

LECTURE I

THE GENERAL NATURE OF THE HUMAN INTELLECT.

A general account of the workings of the human intellect must necessarily deal in part with matters comparatively familiar to students of mental science and at first sight comparatively forbidding to those who are not already psychologists, but the justification of the present undertaking lies in the fact that I shall attempt to deal with some of the more neglected facts of the science of the intellect; while on the other hand these neglected facts are such as promise to possess a comparatively general interest. As indicated in the general title to these lectures, I propose to ask you to study the intellectual life of man especially in so far as it is a product of social conditions. Now if the mind of man is notoriously something very mysterious the life of human society is now-a-days a favorite topic for inquiry. And if it is customary to say that elementary mental science is obliged to deal with very hackneyed problems, it is obvious that so soon as we deal with the relations between the individual mind and society we concern ourselves with matters that must possess an inexhaustible novelty. Now everybody knows that the mind of an individual man is formed under social conditions. It is a commonplace that we ordinarily carry on our thinking more or less expressly in language, spoken or written, or inwardly repeated. And language is an explicitly social process at least as to its origin, and more or less as to its intention when used by an individual, even in soliloquy. Thus the social relationships of intellectual processes are

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in a measure universally recognized, but as I shall show you in the later lectures of this course, I do not think that even recent psychology has yet sufficiently drawn the lesson of the social aspects of the intellectual life of man. Some of the most important and mysterious problems as to the nature of fundamental truth stand in an entirely new light if only we take due account of the social origin of intellectual processes. On the other hand some of the most constant practical problems as to the guidance of the intellect, and as to the business of the teacher of minds seem to me to appear in new and significant light when we view our intellect as an essentially social product. I propose then in following lectures a series of studies of the social relations of the human mind which, as I hope, may interest those who love human nature and may help those who have to teach, or otherwise to guide minds.

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But this first lecture must be devoted almost altogether to purely introductory matter. Our proper business can be reached only in the later lectures. For the first, to-day, since my lectures will all belong by virtue of their topic and method to the scope of the science called Psychology, I must say by way of general introduction something of that science. Thereafter I shall devote myself upon this occasion to a general preliminary account of the nature of intelligence, both animal and human.

[First then for a brief discussion of the definition. The

scope and the methods of what is called mental science, or psychology. 7

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All men are in some sense psychologists. All are interested in their fellow men, and above all in the minds of their fellow men.

But the methods of psychological study which are employed in the interests of science differ from the popular methods, first of all by trying to make a clear difference between the study of minds when made with the purpose of understanding them, and the estimate of minds which we daily make for the purpose of expressing our likes and dislikes and of guiding our practical relations with the persons in whose minds we take interest. For ordinary life minds are either interesting or uninteresting in proportion as they are the minds of people ^{for} whom we ^{feel} ~~make~~ personal ^{concern or with} ~~interest~~ whom we have ^{few} ~~little~~ or no ^{dealings} ~~concern~~. For the psychologist, all minds are interesting, merely because processes go on in them which he is concerned to understand. The psychologist is as

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interested in the minds of disagreeable, of defective, of untrained, or even of insane people as he is in the minds of his friends or of his ~~relations~~ ^{family}. In fact, since he can often better understand the mental processes of certain kinds of defective people than he can understand the ¹ processes going on in those more complex minds in which he takes a private and personal interest, he often finds that the scientific interest of a mental process may tend in particular cases to stand in inverse ratio to the moral or personal ~~interest~~ ^{value} which this process otherwise ~~possesses~~ ^{possesses}. Yet of course such a divorce between the scientific and the practical interests in mental life is only an accident of our imperfect knowledge. ~~In the long run~~ The psychologist tends, in proportion as he understands mental life, to regard minds and mental processes with an interest which differs from the popular one in two ways, (1) In so far as the psychologist's interests are broader and more impersonal than the popular and natural interest in minds, and (2) In so far as the psychologist as such wants to comprehend the nature and the law of the mental life which he is studying, rather than directly to estimate the value of what goes on in this mental life. Thus it is with the psychologist as it is with the botanist, who does not found his science upon any distinction between edible and useless or poisonous plants, but who studies the nature and laws of plant life. But precisely as the botanist gets information which when once obtained may be practically useful to the farmer or to the gardener, so the psychologist tries to acquire information concerning minds which may ~~be~~ ^{ultimately become} useful in the practical life in which we are concerned to estimate minds, and required to guide, to mould, or at any rate to influence them. *And thus, in the end, the two sorts of interest in minds, the practical and the scientific interest tend to reunite*

