

“Outlines of Psychology; Or, a Study of the Human Mind,” *In Sickness and Health*, James W. Roosevelt (ed), pp. 171-233, New York; D. Appleton Co., 1896.

The volume, *Outlines of Psychology (1903)*, is an expansion and reworking of this essay.

III.

OUTLINES OF PSYCHOLOGY, OR A STUDY OF THE HUMAN MIND.

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BIBLIOGRAPHY.

Of standard general treatises on psychology, the reader may be referred to the following, which are selected from the great number of modern books :

BAIN. *The Senses and the Intellect*, and *The Emotions and the Will*, 2 vols.

SPENCER. *The Principles of Psychology*, 2 vols.

WUNDT. *Lectures on Psychology*.

JAMES, WILLIAM. *Psychology*. Longer course in two volumes, shorter course in one volume.

BALDWIN, JAMES MARK. *Handbook of Psychology*, 2 vols.

SULLY, JAMES. *The Human Mind*, 2 vols.

SULLY, JAMES. *Outlines of Psychology*, 1 vol.

LADD. *Physiological Psychology*, 1 vol.

LADD. *Psychology, Descriptive and Explanatory*, 1 vol.

On the methods to be pursued by the psychologist there is a German treatise, written from the modern point of view, by Prof. Hugo Münsterberg, entitled *Aufgaben und Methoden der Experimentellen Psychologie*. The principal modern German treatise on psychology is the *Physiologische Psychologie* of Wundt, in two volumes.

PSYCHOLOGY.

§ 1. The purpose of the following sketch is twofold. For the first, the reader is to be introduced, in a very general way, to the study of the human mind. For the rest, this account will give also incidental suggestions regarding the practical applications of such study to the problems of the estimate and the guidance of minds in health and in disease. The necessarily limited space will forbid any but the most summary statements.

I. INTRODUCTORY DEFINITIONS AND EXPLANATIONS.

§ 2. Psychology, in a general way, has the same sort of relation to the functions of the human mind that physiology has to the functions of the human body. Psychology is, namely, the doctrine which attempts to describe and, as far as possible, to explain our mental life. And by our mental life, as opposed to our physical life, we mean a certain collection of states and of processes with which, from moment to moment, each one of us is, in his own case, very directly or immediately acquainted, while, on the other hand, it is impossible that any one else besides the original observer, whose mental life this is, should ever get this immediate sort of acquaintance with just this collection of states and processes. Herein, then, lies the essential characteristic of our mental life. Others may learn, from observing our acts and our words, a great deal *about* this our own mental life; but each one of us is the only being capable of becoming directly aware of his own mental states.

Mental Life. On the other hand, however, our physical life, in its external manifestations, may be observed by any one who gets the opportunity. And thus the fact that the mental life of each one of us can be directly present, as a series of experienced facts, to one person only, may well be used as a means of defining the difference between our physical and our mental life. Thus physical facts are usually conceived as "public property," patent to all properly equipped observers. All such observers, according to our customary view, see the *same* physical facts. But psychical facts are essentially "private property," existent for one alone. This constitutes the very conception of the difference between "inner" psychical or mental and physical or "outer" facts—a conception behind which, in the following discussion, we shall not seek to go.

§ 3. It is this fundamental difference that leads us often to speak of the mental as the "internal life" or the "inner world," and to oppose it both to our own physical life and to the "external physical world." This way of expressing the distinction between mental facts and all others is fairly good, but must be carefully guarded against misinterpretation. The physiological processes of our bodies are physical, but are indeed also often viewed as "internal," since they go on within our bodies, and are in general mainly hidden from direct external observation. But our mental life is "internal" in quite a different sense. Digestion, circulation, and the changes of our tissues are processes which are actually altogether hidden from many forms of outer observation, and which, at best, can only be observed very partially, and for the most part very indirectly, by observers who view us from without. But, on the other hand, these processes, in case of each one of us, are also very ill known to us ourselves, and are in large part not even indirectly represented by any of our own

conscious mental states. So that, when we speak of our physiological processes as internal, the word "internal," although it here generally implies "hidden, in whole or in part, from actual outer observation," does *not* imply "directly felt by us ourselves." But when we speak of a pain as an "inner" mental fact, we mean that while nobody but the sufferer can possibly get any direct acquaintance with its presence, the sufferer himself can do so, and is aware of the pain. Furthermore, the fact that other observers cannot directly watch our inner physiological processes, is itself something relatively accidental, dependent upon the limitations of the sense organs, or upon the defective instrumental devices of those who watch us. But the fact that our mental states are incapable of observation

An Essential Character of Mental States.

by anybody but ourselves seems to be not an accidental, but an essential character of these mental states. Were physiologists better endowed with sense-organs and with instruments of exact observation, we can, if we choose,

conceive them as, by some now unknown device, coming to watch the very molecules of our brains; but we cannot conceive them, in any possible case, as observing from without our pains or our thoughts in the sense in which physical facts are observable. Were my body as transparent as crystal, or could all my internal physical functions be viewed and studied as easily as one now observes a few small particles eddying in a glass of nearly clear water, my mental states could not even then be seen floating in my brain. No microscope could conceivably reveal them. To me alone would these states be known. And I should not see them from without; I should simply *feel* them, or *be aware* of them. And what it is to feel, or to be aware, I alone can tell myself.

§ 4. Mental life has thus been defined by pointing out its contrast with all that is physical. Now, psychology is to undertake the study of

The Function of Psychology.

mental life for the sake of trying to describe and, in a measure, to explain its facts. But this undertaking may, for the first, appear to be quite hopeless. How

can one describe, with any sort of accuracy, where the facts to be described are in any case open to the inspection of one observer only? Successful description, made with any scientific purpose, seems to involve the possibility of comparing together the various attempts at description made by different observers in view of the same facts. When astronomers observe celestial objects, they compare the results of the various observations of different astronomers. In the multitude of trained observers, occupying, upon occasion, widely different positions on the earth's surface, but all looking at the same heavenly bodies, the possibility of the growth of astronomical science seems to depend. How, then, shall psychology progress if, in our various mental lives, no two observers can ever take note of precisely the same facts? Is it not as if there were as many real moons

as there are astronomers observing the heavens, and a different real moon for each astronomer, which nobody but himself could ever see? In such a case one may ask, What would become of astronomy?

§ 5. Without in the least going into the extended and interesting philosophical problems suggested by these questions, it is enough here to point out at once that, while no two persons among us can ever observe the same series of mental facts and processes, psychological study is nevertheless made possible by the fact (a fact of the most fundamental importance) that we all of us not only have our mental states, but also appear to *give these mental states a physical expression* in certain bodily acts—viz., in what may be called our expressive functions. The mental states themselves each one of us observes for himself alone. Their physical expression is something that, like any other physical fact, is patent to all observers. Now, anyone of us can often observe for himself what sort of physical expression some given sort of mental states gets in his own case. Thus one can sometimes observe how, by cries or by groans, he himself gives expression to his own pain; or how, by appropriate bodily attitudes, he expresses the mental states of attentive interest which we call “looking,” “listening,” “watching,” and the like; or, finally, how he adapts the familiar words of his mother tongue to the expression of multitudinous inner moods, and other personal experiences, for many of which, in fact, we have no definite and conscious bodily expression at our voluntary disposal *except* such words as chance to occur to us as appropriate at the moment when these states are passing. Cries, groans, sighs, tears, gestures, attitudes, words, and other far less easily observable expressions—some voluntary, some involuntary—are thus found to accompany our mental processes. But all these expressive movements are themselves facts in the physical world, and are, as such, matters both for common observation and for exact scientific scrutiny. Most of these expressive acts show marked similarity, either in several, in many, or in all men. And meanwhile, what states in each one of us they express, the individual observer experiences for himself. In attempting to describe our mental experiences to one another we therefore constantly make use of the names of familiar expressive functions, such as laughter, weeping, and the like. Some of our expressive acts, like the ones just named, viewed apart from their names, are of instinctive origin and are only partially under the influence of conventions. Other expressive acts, like the use of the words of our mother tongue to embody or to describe our mental states, are of purely conventional origin, and have only become moulded by slow degrees to a certain sort of uniformity as regards their relation to similar mental states in many people. Whether one person means by the word “love” a state very closely similar to the state that another person means

by the same word may be, and often is, a very difficult question to decide. Yet the use of the words of our common mother tongue to express our mental states, guided as this use has been since childhood by the effort to conform our expressions to the comprehension of our fellows, is often brought to a point which enables us to be decidedly sure that the states which many people agree in describing in given words are themselves in pretty close agreement. With some caution, the same may be regarded as true, within limits, as to the states described in various languages by parallel words and phrases. While we are then unable to make our mental states objects of common observation, in the sense in which the astronomers are said to observe the same star, we nevertheless can observe in common our natural and conventional, our simple and complex, our voluntary and involuntary, our more subtle and our less subtle motor expressions of our mental states, whether in our outward deeds or in the permanent products of these deeds (as in works of skilful art), or in our words, or in our momentary gestures, or, finally, in our established habits of behaviour. The inner meaning of such expressions each of us can, by more or less attentive scrutiny, discover for himself. Their agreement in many persons enables mental facts, private though they be, to be indirectly submitted to a comparative study in many people, and to some sort of generalisation, classification, and even explanation.

§ 6. While this outward physical expression, which our mental life gets, makes psychology, as a comparative and more or less scientific study of mind, possible, our study itself is very greatly aided by a further consideration—viz., that we not only express our minds through our movements, but seem to ourselves to be *dependent*, for at least very much of our mental life, *upon more or less definable physical conditions*, which we recognise, even apart from any special study, as matters well known in daily life, and as matters which we can study in common. Thus the private mental condition

*Physical
Conditions.*

is noticed by its one observer to vary with the presence or absence of physical facts that he and his fellows can observe together. That one cannot see in the dark, that one feels cold at a time when the thermometer reveals the physical fact of a low temperature, that violent physical exercise makes one weary—these are facts which have, at the very same time, their psychical aspect manifest to one observer, and their physical aspect manifest to all observers. A more scientific study, moreover, shows us that not merely some, but all of our mental states vary with physical conditions of one sort or another. Now, this sort of union of the public and the private, of the generally accessible and of the purely individual, gives us many means for indirectly comparing and classifying mental facts and for studying their conditions in various people.

§ 7. But both the expressive movements and the physical conditions thus far mentioned prove, upon closer examination, to have a character as physical processes that makes them still further the topics of a scientific scrutiny; for we possess, as a most important part of our physical structure, *our nervous systems*. And it may be shown that the expressive physical functions (acts, gestures, words, habits, etc.) in which our mental life gets its outward representation and embodiment are all of them, as physical events, *determined by physiological processes that occur in our nervous systems*. In other words, the functions of the nervous system, while they include many other processes as well, still also include, as a portion of themselves, precisely those functions by which, from moment to moment, our mental states get expressed. Thus the scientific study of our expressive functions becomes linked to the general study of nervous physiology. On the other hand, however, those numerous physical conditions, both without and within our bodies, which have been mentioned as appearing to determine in some way our mental states, prove to be conditions that are effective *in so far as they at the same time physically influence our nervous systems*. Thus in two ways the scientific study of mental life may get aid from the study of the nervous system.

§ 8. Now, the physical functions of the nervous system are capable of a very extended comparative and experimental investigation. Those of the nervous functions which are not closely related (as apparent conditions or as expressions) to our mental processes appear, in the light of such study, to differ from those nervous functions which are so related, chiefly in respect of the relative simplicity of the nervous functions which are not thus closely related to the mind, when compared with the relative complexity of those nervous functions which are more intimately related to mental processes. But no one easily definable dividing line appears between the two, except the familiar fact that the nervous functions most closely related to our mental life are localised, so far as concerns their central stations, in the cortex or grey matter at the external surface of the brain, while the nervous functions that

Nervous Centres. have no discoverable mental accompaniment are, for the most part, directed from centres placed below the level of this brain cortex. Otherwise, as we shall see from time to time hereafter, it is hard to prove any essential difference in kind between the physical functions whose nervous conditions are centred in the cortex and those which are centred lower down. The higher functions are, indeed, often vastly the more complex. They change much more during life, and under the influence of our experience, than do our lower nervous functions. They show more signs of what is often called "spontaneity"—that is, of a certain relative (although never complete) independence of the present external physical

surroundings in which our body chances to be placed. But these, although large differences, are differences of degree. Physically speaking, and despite vast differences in detail, the same general or fundamental types, both of structure and of function, are observable, both high up and low down in the nervous centres.

§ 9. Yet one must insist that the study of neurological facts has, although very great, still only relative value for the psychologist. For one thing, what the psychologist wants to understand is mental life, and to this end he uses all his other facts only as means; and for the rest, *any physical expression of mental life* which we can learn to interpret becomes as genuinely interesting to the psychologist as does a brain function. A pyramid or a flint hatchet, a poem or a dance, a game or a war, a cry or a nest, the nursery play of a child or the behaviour of an insane person, may be a physical expression of mental life such as the appreciative psychologist can both observe and more or less fully comprehend. The study of such facts, and of their physical causes and results, throws light both upon what goes on in minds and upon the place which minds occupy in the natural world. To be a student of psychology thus involves three essential things: (1) To observe carefully the signs which express mental life, and to explain these expressions as far as possible; (2) to examine those physical processes which in any case appear to condition mental life; and (3), with constant reference to the foregoing classes of facts, to analyse by means of a close self-examination, or "introspection," the one series of mental facts which can alone be directly observed by the individual psychologist. Studies of the sorts (1) and (2) can be made by all properly equipped observers together, and in presence of what are called the "same" external facts. Studies of the sort (3) each psychologist must make alone for himself; but by the aid of the facts acquired through studies of the sorts (2) and (3) he can indirectly compare his introspective results with those of other psychologists. The first two sorts of study are very greatly furthered by what we know of the nervous system, but are by no means confined to this region of knowledge. Psychology is by no means a branch of neurology. On the contrary, wherever, in the physical world, any mind gets intelligible expression, or any physical conditions appear to determine mental states, the psychologist finds what he wants, in so far as he seeks means of comparing his introspective observations with the experiences of other minds.

*Methods of
Psychology.*

§ 10. The foregoing conditions already serve to define the principal methods of psychology, whereof we may next name the most important.

(1) Our first method—*the study of the expressive signs of mental life*—is in some forms extremely familiar to the popular mind. Every per-

son of any experience is his own psychologist in judging almost constantly the ideas, moods, and intents of his fellows by watching not only their faces, but also their whole range of voluntary and involuntary expressive movements. The relatively scientific use of such study as a method of more careful psychological investigation depends both upon extending the range of its application and upon rendering more minute the scrutiny employed.

The naturalist employs this method when he studies the minds of animals through an observation of their behaviour and of their skill. It should be carefully remembered, however, that not merely the passing functions of the moment, but the established habits and the permanent physical productions of any animal are of importance as outwardly expressing its mind; and a similar thing holds of physical facts and processes that express the coöperative work of many intelligent beings. Works of art, institutions, languages, customs, faiths, cities, national life in general—all these things and processes are instances of complex expressions of mental life in outwardly observable physical forms.

The inevitable dangers and difficulties of this, the most constantly employed of all the methods of studying minds, are meanwhile, in part, well known. The facts to be studied are very numerous and complex, and easily misjudged, especially in case of minds that are markedly different from our own. A good example of this difficulty is the common failure of even very intelligent men to understand a good many among the expressive functions of women, or the similar failure of women to comprehend a great many among those of men. The barrier of sex will probably prove a permanent hindrance, in some important directions and regions, to the progress of the scientific study of the human mind, so far as that study seeks to make the mental life of one sex fully comprehensible to psychologists who belong to the other.

(2) The second method of the psychologist begins by proceeding backwards from the study of the outwardly expressive functions, in which our mental states get a sort of embodiment, to the scrutiny of their nervous conditions. These, once found to be, as they are, centred in the organisation and in the functions of the brain, this second method develops into that of the *study of the relations that exist between mental life and brain processes*. This method is necessarily an indirect one. It takes very numerous special forms. One of these is furnished by the study of nervous diseases with reference to those changes, in the expressive signs of mental life, which are the result of whatever form of nervous disorder is each time in question. In so far as the phenomena of insanity are already, despite our defective knowledge, traceable to otherwise known and definable physical disorders of the nervous system, the study of such phenomena for the purpose of the psychologist also obviously belongs here.

A further extension of the present method is offered by those experiments upon the nervous systems of animals which involve any noteworthy and intelligible changes in the signs of mind which these animals show. And it is thus that the functions of the brain have been frequently and very fruitfully studied during the last twenty-five years, despite the difficulty of drawing exact conclusions as regards the human brain and the human mind from the interpretation of such experiments. Nor does the use of the present method cease here; for, apart from disease and from vivisection, we are able to perform an experiment upon the functions of the brain whenever (as by stimulating our sense organs in particular ways) we can harmlessly bring about any physical change in a living man, whose mental life can indirectly be studied through his own accounts of it, while the physical effect that the experiment has upon his brain functions is meanwhile capable of a more or less determinate estimate. It is in this way that we study what is sometimes called "the physiology of the senses."

