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STRUCTURE AND GROWTH

OF

THE MIND

STRUCTURE & GROWTH OF THE MIND

BY

W. MITCHELL

HUGHES PROFESSOR OF PHILOSOPHY, UNIVERSITY OF ADELAIDE
FORMERLY EXAMINER IN PHILOSOPHY, UNIVERSITY OF EDINBURGH

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TO

MY MOTHER

PREFACE

We bring to the study of the mind not merely an acquaintance with the facts of experience but an explanation of them, to which we have been introduced, and are bound, by no less tried an authority than our mother tongue. The explanation has been formed without debate, as if there were no alternative but to model the mind, its powers, and its working, on the ordinary notion of a physical thing. It has given us a good working knowledge of our own and other minds; and it is not set aside by excluding from psychology the problems that it undertakes. These are of two sorts: one concerning the causes, the other concerning the functions, of experience.

It gives the causes of experience sometimes in physical, sometimes in mental terms; it gives the mental causes sometimes as faculties, sometimes as experience; it regards the faculties as forces acting together or against one another; and it regards experiences either in the same way, or even as a matter with a chemical action. We are as willing to give up this kind of explanation as the corresponding explanation of physical things; but, as there, the only effectual way is to substitute a better; and that is a matter of study, and not merely of changing an opinion.

The demand goes deeper when to the causes we add the functions of experience. The question of jesting Pilate is no part of psychology, but there is no more certain source of confusion than to ignore the question how a thought claims, and rightly claims, to be true. We may be ready to give up the familiar answer which is easily seen to be meta-

phorical and impossible; but in order to substitute another, though there is no doubt about it, we have to undertake what seems at first like a revolution against common sense. Here again it is a question not of changing one opinion for another, but of making a study in order to understand, just as it is in the corresponding revolution where physics transforms our ordinary notion of material things, their powers and qualities. As little can we be satisfied with the metaphors which explain the functions of experience other than knowledge. We may ignore its functions, treating experience as so much complexity of feeling or 'state of consciousness'; and an analysis of the kind is indispensable. But if this is to take experience as barely and empirically as possible, it is also to take it as abstractly as possible; and, as always, the ignoring brings dispute and confusion, if we do not begin by observing the full fact from which we make the abstraction.

There is not less but more reason for a systematic knowledge of experience when we consider that, as some one has said, psychology is no longer one study but a cyclopædia. Unless we understand what is meant by an explanation of experience, and know how the questions are connected, and serve the purposes of one another, the division of the labour must appear a strife and not an organisation. The want of such a knowledge is not confined to the psychological speculations that one meets in general literature, and that so often suggest the physical theorising of those who refuse to enter by the toilsome way of mechanics. It is found in those who think that experience has no function, and in those who limit the mind to what they think the brain capable of being and doing, as well as in those who think the mind capable of anything.

There is, finally, the same need if we consider not what psychology requires, but what is required of psychology. In theory there are not merely the obvious demands of the

normative sciences, viz. logic, ethics, and æsthetics, but those of philosophy and neurology; and in practice there are the demands of education and medicine. The gradual separation of psychology and philosophy in the course of last century was not without its bitterness on both sides. Philosophers pointed to the ill effects of psychology on Locke, Hume, and Kant, while psychologists pointed to the ill effects of philosophy on their psychology. What really took place was a gradual separation of the problems; and they cannot be too clearly separated. But the better one is answered the better for the other. And no one would care to deny that psychology is the proper introduction to philosophy, meaning psychology as it must be taught if it is to give knowledge of the system of experience, or of the structure and growth of the mind.