I have ¹ assumed in what I have thus said a definition of psychology which I may as well state at the outset of these lectures. ^{formally} Psychology is the doctrine ^{or science} which undertakes to study the nature, the process-

27

and the laws of mental life in men and in animals. Thus the psychologist is [as I have said] interested in minds precisely as the botanist is interested in plants. He examines minds, he analyzes their processes, he asks what are the conditions under which these processes occur, and how the processes vary with the conditions. If he discovers any uniformities sufficiently exact to be capable of expression as laws of mental life, he is interested to state such laws. Meanwhile it is as well to say at once that it would be a mistake to suppose, as some have done, that the psychologist is primarily or principally concerned with the study of his own mind. Some ^{people} have indeed imagined that psychology differs especially from other more or less scientific undertakings in that, while other sciences study the world which lies about us, psychology, which studies the mind, is primarily confined to what has been called the inner world, the world which every man knows, or is supposed to know in his own personal experience alone. But this is a mistake. Of his own mind the psychologist tries to discover what he can, very much as a botanist who owns a private garden, very rightly studies the problem of plant life in that garden. But precisely as the botanist who confined his study of plant life to a garden that he himself cultivated would make a very imperfect acquaintance with the phenomena of plant life, so a psychologist who studied his own mind only would go but a *very* little way in his science. The comparison, in fact, is imperfectly fitted to indicate the narrowness of the psychologist's field in case he should confine himself to his own mind; for the botanist might make his private garden a very rich field for observation and experiment, while for reasons upon which I need not enter here our own minds, unless we study them through a constant comparison with the minds of others, yield a comparatively poor field for scientific scrutiny of a psychological sort. The direct study of our own mental processes is technically

called Introspection; and I may as well say at once that introspection is only one of the psychologist's methods of work; and has never been, at any period in the history of psychology, the method exclusively or even principally pursued in the study of mental laws and processes.

The principal instrument of psychological investigation, whatever one's ^{special} method, in a particular case, may become, is an instrument with which everybody is familiar, namely the social comparison of what goes on in various minds by means of the study of the various ways in which minds express themselves. To this principal instrument of psychological study, all the special methods of the science are subordinated. *The following sentence will try to illustrate this assertion through an example. We are all acquainted with certain mental phenomena call-*

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ed emotions, such as, love, fear, grief and the like. Now what do we know of the nature and the laws of such processes? *(What can the psychologist learn?)* I answer first, that

by bare introspection, by an immediate study of our own emotional states as they occur in ourselves, we know ^{can come to} very little of scientific importance concerning the condition under which these emotions occur, or the true nature of such emotions. And there is a very good reason

why this should be the case. When we are under the influence of such emotions in any very violent way, we are ^{often} too excited to observe them, still less to understand their conditions, unless we are already well instructed in psychology, or at least in the practical knowledge of

human nature. When we get to the point where we are able to observe the emotion with care, it ^{maybe} is already less vehement. Or if our power to

observe the emotion is present, as in a way it sometimes is, along with a pretty vehement state of the emotion itself, our inner observation is rendered ^{deceptive} ~~correct~~ or even worthless by various personal prejudices which make us blind to what is going on even when we pretend to comprehend it best. Thus an introspective study of current emotional states

is likely to be to any extent misleading because of *(what one may call, in Ruskin's phrase)* the pathetic fal-