§ 11. (3) In close connection with the first, and in frequent connection with the second of the foregoing methods, stands the *method of introspection*, by which the individual psychologist *undertakes to observe and to analyse his own mental states and processes*. If carried on alone, without constant reference to the physical conditions of the mental life observed, and without a frequent comparing of notes with one's fellows, introspection can accomplish little of service for psychology. But, in union with other methods, introspection becomes an absolutely indispensable adjunct to all serious psychological study. The man who has never observed within will never be able to interpret the minds of others. The student of neurology can directly contribute to psychological science only in case he learns to scrutinise carefully his individual mental processes, even while he indirectly learns about their nervous conditions. Introspection is, however, for the scientific psychologist, despite its importance, rather to be used as an auxiliary of the other methods than as a method capable of leading the way. However expert a man may be in his own mental states, it takes a wide intercourse with his fellows, an outwardly observant examination of the signs of mind in others, and a careful study of the physical conditions in which given mental states arise, to reach any conclusions worthy of scientific consideration. The truly great "introspective psychologists" of the past, from Aristotle down, were none of them, as psychologists, at all exclusively devoted to the study of their own personal experiences. They were, for instance, greatly influenced both by the traditional views of their social order and by the popular psychology which lay more or less concealed in the languages that they used.

(4) An important modern method, which unites or may unite features

belonging to all the foregoing methods, is the method of *psychological experiment* in the stricter sense. This method involves *bringing to pass mental processes of greater or less complexity* (acts of attention, simple acts of will or of more complex acts of choice, associations of ideas, processes of memory or of computation, emotional states, etc.) *under conditions which can be exactly controlled or determined*. Then, according as he wishes, the psychologist studies one or more of the various noteworthy aspects of the situation that has been experimentally brought to pass. Thus one can examine by direct introspection what goes on in a single observer under the circumstance of a given experiment. Here one takes advantage of the definiteness which the experimental devices may give to the whole experience. Or again, in a series of related experiments, one can introspectively note how the mental states or processes alter as the physical conditions undergo certain determinate variations. Further, through comparing the reports, or the other expressive signs which various subjects give of what goes on in their minds under similar experimental conditions, one can get results as to the contrasts that exist between the mental life of various people. In some cases it is also possible to determine, to a certain extent, what physical changes in the central nervous system are produced by the experiment, and thus our knowledge of the relations of particular nervous and particular mental states may be furthered.

Very important results have also flowed from the careful noting of the various time-relations of any or of all the foregoing classes of facts, as they occur when exact experimental conditions have been established. The problem, how long a given mental process takes, and how this time-element varies with given variations in the situation, is one of great interest to the psychologist. Experimental psychology is the most recent of the branches of psychological work. In general it has to be carried on in special laboratories, where there are instrumental means for measuring time-relations, as well as for determining precisely the physical conditions under which the mental processes to be studied take place.

II. THE PHYSICAL SIGNS OF THE PRESENCE OF MIND.

§ 12. In view of what has now been said about methods, we may best begin our analysis of the general characteristics of mental life by asking what are the most general classes of expressive signs by which the living beings that have minds manifest to us their mental life. How, then, do those animals which are high enough in the scale to show us that they certainly possess mental life, differ from those living beings which, like the plants, give us no such manifestations?

The most general answer to this question is, on the whole, not very difficult. When a cat watches for a mouse, when a dog finds his way

home over strange country, we do not doubt that here are real signs of the presence of mind. When a tree that is cut with the axe shows no sign of feeling the blow, we note that here signs of mind are absent. To be quite certain just where to draw the line between living beings that seem to have no minds and living beings that possess minds does indeed

General Signs of Mind. involve us in great difficulties. But there are some general signs of mind which we all regard as unmistakable, and some cases of lack that seem to us to exclude the presence of any functions such as the psychologist studies. The general signs of mind may be defined as follows :

In the most general way of viewing the matter, beings that seem to us to possess minds show in their physical life what we may call a *great and discriminating sensitiveness to what goes on in their environment*. And by this their sensitiveness we here mean something which, though a sign of mind, is itself purely physical—viz., a capacity, observable from without, to adjust themselves by fitting movements, or by their internal physical functions, to what takes place near them. This sensitiveness is called *discriminating* because it is never a mere tendency to respond to every sort of change at random, or to all effective changes in the same way; but it is a tendency to respond to some changes (*e. g.*, light or sound) rather than to others, and to various changes in various fitting ways. To be sure, plants also show very many signs of well-adjusted responses to the changes in their environments. And, even so, those functions of animals which need show no signs of any mental accompaniments (*e. g.*, gland secretions, or the regulation of the body's temperature) are also discriminatingly sensitive, in the physical sense, to external conditions. But the matter is here first one of degree. Greater, quicker, or else more highly elaborate, is the sensitiveness of the beings that have minds, as it is shown in their expressive functions. Duller, or slower, or else simpler, appears the physical sensitiveness of the non-mental being or function when the environment changes.

§ 13. But it is not merely this very general difference in degree which we note when we consider this discriminating sensitiveness as a general sign of the presence of mind. If we come closer to the facts, we next note that the general sensitiveness of the beings that have minds determines itself, as we watch it, in three ways, and so appears in three important aspects, each one of which has its own special degrees of manifestation :

(1) The sensitiveness of the psychically endowed beings manifests itself by what, with a ready sympathy, we easily interpret as signs of satisfaction or of dissatisfaction, of pleasure or of pain, and of various emotions. These signs, in their simplest forms, are so well known that we need hardly describe them. Where, as

in the earthworm, we can detect nothing that we ordinarily call intelligence, we seem clearly able to note the signs of pain. Writting, withdrawal from a source of injury, and other simple movements of an obviously protective character, are such elementary signs of dissatisfaction. Still other movements, even in very low forms of life, seem to indicate satisfaction. Higher up in the animal scale we meet with reactions of fear, of anger, of joy, of the more elaborate forms of desire, and, in the end, of numerous other emotional states. We may for the present class all these as the SIGNS OF FEELING. The beings that have minds thus seem to us, from the first, *to show signs of more or less immediately valuing, or estimating, their own state, or their own relation to their environment.*

(2) But a still more noteworthy aspect of animal sensitiveness, appearing in simple forms, decidedly low down in the scale, becomes, in certain lines of evolution, rapidly more and more important higher up, and reaches its highest expression in man. *Signs of Intellect.* The animal, and especially the vertebrate animal, in proportion to its elevation in the mental scale, *shows a disposition to be moulded in its actions by its successive experiences.* That is, it is not merely sensitive in particular ways to particular changes; but *it learns by experience.* What response it makes at any given time is determined not merely by its inherited structure, nor yet by what is now happening to it, but, in addition, *by what has happened to it before,* during its intercourse with its world. This capacity to be moulded by experience greatly elaborates the discriminating sensitiveness of the organism that is able thus to learn. Wherever this capacity appears in its higher and more complex forms, the signs of such plasticity, of such power to be taught by the world in which the animal lives, constitute, when taken together, the SIGNS OF INTELLECT.

It is true that, in ourselves, nervous functions which seem to have no mental aspect, are still often moulded by experience. Not every case, then, of this sort of plasticity is itself a sign of mental life. In fact, all the so-called "acquired characters" of animal organisms plainly involve, in some measure, a capacity to be moulded by physical experiences. But, once more, the matter is one of degree. The power to show the effects of past experience is, in its more elaborate forms, the most convincing of all the signs of the presence of mind. Especially convincing is this sign when it appears as a power to apply the results of former experience in the adjustment of an animal's actions to decidedly novel conditions. When wild animals, after having experienced something of the nature of traps, become especially skilful in detecting and avoiding new sorts of traps, we never doubt that this is a sign of real intelligence. When (as

*Special Marks
of Higher In-
tellectual Life.*

is narrated in an account quoted by Romanes) an elephant, taught to pick up articles and hand them to the man who is on his back, detects at once, even in case of a novel article (*e. g.*, a sharp knife), and by virtue of some subtler similarity of this novel article to previously known things, will either pass up this article carefully or with a careless haste, we are sure that this sort of acquired skill indicates the presence of mental life of a highly developed sort.

Decidedly different is the case where the actions of an animal show great skill in their successful adjustment to surrounding conditions, while,

Instinct. nevertheless, the adjustment in question seems to be largely an original function of the animal, which is only in part, perhaps in very small part, moulded by the animal's own past experience. In this case we call the actions that we observe cases of INSTINCT. The signs of instinct cannot of themselves be regarded as signs of what, from the psychologist's point of view, is identical with intellect. The most marvellous developments of instinctive functions occur in invertebrate animals, especially among the insects (*e. g.*, ants, bees, and wasps). While these instincts get adjusted to passing experience, they are sometimes remarkably perfect apart from the influences of any past experience. The instincts of the higher vertebrates are generally a good deal moulded by the experiences of the individual animal, so that although a large part of the functions may be directly inherited, it is nevertheless subject in its growth to the laws of the intellect, and is here seldom free from great modifications during the life of its possessor. In man the inherited instincts, although they lie at the basis of all our intellectual life, get so much modified and moulded by our experience that we generally fail to recognise their presence as instincts. Yet, as James and others have shown, man has at the outset an extremely large number of elaborate and inherited instinctive predispositions to given sorts of conduct.

In so far, however, as we leave out of account these relatively unalterable inherited instincts, we can then say that by the signs of intellect we mean those which show an animal's *plasticity in the presence of experience, and especially its skill in adjusting the results of past experience to the meeting of novel situations*. This, then, is the second form of that general sensitiveness which constitutes the sign of the presence of mind.

(3) In a third form the general sensitiveness of the beings that possess minds shows itself when we consider, not now the conditions, but the *results of their actions* and their own relations thereto.

Signs of Will. Not only do they respond to slight changes, but, in many cases, their responses lead to highly important results, whose elaborateness seems out of all proportion to the slenderness of the causes that have set them into activity. For one thing, the higher animals generally show an *overwealth of activity*. They not only

respond in a fitting way to their environment, but they repeat or elaborate their responses more than is necessary for adjustment. They move about when they might, without loss or danger, keep quiet; they sing, as the song birds do, apparently often for the mere love of singing; or, in the form of play, they vent their surplus energy as kittens do, or as children. On another side of their active life we find a great many of them *highly constructive or destructive*. *They do not leave their world as they found it. They fashion their environment to their pleasure.* They build honeycombs, nests, houses, cathedrals. Or, as beasts of prey, they destroy others, and so may alter the aspect of their environment very effectively. Now, when such activities, whether by their overwealth or by their elaborateness, or by their permanent or by their far-reaching results, so attract our attention as to seem to us to show that *the animals concerned take note of their own conduct, and more or less clearly mean or intend its outcome*, we regard these as SIGNS OF WILL. The life of the will means the life of an animal, in so far as it involves a more or less *conscious direction of conduct*.

In this way, then, we get three sorts of noteworthy signs of mind :

- (1) THE SIGNS OF FEELING—*i. e.*, the signs of an animal's way of directly valuing or estimating its own state, or its relation to the environment.
- (2) THE SIGNS OF INTELLECT—*i. e.*, the signs that indicate an animal's tendency to learn by experience.
- (3) THE SIGNS OF WILL—*i. e.*, the signs that an animal is taking account of its own conduct and directing this conduct.

III. THE NERVOUS CONDITIONS OF THE MANIFESTATION OF MIND.

§ 14. The organic conditions for all these manifestations of mind is the presence of a nervous system. At all events, such signs of mental life as some have believed to be present in organisms too low to show us any differentiated nervous systems are such as to need here no further mention. The discriminating sensitiveness which everywhere accompanies all the higher manifestation of mind is, physically speaking, a property of nervous tissue.

Leaving to the anatomist and the physiologist every extended description of the structure and functions of our nervous system and of its instruments—*viz.*, the sense organs and the organs of muscular movement—the psychologist can here only try to show very summarily what characters of the nervous system most interest his own undertaking.

The nervous system consists, for our purposes, of a vast collection of "elements," each one of which is a "nerve-cell" that, in addition to its minute central mass, possesses prolongations which are either "nerve-fibres" or else are other so-called "processes"—*viz.*, minute and multi-

formly branching extensions of the substance of the nerve-cell. These processes, extending, in the central nervous system, from one cell to the

*Structure and
Function of the
Nervous System.*

immediate neighbourhood of other cells, form an extremely complex network of finely divided threads or of moss-like or of mould-like collections of short and long threads and branchings. A current and authoritative opinion holds that the processes of one cell probably never really unite either with the processes or with the central substance of any other cell. Thus each cell, with its processes, lies, it would seem, side by side with other cells, whose processes, intertwining like the foliage of neighbouring trees with its own processes, still never grow into its own substance, so that all these "elements"—*i. e.*, cells, each with its own extensions—are anatomically independent. The nerve-fibres proper, which grow out of what are called the axis-cylinder processes of cells, run often for long distances unbroken through the nervous system, either reaching their various terminal organs in the outer or "peripheral" portions of the body, or else coming to an end in tuft-like branchings in the immediate neighbourhood of the cells whose functional relation to their own parent cells they are destined to determine. Nerve-fibres often divide into branches of equal value, or else send off, in their course through the central regions of the nervous system, many accessory branches, which may terminate as does the main fibre, only at points often far removed from one another. Thus any given fibre, with its branches and accessories, may serve to bring its parent cell into some sort of relation to many other regions of the central nervous system. On the other hand, the anatomical independence of the elements which has thus been probably made out suggests that every cell has some sort of relative and subordinate independence of function. When it has once received any disturbances it probably sends out, through its processes and its fibre, its own sort of excitation; but very possibly this excitation does not pass over from the terminations of the cell branches to any other nervous element without considerable alteration in form, and perhaps in degree. It has been suggested by the experimental work of several neurologists that what a cell does to its neighbours or to the more distant cells with which its fibres bring it into relation must be somewhat analogous to "induction" as known in case of electrical phenomena. From this point of view the excitation of a cell through the excitation of its nerve-fibre or by any other means may "induce" other cells, with which the first cell stands in relation, to give out, in their turn, their own form of excitement, which they then pass over by induction to yet other cells. In any case, the known general structure of the nervous system seems especially adapted (1) to the manifold propagation of excitements in various directions, (2) to the constant variation of the form of this excitement as it passes from element to ele-

ment of the nervous system, and (3) to the most complex influence of the excitations of one part of the nervous system upon the independently aroused excitations which happen to be present in other parts of the system.

§ 15. The best-known division that exists in the functions of the nervous system is that between the sensory and the motor functions.

*Sensory and
Motor Functions.*

Beginning in the more external or peripheral regions of the organism, disturbances are constantly passing inwards from the sense organs, where the fibres of the sensory nerves have their outward endings. These sensory fibres carry physical disturbances of some still unknown form to the neighbourhood of more centrally situated cells, which in their turn may, and in general obviously do, send the excitation or its induced resultants to very various parts of the still more centrally situated nervous tissue. The rate at which the nervous disturbances are carried in nerves is in general known, although not so accurately in the sensory as in the motor nerves, and is from thirty to forty metres per second. In the meantime, centrally initiated physical disturbances are constantly passing outwards over motor nerves to the terminations of these nerves in muscles, glands, etc., where these disturbances produce complex effects upon the organs of voluntary and involuntary movement, upon the circulation, and upon the secretions. In general, the sensory nerves, in view of their actual relations to the rest of the organism, are so disposed as to carry disturbances only inwards, and the motor nerves so disposed as to carry only outwards, although this law

Sense Organs.

seems to be not absolute, but only a resultant of the usual conditions. The sensory nerves terminate outwardly, as has just been said, in sense organs, which are in general so constructed as to expose their nerve-fibres to only one sort of physical excitation (as the fibres of the optic nerve are normally exposed to the effects which light produces upon the retina, the auditory nerve to the effects of sound-waves, etc.).

This division between sensory and motor nerves is, in the first instance, a purely physical matter, and does not by any means name functions that must have any direct relation to our mental states. For disturbances travelling inwards over sense-nerves need not be passed on through the nerve-centres until they reach the level of the cortex of the brain; and unless they do reach the cortex we have no sensations, and the sensory-motor process then goes on without mental accompaniment. Just so, very numerous motor currents pass outwards from centres—*i. e.*, from groups of cells situated wholly in the spinal cord or elsewhere below the level of the cortex—and are in no wise due to excitations aroused in the cortex. In such cases the motor processes in question have no relation to our will. A pigeon deprived of its brain hemispheres can fly, avoiding obstacles; can

perch, balance, walk, etc., when stimulated to such acts by appropriate sensory disturbances. It, however, no longer shows hunger, fear, love, or similar sorts of discriminating sensitiveness, and gives no sufficient signs of such intellectual life as would characterise an uninjured pigeon. If left alone, it rests in apparently absolute repose and indifference to its environment. Driven from one perch, it merely flies till it finds another. Thus the sensory excitations which reach the brainless pigeon's nervous centres produce, probably apart from any definite mental life, physical disturbances of cells, such as stimulate in an always rigidly determined serial succession (through the intermediation of motor nerves) just the right muscular fibres which are needed to produce each time the pigeon's acts of balancing, flying, or perching. Yet all this appears, in the end, to involve none of the watchful, often hesitant, tremulous, emotionally busy sensitiveness of the normal pigeon. The brainless pigeon seems like a delicate but absolutely determined machine, which never really seeks to escape, and never shows the least normal concern for its own preservation, but merely perches when it touches a perch, flies when it is in the air, balances when it begins to fall—and all this with the stubbornness of a steadily working clock.