In lecturing, however, the difficulty is great. One has to proceed very slowly with topics that are very abstract and general. As abstract they need time for their mere understanding, no matter how clearly they are expressed; and as general they need plenty of illustration. On the other hand, one is tempted by an unlimited field in psychology where the going is easy, and where practice makes the other easier too. The solution must be in the use of text-books, and for two purposes. One is when the study has to be extensive; then a lecturer naturally confines himself to parts of it, and leaves the rest to be studied from books. The other is with the parts that need time and reflection; for then his best plan is to presume that his students have gone as far as their book, so that he may devote his time to difficulties, criticism, and a better understanding. It is the second purpose that I have had in view, and so this book does not take the place of any of the text-books in psychology. It deals with what may be called introduction with respect to psychology, and with psychology as introduction to those other studies. It is not an introduction to psychology in the usual sense

of an elementary survey, but in the more technical sense of an introduction to a work with which we are more or less familiar, the work here being our experience. I have also presumed a little knowledge of the nervous system, but almost entirely in the last lecture. Apart from that, a general reader will find no difficulty, if he is not very anxious to run as he reads. I have retained the lecture form, but the lectures are meant for reading and not for hearing.

The five lectures forming the first part of the book deal with the various explanations of experience and the mind. The first deals with the relation of the mind and its experience to the brain and its action. The second examines the different ways of explaining the course of experience, and gives the reason for beginning with the direct explanation, and for including the functions of experience among the matter to be explained. The third and fourth lectures give the general analysis of experience with a view to the direct explanation. The fifth lecture deals with the causes which are the terms of the explanation, and it is seen that the explanation can only be made by following the development of experience and the mind. Hence the eleven lectures that follow. To prevent complexity, and a common confusion, they are divided into two parts. One part consists of three lectures concerned with sympathetic and æsthetic intelligence. The other, consisting of eight lectures, follows the general development of intelligence, but especially as regards knowledge and conduct; and the last of them serves the purpose of a summarising lecture by dealing with the development of character in intellect, disposition, and will, and in the self as a whole. The fourth and last part consists of two lectures, of which one deals with the extension of the direct explanation, how, namely, this demands and incorporates all sorts of investigation about the growth of the mind by means of experience, and apart from it; while the final lecture is devoted to the indirect or physiological explanation.

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LECTURE I

MIND AND BRAIN

§ 1. The ordinary notion of the connection between mind and brain is a confusion of two notions,
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but experience cannot happen to the brain, nor be a product of it, in the sense that every physical event is said to happen to things, and to be produced by them Page 1

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(β) In describing a physical thing, and explaining its action, our earliest way, viz. animism, makes explicit what is thus perceived in the object.
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(*a*) Absorption in an object is different from absorption with it. It may be voluntary or involuntary, pleasant or unpleasant.
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PART III

THE GROWTH OF INTELLIGENCE

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§ 10. Hence the ideal in ethics, politics, and education 406

§ 11. Of the five senses in which we, or 'the will,' have been said to be free, four refer to facts about which there is no dispute :

The first refers to the worth of will, the other four to will as fact.

The second refers to the power of doing what we have willed, the other three to our willing.

The third refers to a power of all willing, viz. everything acts according to its nature, and every conscious creature acts as it likes.

The fourth meaning refers to the still higher nature which not merely does as it likes, but determines what it shall like to do. This is called the freedom of self-determination, and is required for a moral life.

Whereas these meanings of the freedom of the will point to facts that are admitted, the fifth does not. It asserts that there is a higher nature still, where self or will is free from the law that the same cause has the same

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PART IV

EXTENSION OF THE DIRECT EXPLANATION; AND THE INDIRECT EXPLANATION

LECTURE XVII

EXTENSION OF THE DIRECT EXPLANATION

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Three common errors regarding the discovery and explanation of the facts 422

§ 4. Enumeration of the methods of reaching the facts 424

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(*a*) the contrast between growth by nurture and growth by nature is really between one means of natural growth and another.
Both forms are revealed in experience; only from the growth of experience can it be calculated how much is due to nurture, and how much to nature, *e.g.* to age or sex.
Our mental life in the course of a day presents quite the same problems; why it is harder to separate and estimate the two factors in a life-history of growth and decay, than in a daily history 430