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lacies of our emotional conditions themselves. Some very emotional people observe themselves a great deal, but without ever coming, on that account, to ^{any fair} comprehension of themselves. Hysterical, and other nervously burdened emotional patients sometimes pride themselves ^{upon} ~~in~~ consciousness of their extremely clear and skillful introspective comprehension of their ^{inner} conditions. But this consciousness is usually in such people very misleading. Some of them write long letters or diaries in which they love to record what they take to be the precise nature and meaning of the ^{emotional} ~~inner~~ states. Such documents are very useful to the psychologist, but, in such cases, ^{are} very seldom ^{at all} enlightening to the patient himself. His introspection comes to mean an elaborate posing, an often surprisingly ingenious and systematic fooling of himself by himself. It becomes easy to see, when you know him, that in whatever inner state he pretends to be, or takes himself to be, in precisely that inner state he is not, but in some more or less characteristically different mental condition. He records very sentimentally his noble emotions of self-sacrifice at just the time when he is obviously most brutally selfish. ^{He} complains of utter melancholy and ~~despair~~ ^{mood} in ~~conditions~~ which he obviously more or less delights in keeping up and even reinforcing. ^{as} ~~he~~ assures you of his strength of purpose at moments when he is obviously vacillating, professes the absolute sincerity of his motives at the very moment when he is plainly lying to himself and to everybody else, and so on indefinitely. More normal people know, without writing such elaborate confessions that they understand their own emotional life comparatively ill; and popular wisdom has recorded in numerous familiar sayings its sense of the mystery of fear, of grief, of love, and of other passions. What, then I repeat is the instrument that can guide us towards a better comprehension of such passions? I reply a comparison of the phenomena of emotion as exhibited by various people, under various

circumstances, and a study of the conditions, social and physical, under which these expressions take place. We thus learn concerning the emotions a great deal that is of scientific interest. A comparison of the emotional phenomena in man and in the animals, - a comparison such as Darwin undertook in his famous book on "The Expression of Emotion in Man and in the Animals", instructs us that the emotional life is an incident in the vast process of the accommodation of organizations to their environment which has been going on throughout the whole course of evolution; and shows us that there is no human emotion which is not prefigured in some way in the animal world. The light that we thus get as to the biological meaning of the emotions is supplemented by the vast collection of facts which can be made on the human level, when we consider the social conditions of our emotional life. For instance, the emotions in general are subject to the principle of social contagion. The expression of emotion in our fellows may lead to the arousing of similar expressions, and consequently of similar emotions in ourselves, so that emotion is by no means an individual, but is very largely a social affair, in part in its very origin, and still more in its growth as we mature. A comparative study carried on in another direction shows us that in proportion as men possess and express definite ideas or definite and consciously skillful plans and purposes, the emotional expressions are less violent, so that we observe emotions to be incidents of an imperfect, confused, or interrupted adjustment of our organisms to the world in which we are living, or as they say to our environment. Finally a study of the emotional excitability of nervously diseased or degenerate persons, indicates to us the intimate connection between emotional states and functional derangements of our physical condition, so that we have learned that most emotions, in violent cases are due,

which we consciously attribute them, as to the current alterations of our physiological condition. These are examples of the way in which a comparative study of the expressions of mental life in many people guides us to a knowledge of the laws and conditions of mental life which no introspection could possibly reach.

And thus, by the cases of the study of emotions, I have already illustrated the fundamental instrumental psychology. It. The particular methods of which psychology makes use in applying the instrument whose nature has thus been indicated are numerous;

but they all depend upon ^{some special sort of} comparison of the contents of various minds by means of a study of the ways in which minds express themselves. // These

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more special methods may be roughly classified as follows; first there are what one may call in general ^(more strictly, and explicitly) the social methods of psychological study. Of these the first ^(in its beginnings one of the) and oldest is a method dependent upon an analysis of ^{human (and literature)} ~~general~~ language, viewed as a record of the working of the ^{included} ~~general~~ mind. Human language is very largely a psychological record, and is an inexhaustible source of information concerning the processes of

men's minds. ^{Thus} The terms which are used by popular language, in referring to mental processes record a certain ^{rough but valuable} classification of the facts ^{of mind - a classification which as a record of many men's inner experience, is} ~~of mind~~ which is not without its scientific interest. The wisdom which