So far, then, a sensory impression has appeared in our account as a physical disturbance that passes inwards from a sense organ over a sensory nerve. In the central masses of cells such disturbances, occurring, as they do, at any moment, in great numbers, produce changes that are often far-reaching, but that are usually determinate as regards their total outcome, and that often are so quite apart from any signs of intellect, of feeling, or of will. In any case, however, the outcome, if definite, is some sort of "adjustment to the environment"—*i. e.*, is of a nature to be, in general, serviceable to the life of the organism. The adjustment is modified by the endless interchange of excitations throughout the central nervous system, whose enormous numbers of relatively independent "elements," mutually inducing different forms of excitement in one another as soon as any of them are disturbed, tend both to the multiplication and to the control of the effects of every disturbance. The useful movements that result are such as they are because, in the end, groups of muscle-fibres get excited in a definite serial order for every complex act. And this serial order is determined by the total structure and the consequent functions of the central nervous system.

§ 16. But now, where the signs of mind are definitely shown, the accompanying nervous processes are still of the same fundamental sort as in the cases just discussed. The difference lies in the place,

Brain Processes. in the complexity, and in the significance of the central nervous processes involved. When, as in our own cases, the cortex of the

brain is present and is actively functioning, it functions as it does because of the current sense disturbances which reach it. The result of the brain process is always an outward-flowing but very highly orderly—a serially arranged—collection of disturbances which, acting, in general, through the co-operation of lower centres, result either in actual external movements, or in tendencies to movement, or, finally, in the prevention of movements which would be carried out, at the time, by the lower centres, if the latter were not under the control of the brain. Intermediate between the ceaseless income of the sensory disturbances that reach the cortex so long as it is active, and the equally ceaseless outgo of the motor processes (or of the processes tending to the control of movements), that leave the cortex all through our waking life, there are central processes occurring in the form of an interchange of induced cellular disturbances among the elements of which the cortex of the brain is composed. As there are probably some hundreds of millions of these elements in the grey matter which forms the surface of the brain, and as the intertwining foliage of the branching forest of cell processes, together with the masses of innumerable winding fibres that wander from region to region of the brain, must determine an august multiplicity of interrelations among these elements, it is no wonder that these central processes should show a simply inexhaustible complexity. Still more marvellous, however, from a purely physical point of view, is the orderliness which reigns amid the complexity. This orderliness is, in general, due to the great law of habit.

Habit. *The brain tends to do the sort of thing that it has already often done.* The brain is, meanwhile, persistently

retentive of its own once-formed habits regarding these interchanges of the activities of its various elements whenever they are excited in particular ways. And it is thus persistent to a degree which we can never cease to regard with more wonder the more we study the brain's functions. On the other hand, the cortex remains, to a remarkably late period in life, persistently sensitive to a great variety of new impressions, and capable of forming at least a certain number of specialised new habits—such as are involved whenever we learn to recognise and name a new acquaintance, or to carry out a new business enterprise. And all these things, it must be remembered, the cortex accomplishes as a physical mechanism. If we change—by experimental interference, by accident, by poisoning, by disease—any of the physical conditions of the cortex, we interfere with some or with all of these functions. Meanwhile, if we at any time were to cut off all sensory stimulations, the brain, as many facts indicate, would either soon cease to act at all, or would remain active only in a slight or in an almost utterly insignificant way. On the other hand, so long as the brain is active it sends out motor stimulations, or stimulations that tend to control or to suppress the activities guided by lower centres. And it

is precisely this motor outgo of the brain that determines the very signs of mind which we discussed above.

Furthermore, while the brain is, during waking life, full of general activity, it is now well known that every definite outflowing process, as well as every definite sensory stimulation, involves sharply localised regions of the brain. Eye and ear, arm and leg, have definite centres in the brain corresponding to the stimulation of the sense organ, or to the movements of the limb. *Each of the numerous habits of the brain means, then, tendencies to the excitement of localised tracts and paths under given physical conditions.* An excitement passing over one set of paths leads to one system of external movements—*e. g.*, from eye-centre to hand-centre, when one sees and then grasps. If circumstances vary the paths, they vary the motor results. It is possible to have, in cases of localised brain disorder, the survival of a few very complex habits of movement in the midst of the utter wreck of all the other related habits of the same grade of complexity and of similar significance—as when a patient loses all power to remember his native tongue except for a few surviving words, chosen by the disease, as it were, either at random or in more or less typical fashion, to outlast the rest. In this case a few definite and localised habit-worn paths for the induction of activity remain after all the related paths of the region in question have been destroyed.

Meanwhile, what the brain at any moment does, in answer to the current sensory stimulations, is determined both by its entire past history and by its inherited “temperament” or original type of structure. For by heredity the brain has come to be just this vast colony of functionally united cells. And, on the other hand, whatever has happened to the brain in the past has meant some definite and usually sharply localised interchange of induced activities among its elements. Every such interchange has altered the minutest structure of all the elements concerned, has established localised paths between them for future inductions to follow. They can never act again precisely as they would have done had they not acted once in just this way. And this is what is meant by saying that the brain *forms its habits*. One must now, in addition, note that this formation of habits occurs in the most subtle fashions. Parts that have often functioned together tend to function more easily together again. This is true down to the minutest detail of localised functions. But what is still more significant for all our higher mental life is, that *general forms or types of activity, however subtle or evanescent their nature, when once they have resulted from a given exchange of induced activities (due to sensory stimulations), tend thereby to become henceforth more easily re-excited, so that the habits of our brain come to be fixed, not merely as to the mere routine which leads to this or to that special act, but as to the general ways in which acts are done.* A given “set” of the

brain as a whole, a given sort of preparedness to be influenced in a certain way—yes, even a given tendency to change, under particular conditions, our more specific fashions of activity—may thus become a matter of relatively or of entirely fixed habit; so that, under given conditions, the brain, so long as it remains normally intact, is sure to respond to certain sensory disturbances by assuming this “set,” by being ready for this relatively new influence, or by actually seeming to change even its specific past habits themselves in a certain general but habitually predetermined direction whenever given sorts of stimulation are presented. It is known, for instance, that “fickleness” of conduct, irrational change of plan of behaviour, can itself become a hopelessly fixed habit in a given brain. There is, then, no type of activity so general that some brain cannot be trained to become habitually and fatally predetermined to just that type of interchange of internal functions, and so to that type of outward-flowing activity.

§ 17. On the general relation of the activities of the cortex to those of the lower nervous centres, and of the relations between various activities of the cortex itself, it still remains to say here a few words. The brain cortex directs, by itself alone, and apart from the co-operation of lower nervous centres, few or no externally observable motor processes. What it does is partly to combine and elaborate, partly to guide by slight alterations, and partly to hold back or to prevent, the activities which other centres, left to themselves, would carry out in response to the sensory stimuli which either reach them or for which the brain substitutes its own sort of stimulation when it arouses the lower centres to act in its service. The character of the cortex as an organ for preventing or “inhibiting” the functions of lower centres is of very great importance, and well exemplifies the sort of hierarchy which obtains among our nervous centres. Within the brain itself a similar hierarchy exists, and a similar system of mutual inhibitions gets formed on the basis of our experience.

Upon this process of “inhibition”—*i. e.*, of the prevention or overcoming of one form of nervous excitement through the very fact of the presence of another—the organisation of all our higher life depends. What, in any situation, we are restrained from doing is as important to us as what we do. Tension, the mutual opposition and balancing of numerous tendencies, is absolutely essential to normal life. The brain receives, at every waking instant, an enormous overwealth of sensory stimulation. For instance, the habits of those portions of the brain which receive the fibres of the optic nerve, and of those portions which direct our eye-movements, are such that every object of the least note in our field of vision actually acts as a stimulus to incite us to look directly at itself. Consequently, if the eyes are idle, the presence

of any one bright light in the otherwise indifferent field of vision is a physical disturbance, to which the natural motor response is the turning of the eyes towards that light. And so, if the field of vision is full of interesting objects, all of them thus tend to excite various motor responses on the part of the eyes. In order to look steadily, for even a moment, in any one direction, we therefore have to inhibit all of these tendencies except the one whose triumph means seeing the preferred object. This is only one among the countless cases where the accomplishment of a given act means the inhibition of other acts to which the brain is meanwhile incited by the presence of some habitually effective stimulation.

As every normal stimulation that reaches our brains during our adult years is likely to appeal more or less vigorously to some established brain habit, the need of such suppression of possible motor processes is absolute and continuous. The problem of the inhibition of those habits of movement whose presence at any given moment would injure the useful adjustment of our organisms to their environment is, despite its complexity, solved, in case of all the higher nervous centres, by the presence of certain general and very characteristic physical processes whose nature is still very ill understood, but whose beautiful adaptation to their purpose we can already to some extent estimate. We have before

Set of the Brain. spoken of what may be called the general "set," or "sort of preparedness for a given kind of excitation," which the brain at any moment may be brought to assume. This "set" is in general itself the obvious result of a previous series of sensory stimulations, and of an appeal to old habits, and it may come to pass either suddenly or quite gradually. Once assumed, any given "set" of the brain manifests itself by the fact that, for the time, one group of sense-experiences tends to arouse the motor habits that have become attached to them in consequence of the past experiences of the brain, while the motor habits to which all other current sense-impressions appeal, are in great measure inhibited. Yet these relatively ineffective sense-impressions certainly reach, in most cases, their centres in the brain, for if altered a little from their current character they may at once assert their presence by calling out movements that show concern in the alteration. A similar "set" may be given by the action of the brain to a group of lower centres, which then proceed to react automatically to external stimuli until the whole process is cut off by external stimuli, or by a new signal from the cortex; and while this "set" continues all other motor habits of the centres in question are inhibited.

§ 18. Examples, both of inhibition in general and of its relation to the passing general "condition of preparedness" of the higher and lower centres, are easy to give. In general, all higher intellectual processes are accompanied by processes in the cortex which appear, when seen from

without, enormously inhibitory. One absorbed in writing or reading lets pass without response countless impressions which pretty certainly reach the brain, impressions to which, under ordinary circumstances, he would respond by acts of looking, of listening, of grasping, or of other more or less useful or playful types of adjustment. Let him cease the higher activity, and he adjusts himself more vivaciously to the lesser matters of his environment. An absorbed public speaker, an actor, or a man in a formal social company, inhibits those movements, however habitual they are in other company and however strong the momentary sensory solicitation to them, which his habits have taught him to suppress as being here "out of character." This word "character" here names the mental equivalent of a given "set" of brain. So long as one assumes the "character" the well-practised inhibitions triumph. If one goes home, or changes one's company, those former reactions may vanish as if they never had been, and it may be even impossible to reassume them, except in particular surroundings. In case of the relations of higher and lower centres, the "set" of a group of lower nervous processes is well illustrated by the activity of walking, which consists of a regulated series of motor adjustments to sensory stimulations—leg-movements, acts of balancing, etc. This series is largely under the control of relatively lower centres, both in the cortex and below. It may be initiated by a signal from above. Once begun, it is continued, with a consequent inhibition of all inconsistent muscular movements, and often little or no guidance from the more complex groups of brain centres, until the signal to pause is given. Then other activities of adjustment take the place of the ones that have come to an end. Thus one pauses in a walk through a garden to survey more carefully the appearance of the flowers, to do a piece of work that requires the skilful use of the hands, etc. The rule of inhibition, as regards the before-mentioned hierarchy of the nervous centres, seems to be that the higher a given function is, the more numerous are the inhibitory influences that it exercises over lower centres. Intense brain activity of the highest sort is opposed, while it lasts, to nearly all the simpler functions above the level of the vital necessities, except the very few, such as reading or speaking, which training may have brought into the direct service of the highest activity itself. Excite a child's brain to anything approaching absorbing activity (*e. g.*, by telling the child an interesting story), and for the time you "keep him quiet." Otherwise he runs about, looks here and there, laughs, wriggles, kicks, prattles—all adjustments to his environment, adjustments either useful or playful, but of a simpler sort. These may cease by inhibition when the story begins. The child may then sit for a short time with moveless hands, with optic axes parallel—*i. e.*, with eyes "gazing far off," with legs hanging loosely, with falling lower jaw—all of them more or less inhibitory phenomena.

§ 19. The practical consequences of this general principle of the inhibitory character of the higher nervous processes are multitudinous.

Self-control. Absence of inhibitions is a familiar sign of nervous disorder or degeneration, and also, in children, of immaturity. "Self-control" is an essential part of health. This principle furnishes the reason why so much of our educational work has to be expended in teaching "self-control," whose physical aspect is always the presence of inhibitory functions. The moral law has often been expressed in the form of the well-known "*Thou shalt not.*" Such negative precepts always presuppose that in the person who really needs to be taught by the precept, a disposition or habit of brain pre-exists which involves, when left to itself, a certain sort of response to a given environment—*e. g.*, in an extreme case a tendency to the expressive acts called, in human social relations, theft or murder. Instead of telling such a man what positive motor activity to substitute for such doings, the negative precept undertakes to point out that, as a condition prior to any better adjusted conduct, these motor tendencies, at least, must be inhibited. But their inhibition is to be actually brought about, in case of the successful moral precept, through the influence of what is called in psychological language "suggestion." The physical efficacy of such "suggestion" depends, however,

Suggestion. upon its appeal to brain habits of a very high level, which, like the other higher processes, have a general capacity to act in an inhibitory sense, as against functions of lower levels or of a more primitive simplicity.

But just as we often train habits of inhibition as a preliminary to the more positive establishment of useful higher functions, it is even so true that, whenever we can get higher functions of a positive sort established, we thereby train inhibitory tendencies. And, on the whole, this is the wiser course for the teacher of the growing brain to take where such a course is possible. Inhibition is a constant means, but it is still but a means to an end. The end is the right sort of motor process. You teach a man to control or to restrain himself so soon as you teach him what to do in a positive sense. Healthy activity includes self-restraint, or inhibition, as one of its elements. You in vain teach,

Healthy Activity. then, self-control, unless you teach much more than self-control. The New Testament statement of "the law and the prophets" substitutes "Thou shalt love," etc., for the "Thou shalt not" of the Ten Commandments. A brain that is devoted to mere inhibition becomes, in very truth, like the brain of a Hindoo ascetic—a mere "parasite" of the organism, feeding, as it were, upon all the lower inherited or acquired nervous functions of this organism by devoting itself to their hindrance. In persons of morbidly conscientious life such inhibitory phenomena may easily get an inconvenient, and sometimes do get a dangerous intensity.

The result is then a fearful, cowardly, helpless attitude towards life—an attitude which defeats its own aim and renders the sufferer not, as he intends to be, “good,” but a positive nuisance.

The practical problem as to the degree of inhibition which it is well to establish in our nervous life is one which wholesome people meet in part by the device of a duly changing or alternating activity of the central nervous system. *The strain of absorbing intellectual work is, in considerable part, pretty obviously either conditioned or intensified by two factors: (1) The actual nervous expenditure involved in the inhibitory processes themselves:* While one works, countless excitations tend to set free lower motor functions, and all these tendencies have to be held back by counter-signals from higher nervous stations. This in itself involves a great deal of motor expenditure. “To sit still” is itself, in general, a motor process, and is often a very hard one—*e. g.*, when one is in an exciting or harassing situation, and when prudence says: “Do nothing; wait and see.” (2) *The indirect effects of non-exercise of the inhibited functions:* to sit still and think, to restrain ourselves, means to condemn many groups of muscles to inactivity. This means a tendency to disturbed nutritive processes, and so in the end an unequal development or an actual degeneration of the whole organism. We relieve the strain as well as favour the neglected organs when we substitute exercise for inhibition. Variation of labour is thus, in itself, and within limits, actual motor rest or recreation. “To let ourselves go,” within the bounds of propriety, duty, and moderation, involves a rest from the heavy motor task of “holding ourselves still.” This is especially true in children, in whom the inhibitory processes are ill-formed, and therefore the more laborious. Young children should never be asked to continue long any one type of inhibitory process. With them any one persistent “set” of the brain becomes very soon an injurious incident.

On the other hand, not every change of the “set” of brain is itself restful. The phenomena of “worry” include many “changes of mind”—*i. e.*, of more special “set” of the brain. Yet the result is disastrous. But the effects of worry seem to be very largely due to the strong tension existing in the worried person between his abnormally numerous sensory incitations to particular acts and that general “set” of his brain which, so long as he is worried, survives all his actual changes of special “set” or plan, and tends to inhibit all sorts of definite or connected activity. Whether he rushes about or lies still in pretended rest, whether his mood is this or that, he is all the while incited to act, and is busy holding himself back from effective action. His endless question, “What shall I do?” his motor restlessness, his petty and useless little deeds, all express his inability to choose between the

numerous tendencies to movement which his situation arouses. Countless motor habits are awakened, and then at once suppressed. In his despair he tries to inhibit all acts until *the* plan—the saving plan—shall appear. And so, accomplishing nothing, he does far more motor work than an acrobat. But let the dreaded calamity over whose mere possibility he worries actually befall him. *Then*, indeed, there is often but one course of conduct, perhaps a very simple one, suggested by his new situation. The useless inhibitions vanish. One definite “set” of brain is, indeed, substituted for the preceding state, but the new one is free from the over-numerous and violent special tensions between higher and lower centres and functions which characterised the former. The recently worried man may hereupon become cool, may wonder that he can bear the worst so much more easily than he could the uncertainty, and may by contrast find not only rest, but a kind of joy in the relief occasioned by the cessation of useless motor processes. Where the man himself has worried, it is thus often the part of the seemingly most cruel fate to rest him; and this the latter then does by cutting off the extra inhibitions in favour of an easily accomplished response to definite stimulations.

