turn, the sanity of this idealism depends. Next we would have a biological viewpoint: that is, one which sees man's place in nature in the light of biological science, and man himself, therefore, as the most complex of all organisms in the most complex of all environments—not a mechanical but a purposive organism, and the individual man a unit in an endless but purposive series. This would prepare the way for the further conception of the individual as a member of a developing community, the interests of which must come before his. At the same time perfect sanity of mind would recognize that science is ultimately descriptive and not

explanatory of the first causes of things ; that there is always a mystery, and that whether this mystery is personified in a God or not, there is a religion of idealism in which the good, the beautiful and the true are sought always.

How would a man or woman with such a viewpoint as this marry, bring up children, and finally die ? He or she would consider humanity from a eugenic aspect, and if he were in doubt would consult some one skilled in eugenics as to the desirability of transmitting his heritable assets and liabilities to another generation. If the advice were against marriage, his life and work would be devoted to the service of the community. It would probably be neither possible nor wise (cf. Prohibition in the U.S.A.) to forbid experience with the opposite sex apart from marriage. That might be permitted until it was discovered to be a waste of time. If marriage were decided on it would be entered into primarily on a basis of affection and mutual regard, and passionate interest would readily take a second place. Children would be begotten as it was felt that they could reasonably be provided for ; and their education would be a primary duty of both parents, being delegated as little as possible to outsiders, at least in the first few years. A family life of affection and trust would mean the children's freedom from serious psychological hurt. Education in sex would begin as soon as the child showed any interest in it, and would be imparted gradually according to the child's capacity for assimilation and understanding. At about 10 years of age the first systematic attempts at estimating his capacities and future possibilities would be made, with a view to directing thenceforward his education along the channels most likely to suit him ; and at about 14 to 15, definite ideas about possible careers would begin to be formulated. Travel and sojourn abroad would be arranged for him, if possible, before he reached the age of 20, so that the adolescent's judgement might not be parochial. In the meantime social contact with the opposite sex, in the adolescent's own home especially, would be frequently arranged for, marriage being envisaged as a normal aim and reward and the right only of the

fit in body and mind. Team games would be arranged in preference to, but not exclusive of, games like golf or tennis. Health would be rigidly sought after, but seldom talked about. Fear would be realized as a biologically effete emotion, as indeed it is in our culture, apart from times of war. The attitude inculcated towards it would be that of the Elizabethans, of whom it has been said that 'They walked with the lightnings playing all about them, and they sang as they walked'.

The rearing of a family would automatically increase the social spirit of the healthy adult, so that by middle age personal ambition would be lost in the interest of his family and the larger society. Affection and tolerance, love, 'live and let live'—would be the rules of his existence, and finally in an ideal state the man or woman who felt that his usefulness in life was spent would be allowed to seek the permission of his peers to leave it; and dying, he might find that all the trumpets sounded for him on the other side.

APPENDIX I

THE AUTOBIOGRAPHY OF ONE WHO ULTIMATELY DEVELOPED A MENTAL DISORDER ¹

THE story is that of a sensitive, timid child who would have worshipped his mother but felt he was excluded from the full light of her affection by a self-centred father who showed no interest in him and who became an object of fear and dislike. Difficulties with lessons the child met with prayer; this failing, he developed both a guilty and a rebellious attitude: later he tried on one occasion to evade them by malingering. Compensatory phantasies followed, and he developed a very high idealism on the one hand with a vengeful irritability on the other, thus beginning a cleavage which entered more and more deeply into his mind as time progressed. Sexual experiences, which he encountered without any previous preparation, clashed with his idealism and further increased his sense of guilt.

In adolescence, feminine adoration surprised one who had long been accustomed to meet with ridicule, and he responded to it with conceit. His first love affair was mainly a phantasy: but when it conflicted acutely with reality he was ill-equipped to face the disappointment, and re-acted with vengefulness once more. Lack of confidence in his parents prevented his seeking any wise advice, and he took refuge, although very unwillingly, in the company of people whom he regarded as undesirable. This association augmented his feeling of guilt still further: the mental cleavage went deeper, the guilt was projected as accusatory voices, and his psychosis had begun.

I must have been an ultra-sensitive boy. My first remembrance is of sitting in a corner of the nursery holding a black cat for comfort. The days before school were a huge torment. School!

¹ Published by permission.

What was School? A going out into the unknown, away from the protection of my mother and nurse. The word conjured up inconceivable terrors to my childish mind.

At last I asked my nurse what school was like. She, worthy person, had been through all the wonderful experiences. Jane happened to be in a bad temper; she had been called to order, I remember, because the nursery grate had not been polished up sufficiently well. So when my question was launched at her, she vented some of the anger she felt with her mistress, in her answer to me.

'School, Master Ernest, is a place where they won't put up with naughty little boys, but tickle them up with a stick.'

'Tickle, Nurse, what is that?'

'You wait and see; you will come flying home with fleas in your ears.'

Awful remarks; how they sank into my childish mind! How I cried myself to sleep at nights at the thought of the 'stick' and the 'fleas' awaiting me!

I believed implicitly in my mother's sayings up to this time. Such a pretty mother we had, with dark brown eyes and masses of raven hair. I used to love to sit and watch her face when she played and sang hymns to us. Sometimes we went to the drawing-room to play a boat game. My mother played and we sat on the floor, joined hands, swaying to and fro, and sang in our childish trebles. I used to feel happy, but there was always the dim cloud in the background, even then.

We would be such a merry party, but suddenly my mother would jump up, her face quite changed, all the soft happy looks gone; we were hastily banished off to Jane. Why? Why—Six o'clock: Father coming home.

Life until school leapt into my horizon was one of many happy hours, alternating with those passionate outbursts occasioned by some real or fancied injustice of parents or servants, which must always be the lot of a highly sensitive boy.