§ 7. (*b*) The natural and periodic growth of the mind.
This is wrongly identified with its growth without nurture, *i.e.* apart from experience.
The direct explanation of the mind provides a scheme whereby all differences in capacity, and in the seasons for learning, can be read and calculated as differences of rate in a common course which is known.
If this is not understood, the notion of a serial emergence of faculties is a superficial notion, on which errors are easily based;
among them the common or negative use in education of the rule about lying in wait to follow nature.
We have direct knowledge of the growth of individual minds, and can make it as specific as we choose Page 434

§ 8. (*c*) There are also indirect means of inferring their growth, but it is wrong to suppose them a substitute. The knowledge they give is very general, and has all to be verified by the direct method:
(*α*) Inference by analogy, viz. from general facts about growth of the body to the growth of the mind or brain.
(*β*) Inferences from causal connections. One is from the mental development of the race to that of individuals.
The law of biogenesis: example of its erroneous use. In psychology, as in biology, it is not a means of *discovering* the present facts, but of discovering the past from the present.
And while it has its place in *explaining* the present facts, it has to be used with the same qualifications as in biology. One of these, viz. 'the effort to escape the law,' applies more especially to the nervous system, and gives a better rule for education, than the law itself.
(*γ*) The other causal inference is from the growth of the nervous system. That this is not a substitute for direct knowledge of the mind is seen by contrasting the trivial knowledge that it gives with what is known directly. The ultimate inference cannot be from brain to mind.
Apart from this error the indirect method is essential. Example of the use of the two methods in a comparison of the development of the nervous system with the development of the mind 439

LECTURE XVIII

THE INDIRECT EXPLANATION

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We are to consider how it has been proposed to represent the heads of the direct account, viz. (A) sensation and thought, (B) will, (C) feeling or interest Page 450

§ 2. (A) The peripheral organs of sense, and the nature of their stimuli, have more importance than was sometimes given to them under the law of specific energies;

and the view that every peripheral fibre gives a sensation unlike every other has only a limited proof from the variety of sensory qualities, even when the local qualities are included Page 453

§ 3. There is better ground in the differences of path that impulses must travel, and in their different terminations in the cerebral cortex.
But, even if there were a cell-to-cell correspondence, neither the excitement, nor the area excited, at the centre is like that at the periphery 457

§ 4. And there is no such correspondence; for probably every adequate unit of peripheral stimulus excites a group of cortical cells.
This presumption has the advantage of leaving open the question of the site, and the nature, of the cortical process correlative with sensation and other experience; for all views on the matter are still conjectural 460

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Problem and error can be seen at the lowest form of experience, *e.g.* in the mere sense of space; 464

§ 6. and especially in the mere sense of time, because the time that we feel corresponds with the time of events in the cortex, and not always with the peripheral order.
One error (*a*) is to suppose that, though a sensation is not a copy of the peripheral object, it and other experience are copies of events at the centre; but this is impossible in regard to time, whether we take the real present to be a point, or to be a piece of time.
The other error (*b*) is to assume that because the cortical time corresponds with the sense of time, it is the immediate correlate of the experience; but this is not the case for several reasons 465

§ 7. The question about the correlate of the sense of time is like that about the correlate of the sense of space; the answer is the same, 469

§ 8. and points to the only legitimate way of answering the question in § 5.
The question is raised about even the lowest work of intelligence: If we do not know the immediate correlate of a sensation, how can we say anything about that of an organised whole of sensation,—even of sensation of one kind, *e.g.* a shape, or an air?
The answer is that we must argue from correspondence without further likeness. We do so constantly in comparing one physical series of events with another.
The seat of the organised whole need not be different from that of sensation before it is organised.
This accords not only with the facts of individual development, but with the phylogenetic development of a nervous system; for two theories about the relation of higher to lower arcs of the nervous system are in error, viz. the simple projection theory, on which the development is meaningless, and the army-theory, for which there is no evidence 472

§ 9. Extension of this explanation to the correlate of sensory, perceptual, and

conceptual thoughts, which require the joint action of cortical areas distant from one another.
In consequence partly of the limits of this explanation it has its uses: Page 477