Finally, in this connection, it may be observed that when a given series of acts, involving a certain number of successive inhibitions, has to be accomplished, much more mental strain is involved and more weariness results, according as the inhibitions themselves have to be made objects of a more definite consciousness or volition. And the degree of strain increases very rapidly with the attention given to the inhibitory side of the process. Hence the hard labor involved in learning new adjustments, in acts of voluntary attention, and in conscious self-restraint generally.

*Attention to
Inhibitory Process.*

IV. THE CLASSES OF MENTAL PHENOMENA IN GENERAL.

§ 20. A certain proportion of the foregoing functional processes are attended by mental states. In general, our mental life, or, as it is often called, our consciousness, attends those processes which, while involving the cortex, are of a decidedly complex grade and of a relatively hesitant character, or which come in consequence of the graver interferences on the part of our environment. Our most perfect adjustments to our environment are accomplished unconsciously, unless we chance to become aware of them through their relations to what is actually concerning our conscious life. Our mental life, however, regularly attends (1) those of our habitual cortex functions which are at any time considerably altered to meet novel conditions, and which accordingly have, despite their skill, a relatively hesitant fallibility about them; (2) those of our functions which are considerably disturbed in their normal flow by the intensity or the novelty of the external stimu-

Consciousness.

lation ; and (3) those of our functions which, in relation to the other functions present in the cortex, have a physical intensity that exceeds the average of what is going on at the same time. For example, we are conscious when we think out a new plan, but we perform numerous acts of mere routine without noticing them. What we do very rapidly we fail to follow, in its details, with our mental life. What, as being somewhat novel, we do with "deliberation," we may follow very adequately. But the physical accompaniments of strong states of feeling, however swiftly they bring some reaction to pass, still imply a change in our consciousness. And intense experiences, such as disagreeable noises (the sound of a hand-organ or of a hurdy-gurdy), may long retain a place in consciousness which may be out of proportion either to the importance, or to the novelty, or to the complexity, or to the deliberateness of the motor functions which they arouse. Meanwhile, the precise conditions that mark the boundary between those functions which have no mental equivalents and those to which consciousness corresponds is unknown. What we are sure of is that our consciousness is a very inadequate representative of what goes on in our cortex.

§ 21. The mental life which accompanies these functions consists of a "stream of consciousness" in which we can generally distinguish many

*The Stream of
Consciousness.*

"states" or different "contents" of consciousness. These "contents" (or rather, as we shall see, certain distinguishable aspects of these contents) we divide, as before indicated,

into three sorts: (1) Contents of Feeling ; (2) Contents of Intellect ; and (3) Contents of Will. The contents of Feeling form whatever constitutes the immediate value for us, of the passing experience, as satisfactory or unsatisfactory. The contents of Intellect are such as have to do with our application of past experience to the present facts. The contents of Will are such as have to do with our direction of our own activities.

§ 22. The "stream of consciousness" is the name frequently applied to what passes in our mental life, because, mentally speaking, we live in a state of constant inner change, so that no portion of our consciousness ever remains long without some alteration, while most of our contents are always changing pretty rapidly. On the other hand, the changes in our inner state are, in general, however swift they may be, still somewhat gradual when compared with the swifter physical changes known to us. A flash of lightning lasts very much longer for our sight than it does as a fact in the physical world. This is partly due to the "inertia" of the retina of the eye. But a similar "inertia" holds of all our central processes. Every mental experience always joins on, more or less, to subsequent experiences, and in general to previous experiences also. A new experience gradually wins our attention, reaches its height, and dies away as our attention is turned to the next ; and even in very sudden experiences this

relatively gradual character of the process can be noted, if not at the beginning then at the end of the experience, as it slips away into a mere memory. If one listens to any simple rhythm, such as the ticking of a watch, one can note how the succession of separate ticks is viewed by our consciousness in such a way that the successive beats do not stand as *merely* separate facts, but are always elements in the whole experienced rhythm to which they seem to belong, while the successive presentations of the rhythm form a sort of stream of events, each one of which gradually dies out of mind as the new event enters. In consciousness there is no such thing as an indivisible present moment. What happens in our minds during any one thousandth of a second of even the busiest inner life none of us can possibly make out. The contents of mind, as we know them in the "psychological present," constitute at the very least a considerable and flowing series of changes, the least appreciable portion of which takes up a considerable fraction of a second.

As for these "contents" themselves of the stream of consciousness, it is well to say at once that they never form any *mere* collection of "ideas" or of other simple and divided states. Consciousness is not a shower of shot, but a stream with distinguishable ideas or other such clearer mental contents floating on its surface. What we find in any passing moment is a little portion of the "stream," a "pulse" or "wave" of mental change, some of whose contents may be pretty sharply distinguished from the rest, while the body of the stream consists of contents that can no longer be sharply sundered from one another. If one listens to music, the notes or the chords may, in their series as they pass, appear as sharply separable contents. But these stand out, or float, upon a stream of mental life which includes one's estimate of the time sequence of the music as a whole, one's pleasure in hearing the music, one's train of associated memories, one's general sense of the current bodily comfort and discomfort, and much more of the sort, which no man can analyse into any collection of separate or even separable states. In consequence, we are never able, by any device at our disposal, to tell with certainty the *whole* of what is, or just was, present to any one moment of our conscious life. The old question whether one can have "more than one idea at a time" present to one's mind is a question absurdly put. Present at any one time to one's mind is a small portion of the flowing stream of mental contents, in which one can in general distinguish at least two, and sometimes decidedly more, elements of content (perceptions, feelings, images, ideas, words, impulses, motives, hopes, intentions, or the like), while beside and beneath what one can distinguish there is the body of the stream or (to change the metaphor) the background of consciousness, where one can no longer distinguish anything in detail, although in some other moment one may easily note how the whole background has changed.

§ 23. As for the different sorts of contents, it is also well to say at once that they can be distinguished rather than separated. When we distinguish feeling—*i. e.*, the current direct sense of the present value of what is happening to us—from intellect—*i. e.*, the mental process of profiting by and using our past experience in our present consciousness—and when we say that contents representing both feeling and intellect continually pass before the mind, what we mean is not that some of our distinguishable contents (*e. g.*, ideas, such as one's "idea of a horse") belong exclusively among the intellectual facts, while other contents (*e. g.*, pains, such as the pangs of chagrin or of a toothache) belong among the facts of feeling. On the contrary, all facts or contents of the inner life are facts of feeling, and all are also facts of intellect. But some are more exclusively valuable from the one point of view and some from the other. Thus I have pass before me the image of a number, say 500, or of a word, say *physiology*. Such mental contents are undoubtedly to be called rather intellectual facts than anything else; for by virtue of such contents I apply my past experience to the interpretation of my present needs. These are what people usually mean by "pure ideas"—cold, unemotional. But a closer inspection shows that one never attends to such an idea unless, at the time, it is "interesting"—*i. e.*, unless, as a fact in consciousness, it has a sort of present value, a colour of feeling about it, which makes it worth holding as it passes. In the worst case, even our relative "indifference" to an idea that we reject from our present notice is itself an aspect of the passing fact which we now feel or estimate. This fact, then, involves some slight element of satisfaction or of dissatisfaction. Thus all those mental contents by means of which we apply past experience to present needs are also contents that have a present value for feeling. On the other hand, however, no feeling, however intense, occurs to an adult mind without being more or less viewed by us in its relation to past experience. It is recognised, or regarded as strange, or is otherwise commented upon as related to one's past. And thus, though sometimes in a very dim way, it is regarded by ourselves as an intellectual fact.

V. THE FEELINGS.

§ 24. We pass next to the special classes of contents, and first to the feelings. Complex masses of very marked feelings present together are called emotions. The feelings (compare § 13, § 21, and the section immediately preceding the present) are not a separate or separable group of the contents of the mind. but by this word we mean *all* the contents of the "stream of consciousness" *in so far as, at the moment of their passing, they have an immediate value, either in themselves or in view of their relations to other contents.* Thus, again, feeling is another name, of course, for what is often

said to give the passing states their momentary "worth" or to make them "worthless." By virtue of such worth or worthlessness they seem, as they pass, "satisfactory" or "unsatisfactory." Now, some facts of consciousness are "cold," and their colour of worth (the degree of feeling which attends them, and which forms one aspect of them) is small. These colder experiences are usually treated as if they wholly belonged to some other class than the feelings—*e. g.*, to intellect. But, as a fact, these contents, too, have an aspect which gives us a right to class them, precisely in this aspect, with the feelings; for, after all, the whole of consciousness and every part of it has its passing value. Nor can one in any fashion so separate out the feelings from their entanglement with the other aspects of mental life as to treat them as if they could exist alone. The whole stream of consciousness is coloured with interests, or with "what makes life interesting," whether the particular contents be satisfactory or unsatisfactory. Names which denote contents or masses of contents, so far as they are contents of feeling, are such names as joy, grief, anger, unrest, peace, happiness, unhappiness, surprise, misery, contentment, etc.

This general character of being momentarily satisfactory or unsatisfactory is itself one which appears in our mental contents in the most varied fashions. Psychologists usually attempt to simplify the matter by calling what makes the passing colour of feeling satisfactory its *pleasurable*, and what makes

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and Pain.*

it unsatisfactory its *painful* tone or quality. In fact, the names *pleasure* and *pain*, suggesting, as they at once do, rather the stronger and simpler experiences that we get in the world of feeling than the fainter and more complex experiences, invite us to reduce our account of our feelings to a relatively simple formula. Pleasures and pains are unquestionably, in at least one aspect of their conscious existence, feelings—*i. e.*, they involve aspects of passing experience such as give it momentary value for us, and such are most obviously marked aspects of many of the passing experiences that we get through our sense-organs. A toothache is a pain. It is also, to be sure, more than merely painful feeling. It has its intellectual aspect, since one recognises it, relates it to past experiences, localises it in the lower or in the upper jaw, and is led by its presence to think of its probable causes. It has its volitional aspect, since it forms an essential part in one's consciousness of the plan or act of trying to get rid of it, say by resolving to visit a dentist. But regarded as mere feeling, this pain is a fact of passing consciousness, whose "colour" or "worth," distinguishable from all its other characters, lies in the fact that it is not only unsatisfactory, but "intolerable." If one failed to recognise or to localise it, if one could get it into no relation to past experience, if one had no plan for getting rid of it, if one could form no resolve about it, still (so one may by abstraction insist) there *would* remain the brute fact of its intolerableness—a

matter of unreflective passing estimate—an intense colouring of the pain as a feeling. A similar analysis would hold for the intenser pleasures, except that they have about them the contrasting colour of immediate satisfactoriness, or “attractiveness,” or “acceptableness.” The intolerableness of a violent pain, the momentary attractiveness of a keen pleasure, may also be said to be present in consciousness as possessing an *intensity*—*i. e.*, as being greater or less in *amount*. And thus such feelings are apparently *quantities*, and are sometimes spoken of by psychologists as if they were measurable quantities. And from this point of view some have defined, on the basis of such facts, the general maxim of all our prudence as being the rule: “So act as to get the greatest sum of pleasures and the least total amount of pains,” thus assuming that we can at least roughly compute and sum up our quantities of pleasure and pain.

If such an analysis is to hold of the simpler cases, why not extend it (so one may say) to the more complex and subtle experiences of feeling? The masses of feeling which constitute what we call “joy” would thus be nothing but groups or streams of pleasures. “Sorrow” would mean a complex of many pains. “Surprise” is either mainly pleasurable in colour or mainly painful, and, according to this view, would be, as a feeling, made up of pleasure and pain more or less mixed, and so sometimes of pleasures almost alone or of pains almost alone. Thus all feeling, as such, would mean the pleasure-pain aspect of the contents of our consciousness, and the whole theory of the feelings would be reduced to the theory of the nature and the varying intensities and combinations of our pleasures and pains. This, then, is a frequent theory as to the feelings.

But it may well be questioned whether such an account is not a merely artificial simplification of the enormously complex facts of the world of feeling. Pleasures and pains, in the typical case, are names especially associated in our minds with the experiences of certain of our senses. A burn or a toothache is a sensory experience, whose disagreeable or unsatisfactory tone is only one aspect of its nature. It has also its intellectually important character, since, as just pointed out, it is usually pretty clearly localised, and is, like any other sensory experience, referred by us to a source outside of ourselves. Now, the clear and unmistakable character of our more decided sensory pains—which are, not only in the just-mentioned respects, facts like the rest of our sensory contents, but also, like our other disagreeable feelings, unsatisfactory—this very definiteness of character, renders these more violent sensory pains poor examples to illustrate the peculiarly subtle and complex facts of feeling in general; for our feelings, while always either intensely, or vaguely, or in a relatively indifferent way satisfactory or unsatisfactory to us, still show many other characters present in them besides those of the sensory pleasures and pains. Consider, for instance, the masses of feeling which make up won-

der, anger, reverence, our intellectual interests in general, or our feelings of the "sense of humour." Common to all these cases is the presence of values—*i. e.*, of objects of combined satisfactions and dissatisfactions. But how hard it is to be content with reducing, in all cases alike, the satisfaction to pleasure, the dissatisfaction to pain! That this can be done is a mere dogma of certain psychologists.

Another consideration enforces this difficulty. In all our waking life an element of dissatisfaction is in so far mingled with our experience as it is true that we are always interested in passing on from any experience to the next. If we have a satisfactory pleasure, we want it to be still more intense, and so are at the same time dissatisfied. If we listen to music, we are always expecting the next note or chord to the very end. If we are attentive, we are looking for more clearness as to the object of our attention. And so consciousness seems to be largely a concern in what shall come next. But this universal inner restlessness of consciousness, variable in degree, but apparently always present, however keen our pleasures—is this mere restlessness itself a pain? Yet it surely involves a certain element of continual dissatisfaction with the present. On the other hand, whatever interests us, and so draws our attention, seems to be an object of which we in such wise want more that, when we get this "more," there is a certain element of relative satisfaction in the attainment. Yet a novel pang of any sort, painful in itself, may be an object of just such interest. So far as we get satisfaction of this interest, we accordingly get, for the time, more of the pain before our clear consciousness than we should otherwise get. Shall one change the formula and say that here the getting of a pain is a satisfaction? An angry man, at all events, often takes a keen satisfaction in dwelling upon thoughts and deeds that are at the moment giving him great pain. Still further, in brooding grief, a mourner, refusing to be comforted, finds what he himself calls a "gloomy satisfaction" in dwelling on his loss. The promise of a cheerful or even highly pleasurable distraction he may then reject, even when he begins actually to feel the coming pleasure, with the keenest dissatisfaction. Very much the same is true of a man "in the sulks." Nervous troubles of many sorts, insistent ideas, forebodings, morbid questionings, and the like, include many cases where nothing so attracts the sufferer as a content of consciousness which meanwhile gives him inner pain. Even the tune that "runs in one's head" often illustrates this sort of thing.

On the whole, then, it may well be affirmed that while there are many pains which are always merely unsatisfactory, and many pleasures which are always attractive, the terms satisfaction and dissatisfaction name a character present in mental states which is of a much wider range than the characters indicated by the words pleasure and pain. We may find

some satisfaction in a pain, some dissatisfaction in a pleasure, and much interest in experiences which have little pleasure or pain about them. Desire and aversion, attractiveness and distastefulness, agreeableness and disagreeableness—these are still other names for aspects or for cases of the facts of feeling. But that pain is commonly disagreeable, that pleasure is commonly attractive—this does not warrant us in saying that dissatisfaction means pain, or that satisfaction means pleasure.

Feeling, then, is the valuation of the contents of consciousness, or the presence of values in consciousness. And value means, primarily, satisfactory or unsatisfactory character. The unsatisfactory, as such, we in the end reject. It arouses devices to get rid of it, and so “spurs on the will.” The satisfactory, as such, we rest in and accept. Meanwhile, the two coexist and are interwoven together; and consciousness is never without some element of dissatisfaction, and rather seldom, at least in any fairly normal life, without some element of satisfaction in it.