After I had been at the dreaded school some weeks, I found great trouble with my sums. My mother used to teach us that if we prayed earnestly for anything it would be granted. For three nights I had prayed and asked God to let me subtract six from ten, and five from nine rightly, and to please let me remember my tables, so that my governess would not be vexed.

Six sixes would never make thirty-six. I always knew my

tasks before going to school, but one glance from that cold grey eye made me squirm, a little shudder went through me! Six sixes were always forty!

My prayers were of no use. One night I asked mother—If I prayed hard enough would God grant my request? She said, 'Of course, if you are a good boy'.

I now felt that I must be a naughty boy, for my prayers were not answered; but my mother, she could never be naughty, so I asked her to please ask God to help me do my sums right. The next morning I went cheerfully to school; it would be quite all right, my sums would be marked with a big R—my tables I should not falter in. Alas! my sums were marked with a big 'X'. The chill tone of my governess—'Six sixes?'—made me feel sick; a pain came in my stomach; Mother, God, every one was far away. I was alone with the dreaded governess who knew everything. . . . 'Six sixes are forty'. At once I knew that my mother, God, every one had failed me. The long morning ended at last, I went home to my bed and was sick. Then came the endless night of agony. 'Where was God if He could not answer my mother's prayers for me?' Then—awful thought—perhaps she had forgotten to pray for me? A great joy seized me, and I went to find her and ask her the all-important question. I had got to the bottom stair, when I heard my mother's voice—'Go up to bed at once, Ernest,—Father mustn't be disturbed.' A mist came over my brain, I stumbled upstairs and threw myself on my bed, thumped my pillow and cried in my childish agony: 'I don't believe there is a God, I shan't say any more prayers, they shall kill me at school'.

Day succeeded miserable day. Some of the happiest hours at this period were spent in playing with my younger sister. She was a girl and ought to have been a boy. I was a boy and ought to have been a girl. My parents, I think, were conscious of this and in a vague way resented it. Too true, I had the feminine temperament. I hated ridicule; to be laughed at by a school-fellow was to endure agonies. I was too morbidly sensitive. My sister was very kind to me. I have most happy recollections of hours we spent under the roof in talking of things we were to do, and how she was to live with me when I was a man.

On Sunday I was always more happy for one reason—No school, no sums, no tables. I always went downstairs with my

sisters to breakfast. We had big meals, I remember, for the dreaded man was to be at home all day. If I was careful over breakfast and did not spill my milk or egg, that was so much to the good, and I got down from the table feeling virtuous, especially if one of my sisters had upset her coffee. It is curious as a small child the little feeling of glow that overcame me if they were reprimanded and I escaped. It was not unkindness on my part, but a feeling of superiority came over me, and I would metaphorically pat myself on the back and say, 'Ernest, you never do naughty things like that'.

I was only troubled by the knowledge that to-morrow was the beginning of another dreadful week. Still, there was always a little gleam of hope, perhaps by morning I might be sick, or have a much coveted rash, like another boy who had to stay away weeks. Perhaps I might tumble down and break my leg.

One Sunday this idea got hold of me. I opened the little wicket gate at the top of the stairs and looked to see if I could tumble down, but I did not dare.

When Jane woke me up one Monday I tried to feel a bad pain in my throat. I was very hungry for breakfast but I knew that if I ate it I must go to school, so I had a sore throat and no breakfast. My mother was at once much concerned for me. A fire was lit and my throat wrapped up. I was so hungry. I waited until father had gone to the library for a book and sneaked into the dining-room and put a piece of bread in my pocket, then retired to the lavatory to eat it. About eleven o'clock my mother was much concerned at my having had no breakfast and ordered a cup of Neave's food. I ate that ravenously and asked for more, which was a fatal thing to do. She became suspicious and after lunch I was sent back to my terrible school.

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I suppose I must have been about eight years of age when I left the little Dame's school and went as a Day-boy to my first Preparatory school. No pleasing recollections of that again. I was sport for the older boys and got bullied. I began to see here that if I was to be popular with my own kind I must be good at games. How I longed to throw a cricket ball as it had never been thrown before! In my dreams I was always cock of the school and executing wonderful feats at games. Unfortunately that was all in the imagination. When my master insisted on my sharing in games, I funk'd it.

Many fights took place, in none of which did I distinguish myself. Tears were always very near my eyes. A blow on the nose, and I would blubber like a baby. This fact was well known to my tormentors and it seemed to me that there was always some one who wanted to lick Cassalis and see the rain fall.

In my youthful innocence I was much shocked at the way boys cribbed from one another. I was once accused in form of having cheated. The fury that was aroused in me was so great that, on being questioned, I could not explain to the master. My master, taking my silence for guilt, gave me three strokes with the cane. I was so desperately angry that I struck wildly out at my assailant, who, being in turn very wroth, gave me three more strokes and shut me up till I should come to my senses, as he explained it. What happened afterwards is not very clear to my memory, but I know that I had to stay at home for the rest of the term.

The beginning of my moral downfall was here; I began to consort with boys much older than myself, youths who were being prepared for the Army, and was drawn into lines of thought that had a serious effect on my body and mind.

Fortunately for me, at this point my health again began to cause great anxiety and I had quite a serious illness. In my delirium I thought I was going to die. What a relief it would have been! and yet always something held me back.

I would have a law passed in England that highly strung, delicate, sensitive boys should never be sent to school as boarders, herded together as if they were cattle. At first going to Rocton I was pleased to have the freedom and responsibility that is given to fifth-form boys in these big schools. Unfortunately for me our house master was a stern, cold, intellectual man, who had no sympathy beyond the classics and was a firm believer in the boys ruling themselves. My work placed me high in the school, so that the boys in my dormitory were three and four years older than myself. Life began to be the same difficult, troublesome affair. Two boys in my dormitory were beasts. I will not dwell on what I was called upon to endure. Sufficient to say that at last the enormity of the evil was discovered, my tormentors were found out and expelled. Too late for me, the evil was wrought and from that hour began the long struggle

between body and soul. I loathed and hated myself—my soul despised my degraded body.