§ 10. One is to prevent a premature satisfaction with pictures (*a*) of the localisation of higher mental faculties, and (*b*) of the nervous action corresponding with theirs:
(*a*) The great association areas and their special functions.
(*b*) They may be called the seats of intelligence if two errors are avoided, viz.:
that the correlate of an idea is an action confined to an association area;
and that the organisation in an idea, and a course of thought, is represented by a mere association or complexity, and not by a system of action.
The system of action correlative with our subject-experience in thinking 481

§ 11. (B) For correlate of our subject-experience in seeking we may suppose action of a whole system in support of the particular system realising an end, *e.g.* voluntary attention; in unwilling attention there is defeat of the whole by the part.
The whole corresponding to the voluntary self at any time is the whole nervous system under two limitations; it is the whole that has already been active in past experience, and taken form in accordance with it; and it is this whole so far as it is excited by the present occasion 485

§ 12. The efferent part of the nervous system is not the correlate of the will.
The efferent, no more than the afferent part has the organisation of an army; its organisation and working.
Correlate of motor sensations, and of the sense of effort.
The higher levels of structure and action corresponding with desire and will (including the connection of idea and will) must be thought on the model of instinct and instinctive action on which they are developed 487

§ 13. Two theories on the matter are in error:
(*a*) the assumption of an ideo-motor law, of which voluntary action is thought an example;
(*b*) the reduction of all will to attention;
and it is an obvious error to personify the correlate of self and will 489

§ 14. (C) The correlate of feeling or interest is in no separate area, though it especially involves organic sensation.
The correlate of excitement is the amount of nervous disturbance.
That of pleasure and pain is a separate question. The biological answer points to the advantage and disadvantage for living.
And the physiological answer carries this to detail, but the neural correlate is conjectural, and it can only be said that the correlate of pleasure is a success of some sort, and that of pain a failure, in the action of the nervous system.
This is most apparent in the pleasures and pains of seeking;
but the interest of objects may be read in the same way, 494

§ 15. including the pains and pleasures of sense. They have been thought capable of a more specific explanation Page 497

§ 16. Examination of three views which regard feeling or interest as sensation :
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But (α) sensuous pleasures and pains have to be grouped with higher forms,
and (β) the cutaneous pain-sense with other organic sensations 499

§ 17. (ii.) The view that æsthetic emotions are motor and organic sensations.
This may be examined in a series of three views which reduce our appreciation of visible forms to sensation, viz.
(α) to movements of the eyes in following the forms ;
(β) to our bodily attitudes in imitation of the forms ;
(γ) to our symbolic imitation of them.
The natural ending of the series is that in æsthetic appreciation, as in all learning, the nervous system involved becomes relatively independent of peripheral stimulation and peripheral emphasis 501

§ 18. (iii.) The same comment has to be made on the wider view that all emotion is organic and motor sensation.
As formed by Prof. James the theory is that the nervous system must excite peripheral organic disturbances, in order to pass from pleasantness or painfulness to emotion. But mild likes and dislikes are emotions ; and, when thought is deep, emotion may be deep, but must not be violent.
Other objections and how they are met.
The evidence for the general theory is twofold :
(α) Physical : organic changes occur with all emotions.
But so they do with the driest experience ; they appear much the same for very different emotions ; failure has made it doubtful whether emotions, like diseases, can be diagnosed from their symptoms ; and the symptoms may not be the causes of the emotions.
(β) Mental : (1) apathy ; but apathy may be a failure of the brain to stir itself directly to emotion, as well as a failure to create organic disturbance.
(2) objectless moods ; but they are simply organic sensation, and to be distinguished from emotion.
(3) the loss of emotion as we eliminate its expression ; but in this, and many other respects, the connection is like that of thought with its expression, and the expression as we feel it is not the thought.
This comparison is the best solution of the question at present 506