has taken shape in popular proverbs is ^{again} largely of a psychological nature. Literature and especially poetry is ^{still another} a collection of documents and confessions relating to the most significant of mental processes. The value of these documents as expressing not ^{alone} ~~alone~~ the peculiarity of individual minds, ^{but also} what is common to many minds, is indicated by the

very fact that literature gets its permanent reputation by virtue of the fact that a great many different people find in it the mirror of their own inner life. In yet another way is language ^(a treasury of facts of) psychological significance, namely in so far as both grammatical and ^{retorical} ~~retorical~~ forms are due to psychological motives, so that the laws of syntax, and the figures of speech, are, as it were, crystallized expressions of character-

istic mental processes. But the study of the ^{more strictly} social embodiments of the laws of mental life is not confined to ^{such a} consideration of language and of literature. ^(Turning in another direction we find that) The institutions of society are due to very significant mental functions, whose nature can to some extent be read by a study of the forms which these institutions have assumed. ^{and} not only institutions, social processes also have their psychohlogical significance. The phenomena of the great social meovements, religious crises, political outbreaks, commercial panics, mobs, revolutions, all these are distinctly facts for the psychologist. To sum up then, the methods ^{the more explicitly} of social psychology may be applied whenever we seek to understand the laws of mind through a study of language, of literature, of institutions, and of social movements.

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^{But our science uses its immersed instrument} A second and highly significant group of psychological methods ^(comparison of mind) is characteristic of what is nowadays called Experimental Psychology.

Here the plan of work still depends upon the contents of various minds; but the mthods pursued are those which can best be carried on in laboratories, and with the aid of trained observers. Experiemental Psychology means the study of ^{such} mental processes ^{as} ~~which~~ take place under determinat artificial conditions. And how it is possible to study such mental processes we can easily indicate by familiar examples . When you look into a stereoscope, you see, instead of the flat pictures which are really present, what appears to be a single , solid object. The mental process here in question, is the process which takes place in all persons of normal vision; it is the process of seeing objects in a space of three dimensions. But ordinarily many of the conditions of this familiar process escape us. We can easily discover for ourselves ^{that} ~~the~~ the co-operation of our two eyes has something to do with the matter; but the precise way in which our two eyes co-operate to make us perceive objects as solid, no direct introspection, apart from experiment and comparison of various experiences, in different people, can

tell us. The stereoscope however furnishes us with the means of making experimentally evident some of the conditions of vision in three dimensions. We can determine what relation between the two flat pictures assures the effect of relief and solidity so characteristic of stereoscopic views; we can interfere with this ^{relation} in various ways, can produce so-called conflicts of the retinal field, by presenting one picture to one eye and another to the other at the same time; in brief we can produce, can vary and can destroy the normal effects of ~~our two-eyed~~ ^{our two-eyed} vision by artificial means. The use of the stereoscope thus offers a familiar example of a ^{type of} psychological experiment. Now in modern psychological laboratories there are a great number of means employed for producing mental processes under ^{such} artificial conditions. From the nature of the case ^{the} ~~such~~ experimental study of mind succeeds most readily in case of simple mental processes, ~~such~~ ^{as} ~~as~~ ^{circumstance in case of} the processes of sense perception, of comparatively simple activities of memory, of attention &c. Moreover the comparative study of minds under such artificial conditions can best be carried on when the minds concerned are those ~~that~~ ^{of} trained observers accustomed to analyze and report what takes place under the conditions of the laboratory. Nevertheless, the use of experimental methods in psychology is a constantly extending application; and there already many cases where a statistical record of the mental processes of large numbers of inexperienced persons, whose minds are working under artificial conditions, becomes important for the purposes of the experimental psychologist.