My one hobby at Rocton, which was a great relief to me, was the Cadet Corps which was formed there. Our rifle shooting was a welcome resource. I was held to be one of the best shots, and my vanity being aroused I spent many happy hours at the targets.

After I left Rocton I and two or three other men went to read with a tutor in the country. Here for the first time I began to know that I attracted the opposite sex. I was courted and flattered and began to take a great interest in my clothes to make myself still more pleasing to the feminine eye.

Days and weeks passed on. I was for the first time in love and knew that my beloved had nothing but the lightest of friendships to give in return. I vowed that the whole of my career should be consecrated to her, my life should be so full of wonderful doings that she should never cease to regret what she had missed. In fact at this period I became a vain, egotistical youth. One night I was terrified at myself at the great rage burning within me. I saw my beloved. She was in the arms of the man I had seen and recognized as the favoured one. I flung myself down on the grass and gnawed the earth with my teeth. I cried as I had not cried since I reached manhood and my heart seemed to be bursting through my sides as it pumped in my body—all was a chaos. My gun lying handy, I picked it up, and before I knew what I was doing I aimed it in my blind fury at the two who were so near and yet so unconscious of my nearness and of the tragedy impending. Do you believe in miracles? One happened then. The air all round me folded down quickly and enveloped me.

Of the days that follow I remember little. I ate and worked and did all that was required of me mechanically, a dumb figure the mainspring of which was broken, yet, strangely, the watch kept ticking. Again as before the physical gave way through the great mental strain I was undergoing. Life ceased to have any attractions for me; my nerves were on edge; it soon became evident to my tutor that I was unfit for work, and I returned home for a holiday and rest in which to recuperate.

The family had to suffer considerably at this time from our father's money-making. He returned home, his nerves tired out by strain; everything was wrong; neither wife nor children

could please in any way. My mother, true to her convictions, whatever the dispute upheld my father. How far she was right I can't say, but it alienated my already weakening affection and destroyed what remained of her influence. We were never allowed to have friends who required to be entertained in the evenings. Father did not want to be bothered with young people on his return from the office. We led, for our position, a singularly solitary existence. I did not feel free to ask my boy friends to the house ; they would not have been welcome unless my father was not there.

I think I have said enough to show the atmosphere of our home life, which was carried on solely for the benefit of my father. The children were merely impedimenta, to be housed, fed, and educated ; but to have ideas, opinions, individual lives was looked on as a criminal offence.

My father with his ambitious views had mapped out my career. I was to go on to Oxford, to study law with a view to becoming his partner later on. I am not sure whether I wanted to go or not.

When the news came that I had passed my ' smalls ' the fuss and preparation due to my going to that famous seat of learning suited my family. My mother was happy getting my outfit, marking my clothes, etc. She may have thought in her gentle mind that her son would one day become a K.C. or a Bishop. She had no power of reasoning, and to her, mentally and spiritually, I was the greatest of strangers. Flesh of her flesh, bone of her bone ; but no links to draw our souls into communion. She was the adored, the beloved plaything of my father : that contented and satisfied her. She did not try to understand the complex, nervous organism such a union had given to her offspring. She was like a beautiful stately swan who looks on in amazement at her young, which are ducklings, ugly and alien, and as they grow up are of no account, for they have nothing in common with their parents.

I was thrown a great deal with a boy who came up from Rocton with me. In many ways a similarity of temperament drew us together. Gradually we got to know other ' men ' and many nights were given up to religious discussions in one another's rooms. At Blenkinsop's rooms we met other men, of like kind to himself, and gradually, so subtle was his influence, that without knowing where we were drifting, we found ourselves introduced to his evil-minded associates.

Conscience racked and tore me. Work was impossible. My health grew worse and worse. I knew that if something did not happen soon I should go mad with the torment.

I remember little of this time ; hideous fiends walked round and about me. I heard voices upbraiding me ; the whole air seemed full of spirits attacking and tormenting me. I used to try and hide myself in a secluded part of the grounds, as Eve did in the Garden of Eden. No seclusion for me ; the voices followed and tormented me.

Each day brought me a little nearer to the end of my tether. I was now firmly convinced that one, and one way only, was left to me out of the wretched state of my mortal career. I had the dose that would give me the sleep that I so greatly craved in my hand. I poured away the deadly stuff, took my hat and went off to consult a doctor. He advised my going down for a complete rest. This was sensible, I knew. I was not fit to be alone. How I wanted then some loving, kind, tender-hearted woman, not too young, some one with knowledge of life, that I might have laid my head on her lap and sobbed out my bitter experiences ! Did I want to go home ? In my heart I knew that I did not. Why did I not turn to my father ? The old dread of the big man who must ' never be disturbed ' by my childish voice or wants had with the years of boyhood and youth grown into a wall of reserve that it was impossible to break through. I could not tell him of the phantastic images which now peopled my brain. Also his history had been so different from mine. We lived in different worlds, spoke and thought a different language.

It was decided by my parents that I should go to the sea—*en route* we were to see a specialist in Town. Arrived in London my father invited a friend of our family to dine with us. He was a good fellow not bothered with an ultrasensitive temperament or a morbid imagination. A good sensible youth, with practical sound common sense written all over him. He was a great favourite of my father, having all the sterling qualities that he so much appreciated. I felt as he looked at us that he wished the other man were his son.

A tenseness fell over the little party as we sat down to dinner ; surely thunder was in the air. Sparks of electricity seemed to dance before my eyes as I gazed at my father. He was getting bald and slightly stout ; his food must be exactly right, the wine of the vintage that he loved, the napery and silver must all be

quite faultless, or my good parent's equilibrium was disturbed. We dined, I remember, at a small table. I had no appetite and in a fit of absentmindedness crumbled my bread into pellets, which aroused my sire's wrath. Something came over me as I looked at his self-satisfied face. Once again I realized the impotence of my position, the futility of struggling against the man who could not or would not ever understand the vital differences between us. I see red. I must do something to break up the complacency, the contentment of his face.