PART I.—THE DIRECT EXPLANATION OF THE MIND

LECTURE I

MIND AND BRAIN

§ 1. THE confusion of common sense is nowhere so well marked as in our ideas about the mind and its relation to the brain. Very often the words mind and brain mean the same thing; we speak indifferently of a man having his mind or his brain keen, dull, large, or small. The tendency on the whole is to etherealise the brain and materialise the mind, so that the words stand for an ambiguous substance that is neither quite material nor quite immaterial. At one time, as Aristotle says, every element but earth, and even it in a sense, had some one to choose it for the substance of the soul. And still the notion of something exceedingly mobile and intangible, like animal spirits, subtle fluids, very complex and unstable compounds, and, of course, the ether, is particularly acceptable. But the view is nearly as common that mind and brain are different things acting independently, and on one another. The mind is still given a stuff, a position and room to occupy, but it may be thought to leave the body in dreams, and even to become visible and be photographed; indeed it may be given such independence that any soul may be thought to fit any body. Most common of all is the greater vagueness which admits both views—the view that mind and brain are the same thing, and the view that they are different things—with no sense of the contradiction. 1 1.

I. 1. Even without reference to the brain we are far from clear, as when one speaks of mind, soul, and spirit, as of three different things, without being able to distinguish them. We have no need of such a distinction in these lectures; and, if I speak of soul and spirit at all, it is with the same meaning as the word mind, and to suggest that the mind has emotion and will, as well as intellect. It is common and convenient enough to distinguish emotion and will as spiritual, and intellect as mental; but of course they are all qualities of the same individual mind, soul, or spirit.

If, when quite new to these studies, you are bidden to turn from physical things to think of the mind, you will seek to think of it as having a visible or a tangible form, and if it has none, to regard it as not a thing but as a property of a thing. For, being long accustomed to a single successful way of regarding all physical things, present and absent, we expect the mind, if it is a thing, to have the points that all other things possess. We expect it to have shape, to occupy room at least, and to keep other things out of its room. When we find that it does not, it seems to follow that the mind is not a thing but a property, the kind of property that we call the power of a thing. And most people, I think, are satisfied to say that the mind is the power of the brain to produce experience. It need not be a wrong saying, for it may mean anything; and our satisfaction with it is lost immediately we ask how experience can happen to the brain, and be a product of it. For it does not happen to the brain, and is not a product of it, in the sense that all physical events are said to happen to things and to be produced by them.

Every physical event, because it is physical, is perceptible by an actual or a possible organ of sense; but we can never have sensation of another's experience; we have to infer it.[1] Very likely there is a specific brain-change for every difference of experience.[2] The brain-change is a physical, a perceptible

[1] This is the case, though it often happens that we do not know the physical signs from which we make the inference. People who believe in telepathy think that there need be none; but to have another's experience is one thing, and to know that it is the same as his quite another. The latter is a belief and requires a ground (xi. 3).

[2] This may be expressed by saying that experience is a function of certain

event; but of course it is not the experience that is coinci- I. 1.
dent with it. Hence an experience does not happen to the brain in the sense that anything else happens to it, or to any material thing.

There is the same source of confusion in calling experience a product of the brain. We see this whether we take one or the other of two opposite assumptions. We may assume, as we are afterwards to do, that every brain-change, like every change in any other physical object, has a full physical history and explanation. The incidents of this history are products of the brain; and they are all the products, for they occupy the total energy involved. If, therefore, we speak of experience as also a product of the brain, we must be careful to distinguish; for it occupies none of the energy involved, and so it is not a product or effect in the sense that every physical event is a product or effect. Similarly, if we took the alternative and opposite assumption, holding that the energy involved is not all occupied by the physical incidents, but that some of it is converted into experience and is perhaps reconvertible; then, indeed, experience is a product or effect of the brain in the sense that physical events are effects. But now there is this new and extraordinary difference between them, that, in order to produce or become experience, energy must disappear from the physical world. For if the effect were perceptible, however indirectly, in any sort of physical change, it is this change and not the experience that would require and occupy the energy in question. And then the case would be the same as under the other assumption, where experience can occupy none.