The physiological basis of the feelings is still, in many regions, extremely obscure. Pleasures and pains of a sensory type are dependent in part upon the degrees of stimulation to which our sense-organs are at any time subjected. Over-intense stimulation of any sense-organ produces pain. The pleasures of sense are all of them the results of relatively moderate stimulations. But there are many sensory nerves that never give any sharply marked and well-localised sensations except painful ones (*e. g.*, the sensory nerves of the viscera, of the teeth, etc.). Altered organic conditions, such as inflammation, also give rise to a high sensibility to pain. Both muscular and nervous fatigue are, again, well-known conditions of painful sensations, although the theory of the process is still obscure. On the other hand, painful sensations may be eliminated by some anæsthetics, or by some diseased nervous conditions, without the disappearance of other forms of sensation (*e. g.*, of touch-sensation) in the parts affected. The painful sensations, when aroused through sensory stimulation, seem to travel in part upon paths through the spinal cord which are different from those travelled by other stimulations, so that pain does not always reach consciousness as soon as do other sensations aroused at the same time, and by the disturbance of the same region on the skin. If one

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of the Feelings.*

passes to other sorts of feeling, desires and aversions express themselves in characteristic movements (see § 13); and it is probable that the incoming muscular sensations produced by these expressive movements (movements whose causes lie in the hereditary and habitual nervous tendencies of our organisms) form part in our very feeling of the desire or the aversion itself. (Upon this view Prof. Münsterberg has recently laid stress.) Our more complex emotions are also doubtless deeply tinged by masses of other internal sensations more or less indirectly derived from the organs

affected by the expressive movements, and thus much of our conscious feeling is actually secondary to what is called the expression of the feeling. Thus our griefs alter their emotional tone according to the sort of external expression that chances to be forcing itself upon us. Tearless grief is one thing, tearful grief another; and no doubt an important part of the inner attitude of mind which constitutes the grief is determined by our very sensory consciousness of how we are expressing ourselves. This manner of expression is largely determined by our inherited instincts and acquired habits. Reacting to a given environment in a given way, we then feel our own reaction. In telling about the tone of one's own emotions one often has to say, "My heart stood still," or "I felt a choking in my throat," or "I found myself gasping." The poets are accustomed thus to remind us of emotional tones by mentioning their manner of expression, and by so suggesting how this manner of expression itself feels to one who finds himself giving way to it. Thus Bayard Taylor tells how, as the soldiers in the Sebastopol trenches sang "Annie Laurie," "something upon the soldiers' cheeks washed out the stains of powder." This importance of the instinctive or habitual expressive movement as a primary reaction to a given environment—the emotion being the secondary result or feeling of this reaction—has been of late especially insisted upon by Prof. James.

Meanwhile, however, there can be no doubt that, in addition to all states of our organs of external and of internal bodily sense, purely central nervous conditions have much to do with the tone and intensity of our emotions. Brain-fatigue of all degrees, from the lightest to the gravest, is likely to show itself in altered emotional tones, even where it gives few other easily marked signs of its presence. There are known diseases of the brain (such as the extreme forms of nervous exhaustion known as melancholia and mania) whose principal symptoms are profound alterations of emotional tone. The phenomena of these disorders, as well as other known facts, have been regarded by many as indicating that the current conditions of the blood supply in the brain are direct causes of our emotional states.

§ 25. The practical aspect of the life of the feelings, and in particular of the masses of feeling called the emotions, is of great importance.

Emotions. Whatever their precise physiological explanation may be, we are in any case warranted in saying that in the feelings, and in their expressive signs, we have in general an especially useful *index of the current state of the nervous centres viewed as a whole*. The state of a man's present feelings may indeed, at first sight, throw comparatively little light on his character or on his experience, except where one already knows what opportunities he has had to cultivate or to learn to control just these feelings. It is noto-

riously unfair to judge any man by his momentary mood. The now violently angry man may be, in general, a person of amiable self-control. Especially absurd, as well as uncharitable, is, therefore, the habit of those who regard a character as best to be read by considering the most passionate or otherwise marked emotional excesses, or the weakest or most foolish moods which are known to occur in the life of its possessor. So to judge is to commit what may be called the scandalmonger's fallacy. But, on the other hand, for a good observer, an emotional reaction, regarded with due reference to its external causes, does tend to indicate the passing general nervous state in a way which is of great value for psycho-

logical diagnosis. Nervous exhaustion, mental overstrain, show themselves (as just pointed out) first of all in emotional variability. This the popular mind generally recognises. What is not popularly so well recognised is the fact that this emotional variability of overstrain is not by any means always equivalent to the tendency to "black moods" or to ill-temper, but may show itself—and in grave forms, too—in emotions of a relatively cheerful or benign seeming. The sufferer from nervous overstrain may have hours, or even periods, of abnormal vivacity, when his friends, remembering his former fits of gloom, feel that now he is surely restored to himself since he is so ambitious and animated. But the symptomatic value of an emotional state lies rather in the degree of its variation from the normal mean of the individual temperament than in its agreeable or disagreeable seeming.

If emotional variability is often a useful index of nervous overstrain, *the permanent common quality at the basis of any man's normal emotions,*

if once made out, is indeed also an important index as to the fundamental type of his nervous temperament. By this one does not always mean his *predominant* emotions, which may be made predominant merely by his business or his fortune. One means something deeper. The emotional *undertone*, as one may call it, of any given individual is always one of the most interesting features of his character. It must be made out by observing him in a number of sharply contrasted passing moods, especially when such moods are determined by circumstances rather unfamiliar to him. One then finds it henceforth curiously independent of fortune. The fundamentally cheerful man is thus to be found, even in the midst of the keenest distress, and even when he cries out with his bitterest anguish, still, at heart, not really despairing, but in possession of a certain fundamental sense of satisfaction in living, which no mere fortune can overcome and which only a serious brain disorder can set aside. There are other men, and often very resolute men too, who have withal a deep-seated emotional distrust of life, which never leaves them in the midst of the most joyous

good luck. They may be enduring, patient, even heroic, but they are never on decidedly good terms with their own inner state. Such undertones of emotion, when one has learned to observe them in any individual, remind one of the temper of an old violin, or of the quality of an individual's voice—facts which remain amid the greatest varieties in the music played or sung. Like the violin's temper and the voice's quality, this emotional undertone is unquestionably the accompaniment of a permanent physical organisation. In case of the emotional undertone this is the inherited temperament of the brain—a fact which, when once thus diagnosed, may be henceforth counted upon with great assurance. The emotional undertone appears to be noticeable in many cases fairly early in childhood, although it is liable to great changes in the course of development, particularly in early youth.

Abnormal emotions may occur in a great variety of forms. They appear not only as variations from the normal intensity or steadiness of the otherwise unobjectionable emotions, but as associations of emotions with objects, situations, or habits, with which these emotions ought not to be associated in a healthy organism. Our feelings, as we have seen, accompany certain nervous conditions which colour, and in part determine, our whole "adjustment to our environment." If the feelings are distorted, this indicates a distortion of these nervous conditions, and so this whole adjustment must tend to fail. Conversely, a failure of our adjustment, if determined by nervous conditions which express themselves in signs of feeling, is itself a proof that the feelings are worthy to be called abnormal; for our main test of the "normal" is the power of successful adjustment to one's world. All violent passions in ordinary life are therefore relatively abnormal emotional states. The man who adjusts himself well "keeps his head," whatever the temptations to passing moods of confusion. Just so, however, morbid fondnesses for dangerous objects or deeds (*e. g.*, a craving for intoxicants or a love for unwholesome reading) demonstrate their unhealthfulness by the very fact that their results are instances of moral or of physical failure to adjust one's self to one's environment. But the morbid emotion need not be either a violent or a special experience. The whole emotional undertone of any "perverse" character is, in its own degree, an abnormality; and such an abnormality may calmly outlast years of training and thousands of broken and spasmodic resolutions. In fact, what is called "perversity" of character generally *means* simply an abnormality of the emotional undertone, and is as hard to alter as the latter.

Yet, of course, great and enduring emotional abnormalities can be the result, not of heredity, but of training. Some of our emotions (*e. g.*, our cheerful or gloomy undertone) are principally due to heredity; but others are very much moulded as they develop in our early lives. Hence the

importance of care as to guarding the growth of such sorts of emotion as are subject to the greatest degree of development during childhood and youth.

A striking and critical instance is here the whole world of the sexual emotions, including the romantic and the "sentimental" tendencies. These, normally absent or only sporadically hinted at in the emotional life of childhood, develop with great rapidity at puberty and for some years afterwards. They normally occur at first as the phenomena of reaction to particular series of facts in the environment, and they occur both with and apart from more definite acts. But they also normally tend to spread through and colour gently one's whole life to its very highest and noblest levels. Religious emotion, for instance, has deep relations to them. It is the business of parents, teachers, and other guardians of youth, to see to it that these more subtle emotional reactions are controlled by duly controlling both this environment and the youth's sentimental and passionate relations thereto. The laws of brain habit determine the principle that when experiences are keen and novel, any reaction then accomplished determines the brain's whole future to a degree never later equalled by other actions of the same sort and number. Does one early form an association between certain objects and certain vigorous emotional responses, one's emotions are thenceforth given what may prove a permanent "set." This, as recent investigations have more and more shown, is peculiarly the case with the sexually emotional reactions. Whether a youth is to be a libertine at heart or not, and whether or no his sexual imagination and feeling are to be definitively perverted even while they grow (perverted in fashions that are sometimes horribly grotesque and mischievous), is often determined by the earliest stages of his sexual experience, wherein must be psychologically included most of his youthfully sentimental experience, together with even his religious emotions. However convention, or resolution, or morality may later teach him to control his more definite or more external acts, the "set" of his inner sexual consciousness, and of all that more or less unconsciously gets built up thereupon, the purity or impurity of his feeling as a whole, his capacity for honourable love, the whole colouring of even his highest social emotions, his love of honour, his truthfulness, his humanity of sentiment, may be established for life by the emotional responses that he makes to a comparatively few situations in his early world of ignorant youthful sexuality—a world to him uncomprehended, and one where too often, alas, he is wholly unguided. It is one of the saddest of psychological blunders that even wiser guides often leave the young to fight this confusing battle of these inner emotional states alone, and so such guardians, entrusting the young to the mere chances of foolish companionships, subject some of the most delicate and momentous emotional functions of the youthful brain to a treatment that

no man of sense would give to his watch, or even to his boots. To be sure, a false light, a deceitful guidance, an ignorant sort of terror at possible mishaps, would in these matters itself determine or even constitute a perversion. Guidance does not mean mere random meddling. And even a cheerful indifference accomplishes far more than a morbid anxiety. But one need not ask for a false artificiality of instruction, only for a cool and reasonable "symptomatic guidance" of the young, given confidentially and treated as a matter of course, by watchful guardians; given, moreover, just when the charge is seen actually to need it. There is, meanwhile, no one routine of instruction as to such matters. Each case ought to be watched for itself.

The mention of abnormal emotions leads to the practical problem of estimating their significance when once they are present. Regarding the phenomena of any given morbid emotional state, whether permanent or transient, it is a general rule that, of two morbidly emotional moods or individuals, viewed in general, and apart from special causes: the cheerfully morbid is likely to prove worse than the painfully morbid. False despair, within limits, is, psychologically speaking, much more benign than false confidence or than vainglory. One sees classic instances of this in the case of the before-mentioned fundamentally "perverse" characters. Such persons, in case their abnormal emotional "undertone" is one of dissatisfaction (of gloom, or self-distrust, of morbid conscientiousness), may be indeed, in the strict sense, incurable, since one cannot provide them with a new heredity. But they can often learn, within their limits, how to get a very effective sort of self-control, and to live tolerable or even nobly useful lives, simply because they suffer for their frailties, and consequently strive for some sort of salvation. But the cheerfully perverse, whose undertone is often one of vainglory, and who accordingly revel in their own perversities, are much more hopeless cases. You may give them the clearest sort of knowledge, and they may have a high order of intelligence with which to grasp it, to restate it in their own words, and even to preach it; yet at heart they understand their own perversity only in secret, or openly, to admire it. The sole hope lies in getting them where they keenly suffer, not, to be sure, any external or arbitrary penalty, but what they can come to view as the natural result of their own characters. Even then, however, it is a ceaseless marvel to the onlooker how much they can suffer without either losing their false optimism or essentially mending their evil ways. They may change numerous special habits of conduct, but they still cling to the central enemies of their life. Self-induced anguish is often their only possible medicine, yet they tolerate it in simply enormous doses, and often go on as before to their doom, persisting that they have learned wisdom, but daily manifesting that they are fools.

A similar rule holds, as said above, regarding the judgment of even passing moods. A state of nervous fatigue which is extremely disagreeable is in general nearer to the normal than a condition in which we are actually very tired, but feel extraordinarily vivacious. Cheerful insomnia is far worse than even a decidedly painful sense of weariness when accompanied by sleepiness. Even anger that is uncontrollably violent, and that causes the keenest suffering to the angry individual, is less abnormal than that lucid type of fury which its possessor fairly enjoys and nurses. Temper of the first sort quickly wears itself out in pathetically helpless reactions. Temper of the cheerily malicious sort may make its possessor a criminal before it lets go its hold. After great calamities people are often "dazed" into an ominous insensitiveness. The return to the normal is then marked by an anguish which the sufferer himself welcomes as a sign that he is again "coming to his senses." Thus in general good observers are not easily appalled by the mere appearance of suffering. Mental anguish, viewed as a psychological phenomenon, and apart from any otherwise known and serious external cause for sorrow, is always an abnormal incident; but it is frequently, in its consequences benign, in its direct indications relatively insignificant.

VI. THE INTELLECT, OR THE ORGANISATION OF EXPERIENCE.

§ 26. All the contents of the stream of consciousness, *in so far as they constitute experience—i. e., in so far as we learn from them*—are contents of Intellect. When we viewed these contents as feelings we found in them, everywhere present, a certain colour of passing estimate, an immediate sense that they were worth something to us at any given moment, or that they then had an interest to us. When we view these same contents in another light we observe that not merely their passing interest, as such, has a real importance for us, but that this momentary value, as we feel it, is but a hint, and sometimes a poor one, of the real place that they have in relation to our adjustment to our environment. Not only that given states now pass, *but that certain former states have been*, guides us in our dealing with the world. *In so far as we either recognise or otherwise profit by this relation between our present and our former states, or in so far as, by virtue of such a relation to the past states, we are led to expect any future state, our mental states are said to be experiences, and they then have, in addition to their direct value as feelings, an indirect value as indications of truth, as sources of knowledge, or, once more, as intellectual conditions.* This "indirect value" we shall henceforth call their "intellectual value."

The life of the intellect is far too rich a field to be even fairly sketched in this study. What here follows is limited by the purely practical aim before us.

Our past experiences are now of use to us in our adjustment to our environment, because they were associated with nervous changes which tended to mould our conduct into conformity with external physical facts, and which have established certain more or less fixed habits of brain. Our present experiences, as such, now serve to guide us, in so far as their physical accompaniments appeal to these established brain habits; or again, in so far as these new experiences tend to modify the old habits. *The power to learn by experience is founded upon the power of the brain to acquire and to retain habits.* (Cf. § 16.) At any moment a disorder of brain which suspends or destroys the nervous conditions of habit impairs in the same degree the intellectual powers. These considerations are fundamental in the whole theory of the psychology of the intellect.

On the other hand, by no means the whole of our experiences are of equal value for our process of learning by experience, or for arousing us to make use, at any moment, of what we have formerly learned. Many inner facts are of great passing importance for feeling, which are of little intellectual concern. One eats three meals daily and should enjoy them heartily; but since one has come to mature years one has learned comparatively little by such experiences, unless one is a housekeeper, a gourmand, or a cook. But one may have seen but once a given landscape, or scientific experiment, or man, and may have learned a life's lesson from that experience. An experience is intellectually valuable in proportion as it either moulds our habits or calls them into action. It is sometimes said that the value in feeling of a given experience is universally in inverse proportion to its intellectual value. This, as thus universally stated, is not true. Dante's first boyish meeting with Beatrice moulded his whole intellectual life, but was full of the deepest feeling at the moment of the meeting. But one can indeed say that the value in feeling of a given experience bears no sort of constant relation to its intellectual value. A burn is an intellectual experience, when it teaches a child to dread the fire. But so is a light touch, say of a new fabric, if it teaches a blind man to recognise henceforth that fabric. In general, violent internal bodily pains (*e. g.*, the colic or a headache) have comparatively little intellectual value, because we too seldom rightly associate them with their causes, so as to learn easily how to avoid them in future. Moreover, they last longer than they are needed for purposes of warning, and our memory for their intensity is poor. On the other hand, very gentle experiences, say the memories of past scenes, reproduced in the form of very faint images, are, in all persons, of great intellectual importance, as being connected with old habits of action. Pains of the external sensory organs (burns, bruises, dazzling lights, etc.) play a great part in our earliest intellectual education, but are normally of far less moment

later unless we learn some new art (*e. g.*, bicycling, or handling electric apparatus).