After this come days and nights of darkness and delirium. I am . . . where ?

APPENDIX II

THE ART OF STUDY: ITS PRINCIPLES AND THEIR APPLICATION.¹

STUDY, even of the sciences, is an art. But it is a lowly form of art, being with most of us a means to an end, and not to be pursued for its own sake. It is therefore desirable to make use of whatever general principles may increase our studious efficiency. Naturally, psychology is appealed to as the appropriate body of knowledge from which to derive such principles, and it may be of some interest and practical utility to set forth briefly the experimental and other psychological data whose interpretation may facilitate study. The data are not many; the deductions are neither of great value nor very novel; but they have some intrinsic interest, as well as one or two practical applications.

The problem of efficiency in study can be attacked from two sides—the subject-matter, and the mental processes involved. The latter alone can be dealt with here; the interest of the subject-matter depends upon its content and the manner in which it is presented by its professors.

THE MENTAL PROCESS

The mental process involved in study is, strictly speaking, a unitary whole, but several aspects of the process may conveniently be distinguished; these are principally attention, memory, and association.

In considering, first, the mental process in its entirety, study may be regarded as a form of 'mental work'. Experimentally a 'mental work' curve has been obtained from a simple task, like adding figures continuously. There is at first a general, but very irregular, tendency for a rise to occur in the number of figures added per unit of time, followed by a decline in the

¹ Reprinted from the *British Medical Journal*, September 1st, 1928.

number added. Several factors are at work in producing such a complex curve. The influence of practice, which is most marked in the beginning, and should lead to a gradual and continuous rise, is soon interfered with by fatigue. The latter is a complex affair, and its particular nature depends largely on the kind of task involved. Probably very little of the fatigue that appears in every mental task is actually mental in origin. In writing down additions, for example, there is the digital muscular fatigue, in reading there is ocular fatigue, and so on. Much also of what masquerades as fatigue is the result of distraction—other objects attract the attention, and the main performance is interfered with. This is well exemplified in the difference in the amount of work done on a task that is of itself interesting, and on one that is merely boring.

Distractions operate much more readily in the latter case and reduce the output, thus simulating the effects of fatigue. But it is possible that a certain minimal amount of distraction is beneficial in increasing the mental output over short periods. For example, persons working an ergometer (against a load of one kilogram) with their upper limbs, and adding columns of figures at the same time, were found in some instances to perform more work of each kind (mental and muscular) than when doing either kind alone. An illustration of the comparative indefatigability of mental performance as contrasted with physical performance was furnished by the feat of Dr. Arai, who multiplied pairs of four-place figures (for example, $2,738 \times 4,912$) continuously for twelve hours without a break. At the end of twelve hours of continuous multiplication she took rather more than twice as long to perform each complete four-figure multiplication as she did at the beginning. Her efficiency was therefore still very high, as 'even at the end she was performing a feat which probably could not be equalled by two persons out of a thousand engaged in mathematical work' (Watson). Furthermore, a normal period of sleep completely restored her capacity, the work being repeated on four successive days.

Fluctuations in the rate of improvement in any mental performance take place in other ways. We may improve for several days at some task, and then fail to make any progress for a time, after which the improvement may be resumed. It is quite likely that subconscious rearrangements have been occurring, which, when they are completed, enable further improvement to take place. 'Spurts' also occur, notably at the beginning,

when the novelty of the task engages all the mental energy, and at the end, when the prospect of the satisfaction of a completed task is accompanied by increased attention to it—interest being the essential factor in both these instances.

There is another factor called 'incitement', or the 'warming up' that occurs as the task proceeds. It is as if our mental machinery had a degree of inertia, which can be overcome only gradually. Hence the importance of continuity of working and the avoidance of outside interruptions. To be called away to a telephone even for a few minutes causes a greater loss in efficiency than is indicated by the mere loss of time; the output of work immediately after such an interruption is less than the output immediately before.

On the other hand, it is found to be beneficial if brief 'rest pauses' are introduced at considerable intervals during long periods of work. In this way, not only mental work may be made more efficient, but the output of factories has been favourably influenced. In a sweet manufactory, where the working conditions were investigated by the National Institute of Industrial Psychology, an increase in output of 5 per cent was produced simply by the introduction of a few rest pauses at definite times in the working day. In another factory, the curve of breakages rose steeply in the late afternoon. By the introduction of a rest pause of about fifteen minutes' duration at 3 p.m. the curve was flattened to an almost horizontal line.

It is usually considered that to transfer one's attention to another task, after feeling 'fatigued' at a previous one, is efficacious in restoring mental efficiency. 'Change of work is as good as a holiday' is an almost proverbial saying, which is in part confirmed and in part controverted by experimental evidence. The so-called 'subjective fatigue' (which is another name for boredom) certainly tends to be abolished in this way. There is some statistical mathematical evidence that a person readily bored by prolonged continuous work of one kind is likely to be similarly affected by continuous work of any kind—a conclusion which hardly requires such elaborate proof.

Two kinds of 'objective fatigue' have been distinguished—specific and general. Specific objective fatigue, as the name implies, is not transferred from one operation to another—that is, a change in the type of work abolishes it; but in a given individual it is apt to appear specially in a certain type or in certain types of mental work. General objective fatigue—a

fatigue which, having been induced by one type of operation, persists after a change has been made to some other kind of work—may account for from 5 to 25 per cent of the total fatigue ; that is, only 5 to 25 per cent of the original efficiency cannot be restored by a mere change of occupation (Spearman).