Still a third group of ^{psychological} methods consists of those which have come into use in connection with the work of medical men, especially of alienates and neurologists. These are the methods of medical or of physiological psychology proper. They are allied very closely to the

methods of the experiemntal psychologist but differ from them fact that while the experimental psychbologist is studying minds under the artificial conditions of the laboratory, the medical psychologist is considering minds under the extraordinary conditions due to nervous disease. It is in this connection that psychology gets that intimate relation to nervous physiology which is so characteristic of the modern point of view. Yet it must be remembered that even the physiological psychol-ogist is concerned with minds, and not primarily with brains, or with nervous mechanisms as such. The physiological psychologist is directly interested in the comparative study of mind with reference to the way in which their processes are altered when the nervous mechanism is altered in certain more or less determinate fashions by disease. He is therefore led to lay great stress upon the connections between mental functions and brain functions. Yet it must be remembered that every psychologist has to study mind mainly in connection with its physical expressions. Some people imagine that medical, or physiological psychologists, are somehow more materialistic in their methods, and in their presuppositions, than are other students of psychology. This need not be in any sense the case. Every expression of the mind which is capable of being observed or interpreted from without is a physical expression. Everybody who interprets the laughter or the weeping, the words or the gestures of his fellows is studying material expressions of mind, physical organs and functions which record mental processes, outward appearances of the otherwise invisible inner life. Now a physiologist who traces such physical functions as laughter, weeping, speech or gesture to the nervous centres in which they are initiated, and who then notes how these expressions, and the mental life which they express gat altered when the nervous system varies in health or in disease, is just as much a materialist, and just as little as the

ordinary man of common sense, who well knows that, as a matter of fact, our mental states vary along with their physical expression, so that certain mental states cannot in us exist without appropriate expression in our words or our demeanor, while on the other hand, certain expressions cannot exist without the appropriate mental states. We hear much of the mystery of the connection between mind and brain. Physiologists are often called materialistic for insisting so much upon it; and there are people who feel insulted when they hear that our most exalted mental processes do not occur except in definite relations to the states of nervous tissue. Yet people are not surprised when their attention is called to the fact that sorrow and joy have definite relations to the physical processes called weeping and laughter. They do not think it materialistic to say that the highest thought is in us intimately bound up with the ^{ph}ysical processes called speech. Nor are they insulted by the reflection that a man's character is expressed in his deeds. Yet one's deeds are physical processes. The relation between mind and brain is no more materialistic in character or in significance than are these familiar relations between mind and its expression in demeanor, in speech and in conduct. ^{then} So much for a general

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introductory statement of the nature ^{the scope} and the methods of psychology.

^{are to up} I am now free to pass to the special topic of these lectures. ^{We} We apply ^{the} the methods ^{to} to the study of the human

Intellect, ^{U.C. by}

Intellect, ^{And we} may as well begin by a brief account of what we mean by ^{the} the

intellectual facts and processes of the mind. And here, at once, I

shall ^{try} ~~begin~~ to apply the ^{general} principles just laid down by asking you to

consider ^{as we compare} ~~as we compare~~ to define the intellect, not merely or chiefly those

states of your own mind which you call intellectual states, but ^{rather} the ^{(the deeds, the conduct} expressions) which a comparative study of the beings who have minds will

at once lead you to regard as the characteristic expressions of intel-

ligence. ^{For, as I insist,} the best way to find out what we mean by intellect is to con-

sider what is the characteristic behavior of an intelligent ^{creature} being in so far as he shows signs of intelligence. The general answer ^{to this question} which a comparative study of very various grades of intelligence as shown in the conduct of animals and men will readily suggest, is that an intelligent animal is one whose doings are constantly moulded by what happens to him; in other words an intelligent animal is one that shows in his conduct the results of his experience. ^{Let us} consider ~~what this means~~ a little more closely ^{what this means, to this end let} us observe at once that all animals from the lowest to the highest are engaged in processes of what is called adjustment to their environment. That is, what they ~~do~~, on the whole, is to act in response to whatever stimulates their senses, as light stimulates the organs of vision, or sound the organs of hearing. And the responses made to such stimulation are on the whole such as tend to enable the animal concerned to survive and to fit himself to those physical conditions which are indicated to him by the disturbances of his organs of sense. When a dog pricks up his ears, his movement constitutes what we call an adjustment to his environment. He hears a sound. He moves his head and his ears so as to listen better. And listening better is advantageous to him. That is the sort of movement that, in the long run, helps to keep him alive, by enabling him to detect danger, ~~to~~ mind his master, etc. Well, all the movements whereby animals flee from enemies, pursue prey, hunt mates etc., ^{called,} are adjustments to their environment. Such movements are in general initiated by physical causes which disturb sense organs. The animal's nervous system is so constituted or so trained that when it ^{senses are} is aroused by ~~such causes~~ ^{outer} disturbances, it reacts with a series of outgoing nervous currents that in their turn arouse, or as we say ⁱⁿ innervate series of muscles; and this innervation of muscles terminates in conduct that on the whole tends to be suitable to th