So far for the vaguer variations in intellectual values. But now for more precise rules. These are:

1. An experience is of intellectual value in proportion as, through the laws of habit, it becomes linked with other experiences. *No experience is of any intellectual importance in so far as it stands alone.* Its nervous accompaniments in the central nervous system must be functionally linked to processes that have been the accompaniments of former experiences if it is to prove effective for intellectual purposes. This usually happens as follows: Let a new experience, *a*, resemble, in some definite fashion, a former one, *A*. Then its nervous accompaniment will also resemble and nearly reproduce functional processes formerly present in the cortex. The law of habit runs that an old function, when once reproduced, tends to induce those other processes which it induced, or with which it was linked when it was before present in the brain (§ 16). The new experience, *a*, resembling the former one, *A*, will therefore be accompanied by a process—*viz.*, the reproduced *A*-process, that tends to pass over into certain other definite and localised processes. These other processes will somewhat correspond, however, in general to still other former experiences which of old actually accompanied or immediately followed *A*, since the *A*-process of old passed over into these other processes. Let these other former experiences, as they originally were, be *B*, *C*, *D*. Then *a* will now tend to be followed by experiences *b*, *c*, *d*, which more or less resemble the former *B*, *C*, *D*, respectively. *In this case a is said*

to be linked by association with these other experiences—
Association. *viz., b, c, d.* For here the result of *a* is a tendency (which may or may not at any one time prove effective) to the appearance in our minds of experiences *b*, *c*, *d*, more or less resembling what those other experiences (*B*, *C*, *D*) originally were. So, when I see an apple-tree in winter, I may be reminded of the apples that were growing there last summer. That is, the present experience of the tree is accompanied by central nervous processes in the cortex which (by habit) tend to induce some of those nervous functions that were induced last summer when I saw the tree in full leaf with the apples growing. The latter functions can never be wholly reinduced, but the result is a state which includes something resembling, at least, a portion of them. *This association of our experiences in groups is the primary condition of their getting any intellectual importance.* And here we meet with the psychological expression of the fact above observed, that intelligence especially shows itself in the adaptation of old habits to new needs.

2. The "background" of consciousness at any moment (see § 22) is always of relatively small direct intellectual value for that moment,

although, in case it supports the general "set" of our attention, it has an indirect value; and in case it long retains any definable character, this character may slowly acquire an importance through its relation to our habitual brain functions. Those states which stand out (or "float") with a marked relief above or upon the general stream of consciousness are of relatively great intellectual importance. Or, in other words, *experiences are of intellectual importance in proportion to the marked or definite character which they have in relation to the experiences that accompany them.* Definite conscious experiences stand for markedly pre-

Attention. dominant functions of the cortex at the moment in question. The more sharply localised the function in the brain, the more definite is the brain habit which tends to be formed. This principle lies at the basis of all effective *attention*.

3. In order that our states, viewed as a whole, should become at any moment definite, and therefore intellectually valuable experiences, *they must possess, in a certain degree, marked differences from the sum total of the states which have immediately preceded them.* It is this "shock of difference" which accompanies the whole play of consciousness and makes every intellectual process possible. Even when we long attend to one object, we are busily "changing our minds" about it—questioning, conjecturing, observing various aspects, making use of different habits, trying various assertions. To have "one

Discrimination. idea" is to have no idea at all. Discrimination is thus an essential function of intellect.

4. But discrimination itself never stands alone. A mental state, in order to be of relatively immediate intellectual importance, must not only stand out in consciousness as against its background, and must not only differ from what has preceded, but must further, as we have seen, stand in connection with similar past experiences, since otherwise it appeals to no habits of brain. These similar past experiences, when "represented"

Identification. at any moment, *resemble* the present mental state. And they join with whatever else in present consciousness resembles this new state, *to help us to assimilate it.* To know is to note not only difference, but also resemblance; not only contrast and variety, but identity and harmony. An utterly strange state is of small intellectual value. And so, in addition to its associative connections, an intellectually important state *must have relations of resemblance to its context in our consciousness.* Knowing is thus discrimination plus identification. This is still another expression of the principle that intelligence means adaptation of familiar facts to novel needs.

§ 27. The classes of intellectual states are numerous. First in order, and in importance as regards the original genesis of the intellectual life, are the sensations. These are our momentary experiences, in so far as

they correspond to the excitations of the organs of sense. They therefore accompany the incoming stream of sensory disturbances of §§ 15 and 16, above. No exhaustive and perfectly satisfactory classification of our sensations is yet possible. The popular division according to the "five senses" is certainly inadequate. From our internal bodily organs we receive many masses of ill-defined sensations of the "common sensibility." What is often confused together under the name of "the sense of touch" involves numerous strongly contrasted experiences. Simple pressure, heat, cold, muscular sensation proper, joint-sensations—all these need, for psychological purposes, to be discriminated in what has sometimes been viewed as "touch," while the pains of touch-sensation have already been mentioned. In addition to the foregoing, one must mention sensations which have a special organ in the semicircular canals of the inner ear, and which are aroused by the mere fact of the movement in space of the head or of the whole body. The feelings of "dizziness" often accompany an extreme form of these sensations. Then come the popularly well-recognised sensations of smell, taste, hearing, and sight. But even here, in the sense of sight, some psychologists have been disposed to distinguish the sensations of movement in the field of vision from the others, just as a similar division has been proposed in case of the sense of touch itself.

We must leave, however, to special treatises the discussion of the classes of sensation. Our interest lies in the general value of the sensations as experiences. This value depends upon the fact that the nervous accompaniments of sensation—viz., the incoming streams of sensory impressions—are the causes which excite and support that whole series of interchanges of induced activities upon which the motor functions of the brain depend, and by virtue of which our brain habits are formed. *Without series of definite sensory experiences no habits of brain or of mind:* this is the great principle of the *source of our experience*. On the other hand, in any given "set" of brain (cf. §§ 16, 17), those already-formed brain habits are excited to which the incoming sensations favoured by that "set" then and there appeal. As they are excited, the habits tend to become, in their turn, modified by the new sorts of sensory disturbance which awaken them. In early experience this alteration is often very decided. Later it tends to become often inappreciable. The principle of association (§ 26) determines the result that sensations directly tend to arouse those habits which were formed in the past by the action of sensory disturbances similar to the present ones, in so far as the current inhibitory "set" of the brain does not interfere to prevent this result (§ 17). And the rule thus holds: *Without present sensory support, no use of old brain habits*—a rule which governs the whole *current employment of our experience*. As a fact, even in the most absorbed meditation, we are constantly sup-

ported by masses of fitting external (or internal bodily) sensations. One thinks best on a given subject while reading certain books, sitting in a given study, listening to a given speaker, holding a pen and writing, or while getting whatever other experiences habit has made effective.

§ 28. Of the enormously complex processes which follow upon sensation we can give only a hint. Our sensations never stand alone in the maturer mind. They are effective only in so far as their nervous accompaniments awaken habits. But, as a fact, the habits of the brain have at all times been moulded by great masses of sensory disturbances acting together. The results of current sensation are then, in general, mental experiences which more or less resemble past experiences belonging at once to many senses. The brain habits accordingly tend to a *complex restoration of former conditions*. What we see reminds us not only of former sights, but of former touches. The colour of an orange suggests its odour and taste. The sound of a word may recall the appearance of the word as written or printed. Now, these recalled experiences, usually rather faint unless we dwell upon them, first tend, by reason of their swiftness and faintness, to coalesce with the present experience, which then stands before us as a whole mental state, a group of interpreted sensations—a perception. A perception, then, is a group of present

Perceptions. sensory experiences interpreted in terms of our past experience of those outer objects which were similar to the one that has aroused this group of sensations in us. The nervous process accompanying the perception depends wholly upon our brain habits. The brain tends to do again what it has done before. Just so, in our accompanying mental life, we tend to recognise in the new what we have already experienced in the old. Such habits of recognition may often lead us astray—as when we fail to note typographical errors, or fall prey to optical illusions.

Upon a similar process, however, all our higher intellectual life depends. Our memories are determined by associative functions. What

Memory and Imagination. has been connected in experience tends to be connected in idea. The series of remembered experiences, again, runs parallel to the reawakening of already-established brain-habits. Our trains of inner imagination, even in the case where we seem to ourselves most fantastic, are themselves the accompaniment of reawakened brain functions whose results, instead of coalescing with our sensations (as was the case with our perceptions), stand apart, so that we often fail to note the ever-present support which our current sensations, derived from the organs of external sense or from our internal bodily organs, give to even our freest imaginative processes. Yet one has only to note how the imagination of a dyspeptic, or of a sufferer from headache, or of a person listening to an organ played in church, or watching moon-

light sparkle on water, varies with the current sensations, to see how imagination also involves brain-habits determined by current sensory impressions.

Our organised relation to past experience is still more obvious in our thoughts, which are everywhere interpretations of sensations, of images, or of masses of other ideal contents, by virtue of their relation to our former experience.

§ 29. These higher modes of intellectual life—Perception, Imagination, Memory, Thought—require, however, another set of considerations to make even their general character at all intelligible.

Our sensations, we have said, support our intellectual processes by awakening brain-habits. But the brain is an organ that directs movements, and the habits of the brain get their effective expression either in actual movements or in motor processes which, although inhibited, are none the less present as tendencies. Now we actually have states of mind which correspond to such motor tendencies, even when these are existent in an almost wholly inhibited form, and merely as tendencies. *Our perceptions as well as our higher intellectual process are in large part made up of mental material which corresponds to more or less completely suppressed movements—movements which we image, in abbreviated forms, even when we do not make them, or movements whose results we image even when we do not carry them out.* The motor aspect of the intellectual life constitutes one of its most significant features. *Thought is the correlate of present but suppressed muscular tendencies.* These tendencies, aroused by sensory impressions, woven into series by our past habits, adjusted to our present situation in the most delicate fashions, by virtue of the similarity existent between present and past experience, altered also by our present discriminations, and inhibited, or at least reduced to very faint motor tendencies, by the present “set” of the brain—these constitute the physical accompaniment of our most abstract thinking, as well as of our perceptions, of our trains of imagination, and of our memories.

For example, I hear a sudden sound. My perception of the direction whence the sound comes is identical with my consciousness that, in order to hear the sound better, I must turn my head to the right or to the left. This consciousness accompanies an actual motor tendency (the result of long-established brain-habits) to turn my head thus. To judge direction is here to recognise that this noise *means* this useful movement of adjustment in so far as the sound will be better heard thereby. Even so, to perceive in the field of vision that a given object is to the right or to the left, and so or so far away, is to have certain motor tendencies of the eyes, of the grasping hands, or of the general locomotor organs of the body, appealed to and more or less visibly aroused. To perceive where an

object is, is to remember how to reach the place where the object appears to be; and this memory of "how to reach" is itself the idea corresponding to the actual tendency to move thus. *Unless such movements are inhibited they actually get carried out.* One watching an object intently may visibly begin to move towards it; for every idea of any movement, or of the known result of any movement, tends, in proportion to its clearness, to be accompanied by that movement. This principle is the one constantly used in the parlour game of "willing," or by public exhibitors of "mind reading." What is usually "read" in such cases is the motor expression which a person absorbed in watching, or in otherwise imaging an object, inevitably and involuntarily gives to his tendencies to approach, or otherwise to adjust himself to the object, as he perceives or images its place, or its other tangible characters.

Abstracter thoughts, however, have in a similar way their still less visible, but none the less real, motor accompaniments. Much of our thinking runs parallel to an "internal speech" whose expression is an actual series of motor adjustments of the vocal organs. Unless one inhibits these, one "thinks aloud." Deaf-mutes may sometimes be seen "thinking with their hands." Our "general ideas," or "abstract ideas," or "conceptions," of even the highest grade, while they partly consist of a wholly sensuous imagery (mental "pictures," etc.), are acquired in the first place in connection with definite (on higher grades uniformly imitative) motor processes. These processes we usually first repeat after our teachers. Thus one learns what a circle or a straight line is by learning how to make one according to a definite rule. One learns what *ten* means by counting one's fingers, etc. All these processes were originally actual series of movements, which had to become habitual before the ideas in question were at all familiar. Thereafter, at pleasure, we can represent to ourselves the ideas by repeating the corresponding movements. The definiteness of the idea precisely corresponds to the definiteness of the habitual motor process. Where we do not actually repeat such movements while we think, we nevertheless hold and comprehend the ideas by beginning the familiar movement and *then* inhibiting it, or by "feeling as if we could" repeat the movement if we chose—a feeling which corresponds to a mere tendency to begin the movement in question. Where we symbolise ideas by other ideas, as the number *ten* by the word *ten*, we may then wholly substitute for the original motor tendency, whose correspondent was our abstract idea, a motor tendency to speak the word that is said to "express" this idea. And thus, by continual substitutions and resubstitutions of simpler motor processes for more complex ones, we may come to survey, as it were, years of carefully acquired motor habits by means of a momentary impulse to utter a single sound or to make a single gesture. But in no clear thinking is the motor element really

absent. Nobody can think without knowing how to do. The real expression of a thought is an imitative motor process intended to repeat or to reconstruct what we have perceived. All true thought has thus its practical tendency. There is no such thing as the "pure intellect" out of relation to activity. One understands what one can reconstruct or imitate; and one learns by accomplishing—a fact which is of the first importance for all teachers of the young. The more abstract the ideas are which one is to teach or to learn, the greater the need for constructive motor processes to accompany the work of the learner. Nobody gets ideas without responding to one's environment, and our mental images, however rich, are of no intellectual importance except where they are linked to definite brain-habits, which somewhere run out in action. The one distinguishing feature of the motor processes which express our thoughts is that they are all *explicitly imitative movements*, although the imitations are often highly symbolic.

There is here only time to say further: (1) That, among the processes of the higher intellectual life, what is called the activity of judgment (as logicians use the term) is, in general, the mental aspect of an effort to imitate the structure and relations

Judgment. of things by means of combinations of words. In judging we try to combine our words as, in reality, the objects or characters named by the words are combined. And thus our judging is as much the mental accompaniment of an imitative motor process as is the activity of drawing pictures. A judgment that satisfies our own ideals as to how judgments should be

Belief and Reasoning. made is accompanied by a familiar feeling called Belief. Belief, then, is a feeling of satisfaction in our own activity of judgment. (2) That what is called reasoning is, in general, a process which involves judging (*i. e.*, again, imitating in a new act) the result which has followed from some exact constructive process which we ourselves have just accomplished. Consequently, what judgment is to its objects—viz., an imitation of them by means of an order which we give to our words—such is our reasoning process to the results which have followed from our processes of judging. To reason is usually to judge about the outcome of former judgments. And so reasoning also runs parallel to motor processes of an imitative, although highly complex and symbolic, type.

Thus the mind of a man engaged in abstract intellectual activity is no exception to the rule that the intellect shows itself, more or less overtly, in the adaptation of our movements to our situation, upon the basis of our experiences. Whoever thinks, moves, or tends to move. And intelligence on the highest as upon lower levels shows itself in the power to adapt former habits to the present situation, old rules to new cases, and new deeds to established modes of conduct.

§ 30. It remains to speak of the process by which our momentary mental states get the clearness or the "relief" upon which (§ 26) their intellectual value so largely depends. As we learned (also in § 26), in so far as we profit by the relation between our present and our former states, our mental states are said to be experiences. On the other hand, in so far as we are directly satisfied or dissatisfied with our passing mental states (§ 24), they are contents of feeling. But now, as it happens, we often find present in ourselves feelings of satisfaction and dissatisfaction in the very fact that given present states have some sort of relation to former states (*e. g.*, are novel or familiar, are puzzling or comprehensible, have obvious relation to our past habits, or need new adjustments, etc.). But thus our experiences come to have a new and important relation to our feelings. An experience has (§ 26) its "intellectual value," over and above the value for passing feeling of what, as a momentary mental state, it contains (as, for example, pleasure or pain). But now, as a fact, *we are able to have feelings which once more express an immediate, a passing, and, of course, often a mistaken, estimate of this intellectual value itself.* Such feelings are called our current "feelings of interest." They have a curious and invariable character, which often brings them into sharp conflict with our other feelings of the same moment. A pain or an agonisingly perplexing problem, although we hate it keenly, may interest us intensely, because we want to dwell upon it until we have understood its cause or nature. When such interests are those of predominant satisfaction they lead us to dwell on the experience for its own sake, as a familiar or comprehended fact. Thus a young child may love to have its known stories told over and over, or to find picture after picture of familiar objects (*e. g.*, men), and to say triumphantly "Man," "Man," on viewing each picture. Here the mere familiarity of the experience is itself what satisfies. But even if the predominant interest in the experience is one of dissatisfaction (as when one is pained or puzzled), still, the only way to satisfy the current intellectual interest in the pain or puzzle (*i. e.*, to reduce the dissatisfaction) is again to dwell on the experience until its relation to the past has been altered (*e. g.*, until it has become familiar or has been "made out"). So it is peculiar to the feelings of interest, or to the "intellectual feelings," that, whether they are cases of satisfaction or of dissatisfaction, the only way to hold the satisfaction or to diminish the dissatisfaction is, in any case, to dwell for the time on the experience as an experience. For, as we have here defined our term, the interest is not a feeling of satisfaction or of dissatisfaction with what the mental state in itself alone chances to contain (*e. g.*, with its pleasurable or painful tone as such), but with its relation to other states or to one's habits. Hence in states of intellectual interest one questions, analyses, compares—does whatever tends to relate

this object to other objects. One is seeking to know "what to do with it," or is rejoicing in the fact that one does know what to do with it.

Now, *attention is the process of undertaking to satisfy such an intellectual interest by dwelling on its object*, or, in other words, *attention is the process of furthering our current interest in an experience when viewed just as an experience*.

Attention. When I attend to a thing I either try to recognise or to understand it, or I take contentment in an already existent recognition or understanding of it, and dwell upon it accordingly.