Several general deductions can be made from the experimental results that have been summarized. Mental fatigue is a matter of comparative unimportance. Only a small proportion of it (‘ general objective fatigue ’) is probably attributable to cerebral activity. Even this proportion is readily abolished by a rest pause, or by normal periods of sleep. The greater part of ‘ mental fatigue ’ is made up of boredom (for which there are obvious remedies) or by the so-called ‘ specific objective fatigue ’, which is surmounted by changing over to another type of mental activity—for example, so simple a change as from the multiplication to the cancellation of numbers. Clinical experience bears out these experimental findings. ‘ Mental exhaustion ’, ‘ brain strain ’ from ‘ overwork ’, and the like can be safely discarded as a hypothesis in 999 out of 1,000 cases. The apparent mental incapacity in such cases is nearly always the result, not of intellectual effort, but of anxiety or a kindred emotional disturbance, resulting from preoccupation with some personal problem. This is brought home very dramatically in the sudden recovery of persons complaining of ‘ brain-fag ’, which has perhaps limited their work to periods of less than an hour each, when a source of worry is removed. For practical purposes the mind is almost tireless. On the other hand, violent physical exercise disables a person from concentrated mental work for some time afterwards. Even when there is considerable deprivation of sleep, intellectual accomplishment may be persistently maintained at a high level if the worker does not worry about his insomnia.

Another and a very obvious deduction from the experimental work is the desirability of arranging work in such a way that it can be carried on without interruption for several hours at a time if need be. ‘ Warming up ’ can then occur to the full. Much the most difficult part of any study is the beginning of it. At the same time, a judicious arrangement of ‘ rest pauses ’ (which need only be very brief) increases the total mental output. The loss of ‘ incitement ’ with such short pauses is not great. The distribution and length of the pauses has to be worked out empirically by each individual for the type of work that he does.

MEMORY AND ATTENTION

So much for the total mental process. We may now turn to some of its aspects. Memory is one of the most important aspects of the mental process involved in study. There are three distinguishable stages in memory—namely, the impression of an experience on the mind, its retention there, and its recall when wanted. It is convenient to consider these separately and to examine their conditions.

A very important factor in the impression or registration of an experience is the nature of the subject-matter (its lucidity, etc.), but our present concern is with the most efficient mental attitude. It is well known that the clearness of our impressions depends largely on our attention to the objects producing them. The field or range of attention can be regarded as having a focus or central 'area', and a margin. Objects in the focus of attention are more clearly perceived than objects in the fringe or 'marginal field' of attention. This fact is very well established. Nevertheless it is interesting to know that objects in the fringe or margin of attention are sometimes much more distinctly and firmly impressed than at first seems credible. Thus Dr. Morton Prince's subject, B. C. A., looked into a crystal (a method of bringing focal attention to bear on experiences originally in the 'fringe'),

and saw there some printed words which had no meaning for her whatever and awakened no memory of any previous experience. It was afterwards found that the words represented a cablegram message which she unconsciously overheard while it was being transmitted over the telephone to the telegraph office by my secretary in the next room. She had no recollection of having heard the words, as she was absorbed in reading a book at the time. The correctness of the visual reproduction is shown, not only by the automatic writing (another method of recalling marginal impressions), which remembered and recorded the whole experience, but also by comparison with the original cablegram.

For ordinary purposes, however, the majority of us cannot rely on anything but focal attention. Ability to attend persistently seems to be directly proportioned to the degree of intelligence possessed by the person attending. Extreme instability of attention is a symptom in mentally defective persons. By experiment it is found that a lapse of attention, usually unnoticed, occurs in normal persons every few seconds. For

example, if a watch be placed just within hearing, it is found to become alternately audible and inaudible. Fatigue and alcohol increase, while bromide is said to diminish, the depth and duration of these lapses. Any toxaemia besides alcohol, and organic brain disease, have a similar effect in producing frequent and prolonged lapses of attention. This increased fluctuation of attention, or 'mental-tension defect', is a useful diagnostic sign. It helps also to account for the greater difficulty in studying experienced after a meal with which alcohol has been taken.

Useful attention—that is, attention to the task in hand—is disturbed more often by preoccupation with other interests than by any other cause. 'Single-mindedness' is essential for efficient work of any kind, and certainly not least in studious occupations. Where persons (not suffering from organic brain disease and demonstrable toxaemia) complain that their concentration is very bad, it is usually safe to reply that, on the contrary, it is very good, but it is directed faultily towards some personal source of worry.

The second, and more exclusively memorial, aspect of memory process is the retention of an impression on the mind. James considers retentivity to be immensely important.

The persistence or permanence of impressions is a physiological property of the brain tissue of the individual, whilst their number is altogether due to the facts of his mental experience. Let the quality of permanence . . . be called . . . 'physiological retentiveness'. This tenacity differs enormously from infancy to old age, and from one person to another. Some minds are like wax under a seal—no impression, however disconnected, is wiped out. Others, like a jelly, vibrate to every touch, but under usual conditions retain no permanent mark. Those latter minds, before they can recollect a fact, must weave it into their permanent stores of knowledge. They have no *desultory* memory. Those persons, on the contrary, who retain names, dates, and addresses, anecdotes, gossip, poetry, quotations, and all sorts of miscellaneous facts, without an effort, have desultory memory in a high degree. No one was probably ever effective on a voluminous scale without a high degree of this physiological retentiveness. In the practical as in the theoretic life, the man whose acquisitions *stick* is the man who is always achieving and advancing, whilst his neighbours, spending most of their time in relearning what they once knew but have forgotten, simply hold their own. A Charlemagne, a Luther, a Leibnitz, a Walter Scott, any example, in short, of your quarto or folio editions of mankind, must needs have an amazing

retentiveness of this purely physiological sort. Not that mere tenacity will make a man great. It must be coupled with great passions and great intellect besides.

Imbeciles sometimes have an extraordinary, and extraordinarily limited, memory. Forbes Winslow (quoted by Tredgold) mentioned the case of a man who 'could remember the day when every person had been buried in the parish for fifty-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 to feed himself.'

Mere memory, then, in the sense of physiological retentiveness, is not enough. To have it in high degree is a great asset; but unless its stores are utilizable in an intelligent way, a phenomenal memory is of little help and may even be a hindrance. It is nevertheless natural to inquire whether this native retentiveness can be improved in any way. James holds that it cannot; McDougall thinks he has proved that it can be improved by repeated exercise, but the improvement he claims is slight at the best.