Merely, then, because experience does not happen to the brain, and is not a physical product, it is nearly as meaningless to speak of the mind as a power or other property of the brain, as it is to take it for a thing with physical dimensions. And so we are driven from the materialism into which common sense is so easily led.

brain-processes, or that they are a function of experience, and so, more shortly, that the mind is a function of the brain, or the brain a function of the mind. This is the mathematical use of the word function. But in the physiological use, when it is said that the mind or that experience is a function, meaning that it is a product or a process of the brain, there is the confusion spoken of immediately below in the text.

I. 2. § 2. There remain two views, which are so far like the two vague views in our everyday speech, that one of them calls brain and mind the same thing, and the other calls them different things. The difference between the views is in their answer to the question whether the process of experience and the corresponding brain-process belong to the same thing or to different things. The view which refers them to the same thing is at present usually called monism, that which refers them to different things is called dualism.[1] The difference between the two, the difference between one thing and two things, may seem clear and absolute enough; but it really is neither, for it depends on what is meant by a thing.

Monism assumes that there is a brain-process for every process of experience, and yet that the one does not cause the other, because the energy of the physical process remains physical throughout, and is neither increased, diminished, nor directed, by the feeling with which it happens to be associated. It does not, or need not, regard the one process as more real than the other; they are together like the convexity and concavity of a curve, and neither determines the other except as a system of signs determines what it signifies. That is the assumption in monism. Its conclusion is that both processes belong to the same thing as different aspects of its one and the same action, and that this thing is neither brain nor mind but 'reality.' Hence it is also called parallelism. What may be known about reality, and how mental and physical things and events are parallel aspects of it, those who hold this view think it does not concern them to say. Let us ignore this conclusion for the present and look at the assumption; for we are to make it, and should be clear about it. It is that a different brain-change occurs for every difference of experience.

[1] These terms, however, are always to be read in their reference. In the present instance they refer to mind and brain, and hence the distinction between monism and dualism in the text is that which is found in books on psychology and physiology. But there have been several forms of monism and dualism in other connections, viz. in theories about reality and about our knowledge of it. Materialism, for example, is a form of monism in this, the metaphysical sense, though it is directly contrary to monism in the physiological and psychological sense; and those who maintain dualism in the latter sense, *i.e.* in respect of mind and brain, believe, like every one else, in some form of monism, when the nature of what is real is the question.

Objection is taken to it on the ground that we are not compelled to adopt it. For the principle of the conservation of energy puts no limits to the potential forms which energy may take; and it would be undisturbed if there were psychical forms of energy convertible with physical, and even if the quantity of physical energy in the world were not constant. But it is not because we are driven to the assumption that we adopt it; it is a piece of faith. It is an ideal in the investigation of the nervous system to find for every difference of experience, whether of quality, intensity, or structure, a corresponding physical difference. And this ideal is based on the belief that no energy goes in the production of consciousness. I. 2.

But the faith may seem one-sided. It may seem to set limits to the action and growth of the mind which dualism would not set. That is due to confusion about it, and especially to supposing that the brain must therefore be like the mind, and its action like experience. We shall ask about the likeness when we proceed to their correlation (xviii.). At present it is enough to remark that there is no likeness between the sensation red and its correlate; for, admitting a correlate in this case, we cannot take the objection of mere unlikeness in any case. When we assume that energy never ceases being physical to disappear as experience, although we thus deny the interaction of mind and brain, we do not define what the mind can do, nor deny any of its claims, least of all its claim to be a real thing. We do not contract its capacity to what we take to be possible for a material mechanism. The temptation is, no doubt, to put such a limit, though that is really to invert the actual fact; it is as if we tried to gauge the limits of our thought by the number of letters in the alphabet and their possible combinations.

For the capacity of the brain has to be inferred from the capacity to experience. It is only after the meaning of the physical changes has been found, as we find the meaning of a language, that we can reverse the process and say, by examining the physical conditions, what sort of experience its owner may possess. We have first to read the brain as correlate of the mind, and only then can we read the mind

I. 2. as correlate of the brain. Whatever is possible to the mind is possible to the brain; that is the assumption. It is very different from one that would limit the power of the mind by what we can somehow assume to be the capacity of the brain. As there is nothing to limit the deepest thought in supposing that it can be spoken, so there is nothing derogatory to the mind in assuming that, for every difference in experience, and in the power of producing experience, there is a physical difference.