animal according to its nature and situation.

Now when we survey in a comparative way the doings of animals we observe that while all these doings normally tend to constitute useful adjustments to the environment, the individual animal avoiding dangers and seeking food according to its needs, these doings nevertheless present one very noteworthy contrast as we pass from lower to higher levels. All of the activities of many lower forms of life, and some of the activities of even the highest animals, are subject to the rule that under given conditions they are repeated over and over, often to ^{the point where weariness begins, and sometimes even} the limit of exhaustion, without any noteworthy alteration, and that whatever the results of previous activities of the same sort may have been. Seldom, I suppose is an activity thus endlessly repeated without some more or less insignificant alteration in consequence of experience. Doubtless if we examined closely enough we should find everywhere at least minute variations of activity due to experience. But in a large number of cases these variations are for our present purposes insignificant; and the rule of a repetition of a single act over and over up to the point of ^(weariness or of) exhaustion is almost the only one observable. So, in our selves, breathing has indeed its alterations in sleep and in waking, in rest and in exercise, and is subject to more or less voluntary modifications. But on the whole the breathing of a given person, under given conditions, occurs in a ^{fairly} regular fashion, and tends little to be altered by the normal results of previous experience. In the same way, there are numerous reflexes, or involuntary reactions to stimuli, such as coughing, sneezing, the knee-jerk, and other such processes; and these are such that, under given conditions, they may occur over and over in ways which, however variable with our current nervous condition, are not subject to what we should call a tendency to learn by experience.

But in ^{very} ~~the~~ strong contrast to such activities are those ^(numerous and) higher sorts
 of conduct which are subject to the law that what ^{we have} ~~has been~~ done in the
 past, as well as what has happened in the past to our organisms, is con-
 stantly represented in the form which our present acts assume. ^(These higher activities appear in very numerous grades) Many acts
 ivities which are allied ^{closely} in their nature to the reflexes of which I
 just spoke are still subject in the other direction to a constant, if
 not very intelligent modification by experience. Thus walking is a com-
 paratively involuntary process when once we have set about it. Our will
 gives the signal for the start; and henceforth we keep on walking with
 little interference from the will until we reach some point where we
 have to stop or to turn. Thus walking is now, in its details, a quasi-
 reflex action with most of us; and our steps are repeated over and over
 again in a fashion due to sense stimulations. But walking also is sub-
 ject to alterations by virtue of experience. If we have been for some
 time at sea we acquire a new gait which we may have difficulty in
 abandoning after we reach land. To take another case there is a half
 mechanical tendency of the eyes, when unoccupied, to turn towards any
 bright object that chances to enter the field of vision. This tendency
^{becomes} ~~is~~ ^{early} very manifest in infancy; yet it is subject to modification by exper-
 ience. We have ^{now} ~~no~~ tendency to try to look at the sun, for we have
 learned that the act is too painful. When the electric lights were first
 introduced into city streets, I found my own eyes often and involuntar-
 ily tending to stare at them. The result was ^{uncomfortable} ~~painful~~, and my eyes have
^(Involuntary curiosity about electric lights) now ~~no~~ ^{such} tendency. In countless such ways the original tendencies
 of our nervous system get modified through experience, even where these
 tendencies are themselves decidedly below the intelligent level, and are
 more or less reflex in their character. But as one passes from lower to
 higher levels amongst our functions, one finds that more and more what