Experiments on the power of retention in normal individuals yield some interesting results. The experiments have principally been performed with series of nonsense syllables (that is, syllables like 'rel', 'tes', 'bup'), because this is the simplest material for testing pure retention, and the least likely to be complicated by other functions, such as associations of ideas. If a series of, say, sixteen such syllables has been completely learned, a 'curve of forgetting' is obtained. Two things can be observed from such a curve: that it falls off at first very rapidly and then much more slowly, so that nearly 50 per cent of what has been learned is lost in the first hour, but only a further 16 per cent at the end of a day and a further 14 per cent (80 per cent in all) at the end of a month.

Evidently, therefore, so far as this experiment goes, what we have learnt within the last few hours benefits us little more than what we learnt twenty-four hours or even many days ago. Superimposing two curves, one twenty-four hours older than the other, we obtain a comparatively slight difference in the quantity retained after twenty-four hours. Hence it would appear that the last night's cram before an examination is of little benefit. Unless for the acquisition of entirely new material,

we lose comparatively slightly by abstaining from all work in the last few days before an examination, and probably gain considerably in that elusive quality called 'freshness'.

SUBSCONSCIOUS ELABORATION

Mental freshness as opposed to 'staleness' is probably dependent on several factors. One of these is 'retro-active inhibition'; it has been found by experiment that if two tasks are learned in quick succession the acquisition of the second to some extent impairs the memory of the first. Another factor in 'freshness' may depend on this: there is probably involved, in the learning of any task, a process of subconscious elaboration, which occurs more readily in the intervals of freedom from intensive conscious mental work. This subconscious elaboration is evident in dreams. Coleridge is said to have written *Kubla Khan* from the memory of a dream he had while sleeping under the influence of opium. He had been reading a passage about the palace of Kubla Khan from Purchas's *Pilgrimage* just before he fell asleep; and he wrote down all he could remember of his dream immediately on waking. Usually, however, where composition occurs in dreams, and seems to the dreamer to be of superior quality, he finds that what seemed so wonderful in the dream is commonplace, or even meaningless, on waking. Graham Wallas, in his book *The Art of Thought*, records that a relative of his woke one morning with the conviction that she had achieved immortality by the lines:

Leave then thy steed
And let it feed
On more than meets the eye.

On subconscious elaboration seems to depend also the not uncommon experience that a problem—say, a geometrical rider—which has puzzled a person for hours of an evening, may very rapidly be solved with but little more effort on waking the next morning. Similarly, some hysterical persons have the reputation of showing much better arithmetical ability in their dissociated state than in their ordinary waking condition. In composing a dissertation on some subject, especially if it is of a theoretical kind, a similar process occurs. One reads up all the relevant literature, which is necessarily come by in a disconnected way; but when one proceeds to write down the impressions gained from it, and to incorporate them in whatever view one has of

the subject, the dissertation seems largely to write itself; the views of others fall relevantly into place in a natural fashion, suitable collocations often occurring in a way certainly not realized before the actual writing was begun.

Instances of a more fruitful kind of subconscious elaboration have frequently been related by men of the rank of genius. It was de Maupassant, I think, who said, '*Ce n'est pas moi qui pense : ce sont mes idées qui pensent pour moi*'. Helmholtz, speaking of his methods of thought, said that, after preliminary investigation of a problem, 'happy ideas come unexpectedly, without effort, like an inspiration. So far as I am concerned, they have never come to me when my mind was fatigued, or when I was at my working table. . . . They came particularly readily during the slow ascent of wooded hills on a sunny day'.

Wallas divides the process of elaboration of new ideas into four phases. 'The first of these is Preparation, the stage during which the problem was investigated in all directions; the second is the stage, during which Helmholtz was not consciously thinking about the problem, which I shall call Incubation; the third, consisting of the appearance of the "happy idea" together with the psychological events which immediately preceded and accompanied that appearance, I shall call Illumination.' The fourth stage is that of Verification, in which 'the validity of the idea is tested and the idea itself reduced to exact form'.

It is clear that if these methods of geniuses hold also for lesser men, periods of freedom from conscious mental work are more than justified. Psychologists have recently argued against this view, which was dramatically overstated in the pronouncement, 'We learn to skate in summer and to swim in winter'. But most of us have noticed that our best ideas, poor things as they may be, often come to us while we are shaving, or in our bath, or engaged on some other desultory activity involving no mental effort. The philosopher Hobbes kept a little notebook where at any hour of the day he would enter the thoughts that 'dart' into the mind from the 'fringe' of consciousness. Graham Wallas recommends that 'anyone who is living a life of intellectual production will do well to keep, as Darwin did, a rather considerable number of "folders" or envelopes, labelled with the names of subjects to which he finds his mind recurring, even although he may not immediately contemplate writing, or lecturing, or acting on them.' In corollary also the danger from another aspect of too much and too continuous reading has to

be remembered : such habits of reading teach us not to think for ourselves, but to expect our ideas always to be spoon-fed into us. Independent observation and, wherever it is practicable, experiment to 'find out the secrets of nature', are the best correctives.

MEMORY AND ASSOCIATION

To return to nonsense syllables, it is dangerous to argue from the learning of these to the learning of sensible material such as comprises any connected body of knowledge. Into the acquisition in memory of the latter much more enters than mere 'physiological retentiveness', whereas the learning of the former implies merely the formation of motor habits. A poem or piece of prose is much more completely and easily remembered, as every one knows, than a series of disconnected words. Nonsense material committed to memory has been found to have disappeared completely at the end of four months ; whereas verse will persist for years. An old man, with such senile cortical deterioration as causes him to forget completely what occurs from day to day, will recollect whole series of verses which he committed to memory sixty years before. Frequently one sees advertisements of methods of improving the memory. Even if it be admitted that innate retentiveness, in James's sense, can be increased, which is doubtful, the principal improvement in memory must depend on the multiplication of associations ; and most of the advertised tonics for invigorating a feeble memory utilize this fact. Ingenious methods, such as the formation of mnemonics or the invention of 'figure alphabets', in which each numerical digit corresponds to a letter, are typical of the schemes recommended. James mentions a system advocated by E. Pick in 1888, which consisted in linking together any two ideas by means of an intermediate idea. Such 'ingenious methods' occupy more time than they are usually worth.