If our attention succeeds in any case—*i. e.*, if our passing feeling of current interest is furthered—the object of this interest *grows clearer in our minds*; that is, it grows more definite and gets a better "relief" upon its background. This is the one sure result of the furthering of the temporary and passing intellectual interest, as this interest has here been defined. What we attend to may, as a mental state, be faint in content, but as an experience it grows important. It is discriminated better from whatever goes along with it, is more effective in arousing associations, is recognised more readily, if already somewhat familiar, and tends to be more effective in modifying our already existent habits. Attention involves, of course, by definition, feelings. But these feelings from their nature have, even as feelings, their intellectual value. And attention is the *conditio sine qua non* of all important intellectual processes.

The less artificial and adventitious are our passing interests, the easier and more effective is their satisfaction. Accordingly, it is difficult to attend long to anything merely because we abstractly think that we ought to attend. We must have our interest pretty spontaneously, or we can never hope to satisfy it. What already pleases us for itself is therefore, in general, the more readily attended to in regard to its interest as an experience. The relatively familiar is also more closely attended to than the incomprehensibly strange, unless the latter, by its painful or its portentous aspect, or by its sensuous or other direct charm, arouses our longing to comprehend its significance. Children often wholly neglect whatever is not yet comprehensible to them in their lessons, although some uncomprehended things, such as fairyland, or the doings of their elders, may arouse their keen interest by appealing to their love of beauty, or by awakening their imitative instincts. Interest in objects because of their familiarity or their comprehensibility has been called "derived" interest, and its furthering "derived attention"; but, as a fact, all current interests are, as already shown, more or less secondary feelings.

The physiological accompaniments of attention seem to be of three sorts: (1) Adjustments, of a motor type, whereby our sense-organs are brought into better relations with the object of our interest, or are brought into positions that habit has associated with clear attention, while our

organisms are also rendered otherwise more impressible. Certain characteristic attitudes, gestures, and alterations of breathing and of circulation belong in this category. (2) The assumption of a "set" of brain that tends especially to favour those habits which are of most use in comprehending objects of the kind wherein we are interested. The control which attention displays over our trains of association belongs in this category. (3) In close connection with (2), the assumption of a "set" of brain which tends to inhibit all movements and habits such as would interfere with the satisfaction of the ruling interest. Hence the stillness, the "absorption" of the attentive person. Attention is always a highly inhibitory function. Hence its fluctuating character in children and in many of our states of weakness.

§ 31. The practical study and proper guidance of the intellectual life constitutes one of the principal problems of civilisation. All efforts to deal with the problem must set out from the fact that *The Intellectual Life.* the intellectual life is precisely the "Organisation of Experience," and that, on the other hand, both the expression and the very existence of the intellect are dependent upon the formation of rational habits of conduct, useful motor adjustments.

The first principle is itself twofold. It means that the intellectual life depends, as to its genesis in each of us, upon experience, and that, apart from experience, we have no sound intellectual guidance. It also means that no experience is of importance unless it is organised, and that chaotic or irrationally ordered experience is useless, and may be worse than useless. The second principle shows, in general terms, how experience is organised. It is organised by teaching certain fitting habits of conduct (imitative processes, constructive activities, language functions, habits of attentive observation), such as are at once constant, familiar, and accurate as to their general types, and at the same time plastic, adaptable, and controllable, with reference to the novel circumstances that may arise. That this complex object may be attained in case of healthy brains is itself a matter of experience. How to attain it belongs to the art of the teacher—an art whose rules, so far as they can be stated abstractly at all, must be founded on the laws of habit, of interest, and of inhibition—all of them laws which can best be stated in terms of the physical functions of the brain. At all events, he teaches in vain who does not in some way organise the activities, the intellectually expressive deeds of his pupils. Thought is either action or nothing.

The abnormalities of the intellectual life are more manifold and sharply definable than are those of the emotional life. The common formula for them all is a failure of due imitative adjustment to the environment, conditioned either by defective sense-organs or by defective or by hindered intellectual habits of brain. This failure, whether its cause lies in hered-

itary temperament, or in early training, or in acute or in chronic disease, is very generally a matter that shows itself more or less plainly to every closer observer. The intellectually abnormal person seems "queer," or is called a "fool" or a "crank," or makes a "failure of life," or, in cases of acute acquired malady, "becomes stupid," or "loses his memory," or otherwise "breaks down." Such things, in a general way, one constantly hears. Intellectual defects and disorders, if considerable, do not easily escape notice, because the keen struggle for existence sets every man busily adjusting himself to his environment, and a serious failure of the brain to display useful habitual functions is sooner or later pretty unsparingly exposed.

On the other hand, the diagnosis of what is the actual failure present in any individual case is much more difficult. There is, one must remember, no such thing as "foolishness" in general, unless, as in case of the extreme idiot or of the patient suffering from advanced *dementia*, one means thereby simple absence of all significant cortex functions. Otherwise, what gets called "foolishness" or "crankiness" is some particular group of defects; and then the question is, each time, what group? It is regarding this question that careless judgment, in general, hopelessly errs.

Here it must be noted, in the first place, that many intellectual defects and disorders are but secondary phenomena, due to disorders whose primary manifestation lies rather in the realm of the feelings. The grief-stricken, the anxious, the worried, the exhausted man, or the victim of violent physical pain, may have, for a longer or shorter period, an almost complete suspension, or else an extensive degradation, of all the higher intellectual functions. This sort of thing, in case of sufferers from acute

*Nervous
Exhaustion.*

nervous exhaustion, may assume an outwardly very formidable aspect, and may give the sufferer and his friends numerous fears of impending insanity, even where the whole trouble is of relatively very superficial character. The nervously exhausted are likely not only to be, for the time, intellectually inefficient, but to be keenly aware of the fact, so that their fears of disorder may often tend to aggravate what disorder they have. It is important, therefore, to distinguish the false fire from the real mental danger in these regions.

In cases of simple nervous exhaustion the attention is usually one of the most easily affected intellectual functions. It grows unequal—spasmodically intense as to some matters, uncontrollably helpless as to others. A sense of confusion overtakes one in the midst of business complications or of other intellectual tasks. One's favourite mental work grows unaccountably distasteful, or else morbidly engrossing in its portentousness, so that one cannot lay it aside during the hours of rest. One for-

gets in the middle of a sentence what one was going to say, and is terrified accordingly. One then talks of entire mental collapse. Memory may become more or less unequal or helplessly uncontrollable before the case has progressed far. A complaint of the "total loss of memory"—a complaint, to be sure, often absurdly unfounded—is very common with nervously exhausted patients. Over all these things, however, "the sense of inefficiency," a collection of feelings, may easily be seen to preside if one observes more closely. And a noteworthy characteristic of this whole state is that the nervously exhausted man can actually do all, or nearly all, that he declares himself unable to do, can perform nearly all the brain functions that he regards as impaired, can speak coherently, can avoid confusion, can attend closely, can remember very fairly, if only, without his express expectation, you engage him in a conversation that gets him for the time "out of his ruts," and that so temporarily frees his essentially intact brain from the emotional cloud that is hindering his habits from their natural expression. This is, of course, an objective proof that the clouded functions are not yet destroyed. So that the question of mental diagnosis is here not what the nervous patient can *not* do (when he is left to his anxiety or confusion), but what he still can do when for the time you get his thoughts "out of himself."

This may serve as a suggestion of the nature of a secondary impairment of otherwise intact intellectual processes. But we must proceed to

Hallucinations. exemplify the intellectual disorders proper. A striking example of disorders directly intellectual in type is furnished by the morbid phenomena, of a sensory character, called "Hallucinations," or false perceptions, which have no foundation in external facts. These occur normally in our dreams, often also on the borderland of sleep, and in a great variety of mental disorders. Sporadically, as single brief waking experiences, they occur also in the lives of healthy people. But they are never present in any considerable number or persistence in a wide-awake person without a decidedly serious nervous cause. This may be a cause seated in part in the external sense-organs, but it generally involves those portions of the brain where the sensory nerves of the sense affected have their central stations. An hallucination is, in any case, *prima facie* evidence of an abnormal form of central excitement. Yet hallucinations, as morbid phenomena, may occasionally exist for a good while in a comparatively isolated form in the mind. The patient may then be quite cool about them, may reason correctly that they are only hallucinations, and may be in all other intellectual respects apparently unimpaired. But this clearness can seldom thus last long. The strangeness of the hallucinatory experience fixes attention upon it. The physical cause of the trouble is usually pretty general. In the further development of the case either a general delirium follows, or the intel-

lectual habits, if they remain relatively intact, are gradually but profoundly modified by these sensory intruders. The delirium of fevers and of a number of other nervous conditions of toxic origin is largely characterised by the presence of manifold and massive hallucinations along with great emotional disturbances.

The hallucination, in itself alone considered, is a fair example of a special disorder of the intellectual life. But another form of intellectual impairment appears in what are technically called delusions.

Delusions.

Delusions are morbid derangements of one's habits of judgment. These may be, like sporadic hallucinations, phenomena confined to a decidedly limited region of the intellectual life. But this seems to be seldom the case. If a man suffers from one delusion he commonly falls a prey to more than one, although then his delusions may still relate, for the most part, to some one class of topics. Yet the psychological mechanism is such that delusions, from their nature, tend to influence all of the sufferer's intellectual habits, and nobody can be trusted to remain long "insane on one topic only." One can never tell when the false habit may not show itself in some unexpected region.

While the phenomena of insanity proper belong elsewhere, this sketch mentions delusions simply because of the practically interesting psychological problems of diagnosis which they suggest. As to the name, the psychological usage differs somewhat from the popular usage. The latter often confounds hallucinations with delusions. The psychologist means by delusion a morbidly defective type of opinions, while hallucinations are false perceptions. When a man groundlessly and morbidly accuses his family of trying to poison him, this is a case of delusion. When a patient hears unreal voices talking about him, this is a case of hallucination. Of course, phenomena of both kinds may be combined, and in some forms of insanity they always are combined. The distinction, however, is important; because, from a purely psychological point of view, a delusion is, in general, the sign of a deeper derangement than is a mere hallucination. The latter may be due to transient conditions of cerebral excitement. The former, the delusion, stands at once for the distortion of one of the most significant of our habitual functions—namely, the function of judging our relation to our environment. And it is a universal rule of psychological diagnosis that the more general the habit of brain which has been really deranged (and not merely hindered by temporary emotional disturbances), the worse is the abnormal indication. To forget a familiar name is possibly an abnormal, but is so far a decidedly superficial incident. To hear a voice when none is really speaking may be a very grave matter, if it becomes chronic; but of itself, as a single incident, it indicates merely a state of excitement which may soon pass away. But coolly to insist, without any objective ground, that you are indubitably aware that your

wife means to poison you—this indicates an established “set” of brain which (unless the cause is an acute and transient delirium) is likely to prove serious in proportion to the number and the generality of the altered habits which must lie at the basis of the perversion. (On the “general” habits of the brain, compare what has been said in § 16 near the end.)

On the whole, other things being equal, the cooler and less emotional a delusion is, in the tone with which it is held and expressed, the worse is the indication, because the more does this state of things indicate a direct perversion of the more general “set” of the brain. The delusions of a fever delirium are largely secondary to violent emotions, and so in their contents they are confused, and they may soon pass away, when the temporary brain poisoning is relieved. The wild, fleeting, and scarcely utterable delusions of an ether-intoxication are as massive as is the stormy, emotional outburst of the intoxicated condition, and they vanish with recovery. But an experienced insane patient may hold to his chronic delusions with considerable coolness and clearness of head. His power to do so may of itself indicate the hopelessness of his state. Especially grave is the tendency of cooler delusions to get thought out, or “systematised,” by the patient. For thus all of a man’s habits of brain get wrought over into the service of his delusion, and then he can never even conceive the way out. All of the foregoing indications must of course be modified by the circumstances of individual cases, but these suggestions may serve as hints of the principles of psychological diagnosis.

A morbid delusion, for the rest, is by no means the same thing as a foolishly false opinion. When one gets superstitions, or other absurd views, by hearsay, and from the tradition of the social order to which one belongs, the process of acquiring the false belief is then normal, however false the faith. There is no view so ill-founded that perfectly sane men may not hold it, given a sufficient weight of social tradition and of popular ignorance. But the peculiarity of the morbid delusion is that a man does not get it by normal methods—*e. g.*, by accepting current social traditions—but comes upon it alone, as a matter of his private experience. The exceptions to this rule are, for our present purpose, insignificant. Moreover, the morbid delusion has always a characteristic reference to the patient’s own private fortunes or dignity, instead of being, like the socially acquired tradition, a matter which concerns others quite as much as himself. A morbid delusion may, indeed, assume a philanthropic seeming, but a closer inspection always shows that the deranged man is to an abnormal degree at the centre of his false world. It is he who, of all men, is most persecuted or exalted.

So much must here suffice as a mere hint as to the greater intellectual abnormalities. Very common, however, is another problem—*viz.*, that of the diagnosis of mere eccentricity of intellectual life, apart from any spe-

cifically manifest perversions. It is normal for us to acquire the most of our intellectual habits, by imitation, from the society to which we belong. Our social experiences are normally the most potent of all our experiences. Speaking, reading, writing, investigating, the knowledge of our profession or business, the thoughts of our daily life—these are all determined for us, in great measure, by our guardians and teachers in early life; by our friends, comrades, rivals, and other fellows in later life. Hence the most of our intellectual habits ought to be of a sort that we have in common with many of our fellows. When one's intellectual life varies, however, from the average intellect of his tribe or of his class, then, according to the degree and the noticeableness of the variation, one is called "striking," "individual," "original," "independent," "a man of parts," "a genius"; or, in less kindly speech, one is declared "eccentric," "queer," "quaint," "odd," "a fool," or "a crank." Now, it is manifest that variations from the average intellectual type are, within certain degrees, advantageous to both the individual and the community. The best communities cultivate certain types of originality. One habit that ambitious young people often catch by imitation is the very habit of seeming not to imitate—*i. e.*, of striving to be original. On the other hand, there is a good deal of intellectual originality in the asylums; and certain forms of eccentricity are of themselves abnormal. The question of diagnosis often offers itself: Is this particular sort of intellectual eccentricity (*e. g.*, in this young man) a mark of wholesome talent or of dangerous crankiness?

The answer must be founded upon principles, some of which can easily be stated. Conformity to one's environment is, as we must insist, in the end the test of normality. But some original men first win their environment over to conform to them; and herein they show, even through an early conflict with the environment, their higher sort of capacity to find a place in their world. Moreover, all young men have to spend some time in learning what they are fit for before harmonious life becomes possible. Thus the test of the conformity of a given intellectual life to a given environment must be applied, especially in early life, very cautiously. Some eccentric young men are so because they are "ugly ducklings" who will turn out swans. Still others, however, are rather geese among swans. The psychological observer is therefore not afraid of the mere show of eccentricity even where it is great in degree. It is the sort of eccentricity that such an observer tries to consider more carefully before he judges. And now, a general test of the abnormally eccentric intellectual life, where it involves as yet no graver disorders—no delusions, no violently morbid emotional states—is to be found in much the same region as the one in which the morbid character of true delusions was just seen to manifest itself. The morbidly eccentric intellect is one

in which the interesting experiences are to an extraordinary degree centred about matters which have too little social concern, and too much private concern for the morbid individual himself. This test is not applicable, of course, in childhood, since all young children are extremely self-centred. But it is, despite the normal selfishness of youth, already fairly applicable in the later years of youth. A young man may indeed be very extremely and grossly "self-centred" and intellectually commonplace *at once* without much mental danger; for he then belongs to his herd, and his herd will take care of him. His socially submissive instincts may, and probably will, offset the selfish grossness of his conscious aims. He will live, like the rest of his kind, a poor intellectual life, but a normal one. He will think mostly about his private concerns, but still society will, after all, determine *what* he shall think about them. Not so, however, is the eccentric or "original" mind fatally protected by the instincts of the herd. And where an intellectually eccentric or original mind is extraordinarily devoted to thinking over, dwelling upon, planning, the private success, the exalted dignity, the selfish preferment, of just this individual, then, *in the combination of intellectual eccentricity and selfish narrowness of personal aim*, there are strong marks of danger. To be sure, even such a being might have the brain of a Napoleon; but that is, to speak mildly, uncommon. On the other hand, a naïve eccentricity of intellectual life, sincerely, not falsely, devoted to objective concerns (mathematical problems, scientific pursuits, the study of nobler literature, the pursuit of a modest but effective philanthropic career), is consistent with a true promise even where the anomaly is relatively great. A noteworthy test, then, is whether the anomalous young person really looks rather without than within. One need not add that to apply such a test needs often a pretty close scrutiny. Selfish greed may wear many cloaks and may use noble phrases.

VII. THE WILL, OR THE DIRECTION OF CONDUCT.

§ 32. The life of the Will has already been defined, in certain of its aspects, in the foregoing discussions of the facts of feeling and of intellect. It is therefore possible to be here especially summary in our method of treatment.

The Will is the sum total of our mental states in so far as they involve *attentive guidance of our conduct*. How such guidance is possible we have therefore next to explain.