The number of associations that a new body of information forms for itself depends upon the number and kind of previous acquisitions. One of the most important—probably the most important—factor in a good memory, especially in the sense of a serviceable memory (and not of mere mechanical registration and reproduction), is the multiplication and verification of the connexions of our experience. To take a very simple example, in preparing for an important examination it is unwise to use only one textbook. Some textbook or other should be made

the mainstay ; but reference to another, even by borrowing it from time to time, will present new viewpoints, or at least will present things in a somewhat different order, in such a way that new associations will be formed for the material gleaned from the staple volume. Still more important is it to talk about the subject in as many of its bearings as one's fellow students can be prevailed upon to discuss (which may not be many). ' If a man confer little ', says Bacon, ' he had need have a present wit.' Attendance at lectures has a similar justification. If the lectures are expositions of a subject, and not mere essays read aloud in public, they stimulate associations in the same way. In these days of cheap and well-made books this is one of the few remaining justifications for the survival of systematic lectures.

In merely learning anything by heart, certain devices are of value. The grouping of the material to be learned into intelligible unities naturally occurs to every one. The presence of rhythm makes learning easier ; for example, poetry is easier to learn by heart than prose. This is presumably related to the fact that every mental and bodily activity tends to be rhythmical. It has also been found experimentally that if a poem of several verses has to be memorized, it is more economical and effective in the long run to learn it as a whole, rather than stanza by stanza.

Interest is naturally also of vast importance. We remember best what interests us most ; although the retention of what has not appeared to interest us at the time, but has remained in the ' marginal field ', is sometimes remarkable, as we have seen. Interest reduces, also, the effort both of attention and remembering, and it increases the powers of observation as well. It is a frequent occurrence that when a name or a word which we do not seem to have encountered before comes to our notice, and which interests us by its very unfamiliarity, it crops up repeatedly in our experience in the next few weeks. On a similar focusing of interest depends the common ' fallacy of the positive instance '. Interest leads also to selection. Under the influence of interest we select—often without realizing it—what we wish to remember. But everything should not be left to this more or less instinctive selection. There is with some people too much slavish routine reading, too much of ploughing through masses of more or less unnecessary and irrelevant texts, omitting nothing, lest anything be missed, as some people read every page

even of the inferior works of fiction produced by a good author. 'Some books are to be read only in parts; others to be read, but not curiously; and some few to be read wholly, and with diligence and attention.' Closely related to interest and attention is the general attitude of the student. Too many men sit down to a book or a problem without troubling to form a general notion of what they expect to get out of it.

It has been held by some that every experience is retained—everything seen or heard or done in our life up to date—that nothing is ever completely forgotten. There is no evidence for this statement, and it would be very awkward if it were true. 'A good memory for forgetting' sounds like a contradiction in terms; but consider what would happen if we did not, for all practical purposes at least, forget much of our experience. Otherwise, in recalling some event we would laboriously resuscitate every smallest detail that had ever happened contemporaneously with it; and its recollection would occupy nearly as much time, perhaps, as the event itself. In this way we would never be done and could hardly have time available for registering new impressions from the intruding complex burden of the old. How much, for example, of the events of our earlier years do we seem to remember? The first ten years of our lives we could perhaps dismiss in as many minutes, having recollected all we can of them. Nevertheless, although our memory is not of everything we ever experienced, modern psychopathological research has shown it to be much greater than was formerly suspected.

Memory then, so far from being all-inclusive, is selective. The best memory is possessed, as we have said, by the man who makes the greatest number of associations with his experience; but the most effective memory is a combination of associative richness with selection. The organization of memory in accordance with one's prevailing interests is the most effective organization. The man who thinks about his experience has much the better memory. This, by the way, marks the point of distinction between crammed information and real knowledge of a subject. In cramming one does not think—few associations are formed; real knowledge involves organized associations formed under the influence of continued interest.

Much better than a slavish devotion to the minutiae of one subject, is a study, less minute, but more comprehensive, of several. It has frequently happened that outstanding contributions to one science have been made by men trained in some