All definite brain-processes tend to express themselves without in movements by which we adjust ourselves to our environment. Many of these movements pass more or less unnoticed by ourselves. But all of them, in proportion as they are marked and effective movements, tend not merely to

*Expression of
Brain-processes.*

result from brain-processes, but to influence, in their turn, the very brain whose processes have initiated them. If one's arm moves, the movement is itself a fact in the world outside the mind, and, like any other outer fact, it may be once more perceived and remembered. One sees the arm move, feels the sensations of muscular contraction, and is in still other ways advised through one's sense-organs of the processes which the arm's movement involves. Moreover, if the arm, by moving, accomplishes something definite, such as an act of grasping, one perceives the resulting movements of the object grasped. If the arm is engaged in writing or in drawing, one sees on paper the lines which the moving hand traces. In all such cases one observes, then, the results of one's doings. And so, in short, *one's own activity constantly becomes itself a part of one's experience.* If an experience is any mental state in so far as its relation to

past states guides our present thoughts and deeds, and if all of our mental life accompanies those expressive movements, or tendencies to movement, which the brain initiates and guides, it follows that *every mental state has an aspect in which it may be regarded as involving an experience of our own fashions of action, or of our own attitudes, towards our world*; for at every instant we are acting, or tending to act, and so at every instant we are experiencing the results of our own activity, or of our own tendencies to action. So far, then, there is an aspect in all of our mental life which constitutes this life *a series of experiences of our own doings*, a series which can take on, by the laws of intellectual growth, a highly organised and rational character in proportion as our habits of conduct become themselves regular, uniform, and complex, and are observed by ourselves for what they are.

But just as our activity has its intellectual aspect, in so far as we constantly learn what we have done and are doing, so, too, this activity has also its passing value for us in our direct feelings. What we are doing at any given moment is satisfactory or unsatisfactory to us. Action which, by virtue of its passing character as a felt mode of action, relatively satisfies us, we call an expression of our desires. When an action

is such that the feeling which accompanies it is one of predominant dissatisfaction, the act opposes our ruling desires, and tends to be inhibited accordingly. *Thus, then, every mental state tends to have, as a fact of feeling, an aspect which embodies our current relative satisfaction or dissatisfaction with our own momentary doings. A desire means a tendency to action, experienced as such, and at the same time felt as a relatively satisfactory tendency.*

So far, then, we see: (1) That our own activity forms constantly a part of our experience; (2) that this same activity constantly results in a modification of our feelings of satisfaction and dissatisfaction in what

we are doing. If one combines these two aspects of our inner life, one can say that together they involve *a vast experience of our own desires and aversions, of our own doings and inhibitions, and of the inner results of these doings and inhibitions, together with a constant play of feelings of inner content and discontent with our own motor processes, and with the tendencies or attitudes which accompany our partially suppressed movements.*

Thus we briefly characterise so much of our inner life as constitutes the world of desire and of its outcome. Thus viewed, our minds appear as full of passing impulses, of tendencies to action, of passions, and of concerns for what we take to be our welfare. All these impulses and concerns get woven, by the laws of habit, into systems of ruling motives, which express themselves without in our regular fashions of conduct. The whole of our inner life, viewed in this aspect, appears as the *active side of our consciousness, or as the will in the wider sense.*

The Will in the Wider Sense.

But it remains to lay stress upon one further aspect, by virtue of which the world of the more or less organised impulses, concerns, passions, and other desires, gets its fully developed character as the world of the will in the stricter or more proper sense. We not only observe and feel our own doings and attitudes or tendencies as a mass of inner facts, viewed all together, but in particular *we attend to them with greater or less care, SELECTING now these, now those tendencies to action as the central topics in our experience of our own world of desire.* The process of attention (§ 30) often has as its objects not only external facts, or facts of sense-perception, but also desires, actions, inhibitions, tendencies to action, concerns, feelings, passions—in brief, whatever constitutes the active side of our nature. But to attend to anything is to emphasise that object, to give it “relief” as against the rest of what is in our minds. *To attend to any action, or to any tendency to action, to any desire, or to any passion, is the same thing as “to select,” or “to choose,” or “to prefer,” or “to take serious interest in,” just that tendency or deed. And such attentive preference of one course of conduct, or of one tendency or desire, as against all others present to our minds at any time, is called an act of will.*

An Act of Will.

The Will is, when viewed from within, *the attentive furthering of our interest in one act or desire as against another.* The act or desire is in itself something of more or less interest to us. If we attend to this act or desire (§ 30) we further our interest in it. The furthered interest results in a clearer consciousness of the act or tendency in question. But the very existence of such clear consciousness implies (by the principles indicated in § 20) that the condition of brain which naturally expresses itself in just this form of outward activity is, at the moment of clear

consciousness, a predominant condition of the brain. The furthered interest, if intense enough, therefore means, on the physical side, that the form of activity in which we are interested gets an actual outer expression *just as soon as our attention sufficiently prefers the thought of this act to the thought of any other act.*

To think of any sort of activity, therefore, already implies a tendency to this form of activity (cf. § 29). And actually to will a given act is to think attentively of that act to the exclusion or neglect of the representation or imaging of any and all other acts. Whenever one idea of action or one type of desire becomes really predominant in consciousness through attentive consideration, then the action or desire in question at once gets carried out until some restraining idea arises and in its turn gets attended to. Choice bears, therefore, the same relation to actions that intellectual attention bears to images, ideas, or thoughts; and in discussing the phenomena of attention we have already discussed all that is essential to the comprehension of an act of will. Upon the physiological accompaniments of the will we need, therefore, say nothing further at this point.

It remains to note here only one or two considerations of no small practical moment. The first is that, strange as the statement may seem, we can never will any really novel course of action. We can directly will an act only when we have before done that act, and have so experienced the nature of it.

*The Will
not Original.*

The will is as dependent as the intellect upon our past experience. One can indeed will an act which is sure to involve, in a given environment, absolutely novel consequences; but the act itself, so far as one wills it, is a familiar act. Thus a suicide can will an act which results in his own death, and so far he seems to be willing something which wholly transcends his past experience. But, as a fact, the act itself which he makes the direct object of his will (*e. g.*, pointing a pistol and pulling a trigger, or swallowing a dose) is itself an act with which he is long since decidedly familiar. One can will to visit a far country, to engage in a new sort of speculation, to choose a still unfamiliar profession, to marry, or to do anything else whose consequences one cannot foresee. But it is the consequences that are novel; the act which one directly wills is not novel. What one does at the decisive moment is to buy a ticket, to sign one's name, to say "Yes," or otherwise to repeat deeds whose contents are already perfectly familiar, while the circumstances under which they are willed may make them to any extent momentous. But, on the other hand, one cannot will to fly, because one has never learned how. We can thus will to do only what we have learned to do. "Control yourself," says the stern adviser to the spoiled child. But the adviser upbraids in vain. How *can* the spoiled child will to control himself if nobody has

ever shown him, by an appeal to his imitative instincts, what self-control means? Our will, psychologically viewed, is thus an absolutely unoriginal power. It gives back what experience has taught it. But, on the other hand, viewed with respect to its outer consequences, the will, if not in itself original, may be to any extent *originative*, because to repeat such an unoriginal act as signing one's name, or saying "Yes," may, under given conditions, begin a new life for the doer, or even for the whole world in which he moves.

Closely connected with the foregoing consideration is the further principle that, before we can come to possess a will, we must first perform numerous and complex acts by virtue of the inherited tendencies of the brain (see § 16, in the latter portion). Such original tendencies of the brain are the source of our human instincts (§ 13, 2). The will is based upon instincts. These get moulded by experience. The resulting acts, gradually organised by the laws of habit, come at last to our notice, in so far as our doings are themselves a part of our experience. The accompanying feelings colour our acts so that they are also expressions of desire. Then attention fixes now on this, now on that conceived act, tendency, or desire, according as our interest plays over the whole series of such experiences of our activity. The emphasis which attention gives, in the end, to the ruling idea of action is the inner and psychological aspect of our current act of will or of choice.

The growth of language in any child is an excellent example of the evolution of the will. Inherited instinct expresses itself in the infantile actions known outwardly as cries, and later as more vocal sounds—babblings, primitive efforts at wholly meaningless articulation. Then the child begins to observe these acts of his own, to feel satisfaction in them, to desire their repetition. The result, so far, is the development of a chaos of vocalised expressions, but not yet anything resembling true speech. However, long before this process is completed another inherited instinct intervenes. The child is imitative. This instinct involves complex processes which result in making the child's vocal noises tend to resemble those which he hears from other people. This resemblance, once more noticed by the child, also becomes a much-desired ideal; and hereby the child first gradually learns and then definitely wills to reproduce the utterances of others. Then there is added, while these processes are still under way, the intellectual experience that many of the sounds uttered by other people mean something: are names for things, or for feelings, or for purposes. This, ere long, shows the child that he too can express his meaning by using the right sounds. Now he becomes selective, attentive to speech as such, desirous of harmonising what he says with what others say or understand; and finally, upon the basis of all these elaborately

moulded instincts and habits, the intelligent will to talk takes form, and henceforth the child says whatever he predominantly and attentively desires or chooses to say, whenever he is thinking of speech rather than of any other mode of activity.

§ 33. While the expression of our minds in and by our conduct is the one great tendency upon which all knowledge of mind from without, and all the serviceableness of our mental life for the interests of society, depends, it is nevertheless the case that the practical study and training of the will are almost always regarded as secondary to the practical study and training of the feelings and the intellect. The reason for this is obvious. Apart from intellectual training, the life of our desires is

Inherited Instincts. mainly the expression of our inherited instincts, which nobody can hope to eradicate altogether, or to enrich by the addition of any entirely novel instincts. What can be done for us is to organise our planlessly numerous inherited instincts in such fashion that there shall result valuable and consciously directed habits. The devices for accomplishing this aim are largely appeals to our universal

Training the Will. human love of social imitation. Hereby we "learn how" to act aright; and unless we have "learned how," one appeals to our will in vain. Hence what appears as an intellectual acquisition—a "learning how" to be good, industrious, skilful, self-directing, etc.—is always prior to the successful moulding of the will as such. As every such "learning how" involves interests, the feelings are appealed to at every point. But the will itself, whose proper moulding is indeed in one sense the goal of all education, seems to be capable of only this indirect approach. Or, again, to teach one to will involves teaching him first to take note of his own conduct. But to teach him this you must first establish in him the desired conduct. You must get him to do before he has consciously willed this particular sort of doing. The involuntary conduct must precede the voluntary; but the right sort of involuntary conduct you can only establish through appeals to the feelings, and through presenting the fitting objects of knowledge to the intellect.

For the same reason disorders and defects of the will never exist alone. They always involve alterations either of the feelings or of the intellect, and must be studied in connection therewith.

Disorders and Defects of the Will. It is noteworthy that insanity, in the popular mind, is usually conceived as primarily an intellectual defect rather than as primarily a defect of the will, and this despite the notorious fact that insanity can only manifest itself through some sort of "queer" or "wrong" expressive action.

Nevertheless, it is often important to consider mental defects or disorders from the side of the will. So viewed, the "disorders of the will" may be said to manifest themselves in three general types. The first

type is that of the absence or serious impairment of the ability to carry out important voluntary acts, when such acts have already been in the past learned as well as often performed. This first defect is often known by the rather vague name of "weakness of will." A technical name is "Aboulia," or morbid will-lessness. The second type of defects of will is that of the chaotic or "segmented" will, whose plans do not hang together, whose action is morbidly impulsive, capricious, inconsistent, or inwardly anarchical. The third type of defects of will appears in those morbidly perverted persons (*e. g.*, in morbid criminals) whose activity, without being confused or chaotic, is still steadfastly such as fails of any tolerable adjustment to the environment, and especially to the civilised social environment.

The first type, Aboulia, is sometimes a manifestation of the temperament as such. In such cases one naturally looks for its cause in the emotional "undertone" (*cf.* § 25). The deeply hesitant

Aboulia.

or morbidly indecisive man who, despite having learned how to do a given thing, and despite his clearly knowing that it is to his interest to act, still remains permanently fast bound in a Hamlet-like incapacity to will anything for himself at the important moment, has become a favourite topic for literary portrayal. Hamlet notoriously refers his own defects of will to intellectual causes. His "native hue of resolution" is "sicklied o'er with the pale cast of thought." But such defective will may appear with a less obvious intellectual basis than in Hamlet's case. Then, however, the defect would probably be definable, in emotional terms, as the pretty constant presence of some emotion of painful timidity or scrupulosity, in the presence of which all very decisive action seems in general unsatisfactory. "Apathy" of temperament—*i. e.*, an enduring state of abnormally depressed emotional sensitiveness—might have the same effect.

But Aboulia is a frequent acute symptom in cases of more or less transient nervous exhaustion. In a measure, every one can occasionally notice such a defect of will as an incident of normal weariness. At such times we may find it especially hard to make a decision, even when we seem to ourselves clearly able to see just what decision ought to be made, and even while we feel that, as we say, we "want" or even "long" to decide. The feeling of helplessness is then itself often extremely painful. If by chance we actually begin a decisive course of conduct, then the feeling that we are "committed" gives a great sense of relief, and the defect of will may at once, for the time, vanish altogether.

In cases of nervous exhaustion, such Aboulia is an inconvenient complication, in so far as it tends to set a habit of indecision which may long survive the period of exhaustion itself. In itself, however, this acute Aboulia is apparently no very alarming incident. The nervously exhausted

man should be carefully relieved, so far as possible, from every necessity of making difficult choices. He should, therefore, if possible, "resign his will" into the hands of some one, or at most two or three competent and harmonious advisers, and he must be protected from every confusing variety of plans. On the other hand, whenever decisions are really necessary, he should always be gently but firmly helped to a quick and irrevocable choice, since hesitancy is a very exhausting incident in his experience, and since even a poor choice is often better for him than doubt. But if such care is taken, the Aboulia itself is no very serious symptom. Sometimes one meets with light cases of weariness where such Aboulia is, in fact, almost the only discoverable morbid symptom, and these cases are actually encouraging as to the outlook for quick recovery.

Much more manifold are the chaotic disorders of the morbidly inconsistent or capricious will. Temperaments abound which are characterised

Segmented Will. by phenomena of this kind, and in both acute and chronic disorders the disorganised will is a well-known symptom. This, for example, is especially true in hysterical disorders. But ordinary nervous exhaustion is frequently burdened with enemies of the kind. One often sees, for instance, the man who forms morbidly one-sided resolutions for the conduct of this or of that portion of his life. He means to permit only this or this train of thought, or to exclude wholly this or this possibility of temptation. Over the well-meant but possibly useless resolution he grows morbidly conscientious, and upbraids his friends for not sufficiently appreciating and aiding his efforts. Meanwhile, however, he freely indulges himself in graver defects than the one which he is so elaborately correcting, and inconsistently encourages even the very tendencies which he is fighting by giving them a false importance through his over-wrought self-scrutiny. In more hysterically disposed cases such defectively insistent broodings will be subject also to vast changes of plan, so that the sufferer alters his religious faith, or the whole ideal of his life, without any clear reason, and throws to the winds a whole system of good resolutions in favour of some other equally useless scheme. The habit of mere fickleness may thus become finally prevalent over all other habits (cf. § 16, at the end). One thus finds people who acquire a "mania" for changing their religious faiths or their callings.

Simpler, but often very stubborn, are the phenomena of disorganisation of will in case some one more or less generalised motor habit becomes rebelliously insistent—*e. g.*, the habit of counting or of examining gas jets, locks, etc., to see whether they have been safely adjusted, or of asking useless questions about some sort of topics. Disorganisations of this kind appear in many patients on the basis of a defective hereditary constitution. But in

- *Disorganisation of Will.*

children and quite young people they are also often present as mere disorders of development, which pass away with maturity. And nervous exhaustion can bring them on as acute symptoms in otherwise unburdened people. A surprisingly large number of such morbid habits can often exist without destroying or even seriously endangering in other respects the general capacity of the brain that suffers from them; and the fears of an impending general insanity which they often arouse are therefore very frequently unfounded. On the other hand, they are certainly grave inconveniences, and are not to be trifled with. They are best treated, apart from the medical care of the patient's general health, through a discreet moral support, given by a competent adviser, who can often help the patient to or towards a relatively effective and cheerful ignoring of his enemies.

In estimating all such defects the rule holds here, as in case of the defects of the intellect, that the stronger the attendant emotional colouring of the disorder, the more hopeful, other things being equal, is the outlook. The cooler the emotional tone of the sufferer from a defective will, in so far as concerns his immediate feeling about his disorder, the fewer are the means of influencing his morbid state. And this finally suggests why the morbidly perverted characters whose wills are relatively well organised, firm, and cool, but whose behaviour is intolerable, are in general incurable. In consequence, we may as well here abandon the task of further describing such characters, whose mission in the world seems to be to illustrate the variability but not the healthy docility of our human nature.

Morbid Perversion.

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NOTE BY THE EDITOR ON

THE PRACTICAL APPLICATIONS OF PSYCHOLOGY.

It is a common mistake to suppose that psychology is a branch of science which has little bearing upon the practical affairs of daily life—that it is a matter of pure theory, which has its place among the abstruse studies of philosophers far above the heads of ordinary people, and as far removed from ordinary business as are the higher mathematics or philology. The article by Prof. Royce shows clearly that psychology has a most intense “practical” importance; it is concerned with every phase of human thought, and therefore of human action. It deals not only with the human mind in the abstract, but with the mental development of