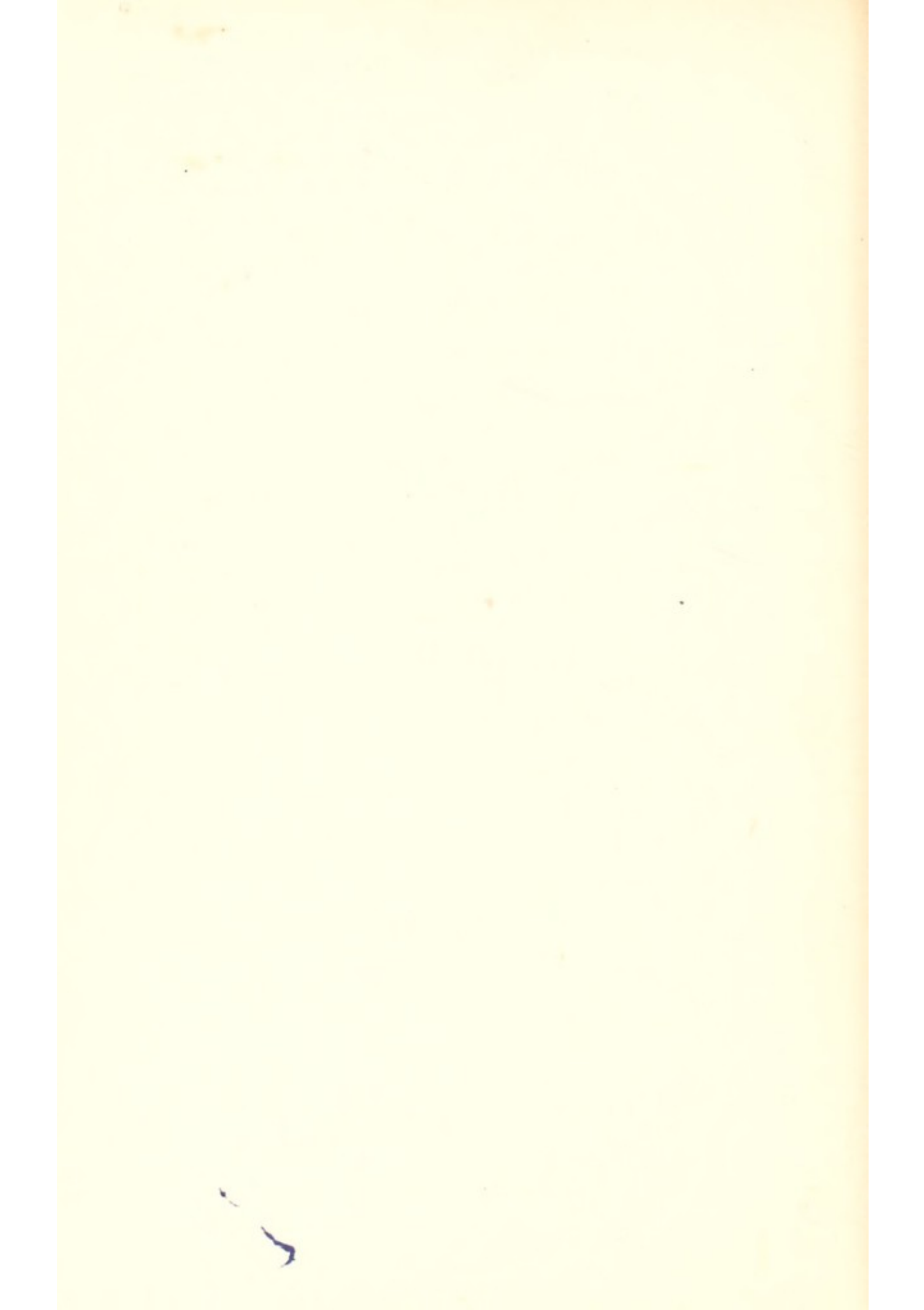
other ; they have, in consequence, approached problems from a new and fruitful aspect. For example, physicists have contributed much to astronomy, chemists to physiology, and mathematicians to everything. It is interesting to find how many of the men who have done exceptional work in one branch of medical science have begun their medical work in some other, often only distantly related. The absence of a narrow specialism has been until recently (and still is, to some extent) one of the glories of medicine in this country. 'For expert men can execute, and perhaps judge of particulars, one by one ; but the general councils, and the plots and marshalling of affairs, come best from those that are learned in many fields.' Fertility of invention arises largely from the interplay of associations ; diversity of interests (provided that intensity of interest does not suffer) facilitates such interplay.

HABITS OF WORK

Associations can be multiplied not only between cognate fields of knowledge, but within each field itself. Some of these methods have been mentioned above ; for example, by discussion and debate, and by reading different books in the same field. There is another method, which is among the most efficacious ; and that is, to write about the subject. To quote again the inexhaustible Bacon, 'Reading maketh a full man, conference a ready man, and writing an exact man. And, therefore, if a man write little, he had need have a great memory.' It is not, however, merely that writing about a subject improves the memory of it ; still more it improves the clearness of a subject in the mind. Writers of monographs and textbooks not infrequently acknowledge that the persons to whom the writing has been most beneficial are the authors themselves. Lord Kelvin is reported to have said that he did not feel that he fully understood anything until he had made a working model of it. Most of us cannot, without disproportionate labour, make a working model of a problem in carbohydrate metabolism, or even of a murmurous heart ; but to be able to write a coherent and lucid description of such things is a great advance on merely having memorized some textbook account of them. It is not possible to perform this service for every topic while preparing for an examination, but how seldom is it done even for the most difficult ! One of the most valuable of such exercises is the writing of 'papers', especially papers on some piece of 'original' work

(it need not be very original), and not merely critical summaries of literature. The latter, however, can also be very useful in this way ; for the reading of original articles in the scientific press and the constructive summarizing thereafter of a number of articles on kindred topics is a pleasant and often very stimulating variant to poring over textbooks. It also has the advantage of 'mobilizing' one's knowledge. Original work, being less cut and dried and dogmatic than textbooks, leads to questioning and to an open mind. The air of authority, too, is less overwhelming in them than in standard books, the constant perusal of which, if unvaried by occasional resort to originals, tends to stifle intelligence. The first few years after graduation have often to be spent by the young graduate in ridding himself of the unquestioning faith in authority and the printed word that he has acquired during his student days, and of the parrot-like habits of memorizing, rather than understanding, a subject which, in defiance of the methods recommended above, many men adopt in their work for examinations. It is a good thing that the student should regularly read—in selective fashion, of course—one of the current general periodicals, together with occasional numbers of the more specialized journals, dealing with any subject to which he happens to be specially attracted.

Finally, method, in the sense of orderliness, is a great asset, not only in the acquirement of learning, but in its serviceableness afterwards ; and so long as it does not become a fetish, it betokens an orderly mind. The methods adopted must vary with the individual, and with the nature of subject which he is endeavouring to master. Some lay stress on regularity of working habits ; it is a good thing, for example, to have a prescribed routine of beginning work at certain hours and working for a certain period of time. A habit can be thereby established which, like every habit, has a certain dynamic effect of its own. Moreover, habit facilitates the 'slow dead heave of the will' that overcomes the inertia existing in the most willing people at the beginning of any task, and which is probably a property of mind itself, and even that other inertia which is present in the rest of us, and is a thing of the spirit.



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