And so far there is no tax on common sense, for we are accustomed to speak indifferently of mind and brain. But we are also accustomed to speak of mind and brain as depending more or less on one another, and especially of the mind as depending on the growth and the state of the brain. Every sensation is preceded by a physical stimulus; we are mentally languid when physically done; and a young mind is incapable of any great thinking, for no reason but that the brain is not grown enough. Must we say, then, that experience depends on physical causes? Our assumption answers, Yes, in the sense that left depends on right, up on down, in the sense, namely, that one is not found without the other. If we speak of dyspepsia causing depression, or depression causing dyspepsia, our language has the same convenience, but the same error, as when we speak of the sun moving across the sky. Our assumption is that the physical cause becomes a continuous physical effect, which is broken at no point to become or receive a mental influence. Adapting an old illustration, let us suppose that we had the means of so enormously magnifying the brain—each examining his own brain in a mirror, if you like—that its minute structure, and every movement in it, became visible. We are assuming that the effects of a stimulus upon it would be seen as a continuous series of physical changes in which the total energy is accounted for at every point by the work done (including the potential energy of new structural arrangements) and heat. At some point in the series, where the cerebral cortex is involved, we should see the various actions on which the course of feeling depends. We should not see the feelings; they would be something of which we had no sensation,

something over and above the physical process. If the brain we examined were another's, we could only know of his feeling, say of red, from himself; if it were our brain, we should at the same time have the feeling of red and see its immediate physical correlate, but our feeling of red we should not see. I. 2

This, then, is the assumption when fully taken. It is objected to by many who would admit it so far as to say that there is a physical change of some sort for every psychical one. But it is an assumption which nothing can disprove; it cannot cease to be the ground for the investigation of the brain; and because it interferes in no way with anything we may infer from experience about the structure, the growth, and any capacity whatsoever of the mind, there is no difficulty about our taking it. On the contrary, the more frankly you take it the better, and especially if your studies are at an early stage, when brain and mind have a vague meaning to you. When you try to picture the structure and the action of the mind, remember that you are trying to picture the structure and action of the nervous system. In this way you will avoid the usual confusion of trying to picture a hybrid process consisting partly of visible movements and partly of invisible feelings; and you will also avoid the error of limiting the capacity of mental action by the range of movements which you imagine to be possible for the brain. When we come to consider the immediate correlate of different experiences it will be found how robust one's faith must be. But it will also be apparent, if not already, that except for clearness it does not make the least difference whether the assumption is right or wrong. Nothing can be based on it but the efforts of those who go to seek the treasure when there may be none. And if their efforts are real, and not merely speculative, they will continue to have no more cause of regret than the farmer's sons in the fable, since all their digging is demanded by psychology, and adds to its ordinary wealth.

Let us now see how we stand. We have omitted for the present the conclusion of this monism, its doctrine, namely, about brain and mind being parallel aspects of a single reality. And we have admitted its assumption, and

I. 2. seen that the assumption is only an ideal. There is really nothing more in the theory but its name, which protests against the view that brain and mind interact. Were it not for this, the monism might equally well be called dualism; for it splits the whole world that we know in two, into a physical and a mental world. If dualism, which makes brain and mind two different things, admitted the assumption of monism, there would be nothing to divide the two theories but the meaning of the word thing. Both theories are monistic in the sense that they regard the mental and the physical worlds as belonging to a single universe, and they are both dualistic in opposition to materialism. The difference is that monism ascribes physical but not mental events to things, whereas dualism refers both to things, calling the psychical things minds, souls, or spirits.

§ 3. If we remove certain superstitions from the popular notion of a physical thing, there is no reason why we should not regard the mind as a thing. And that is what we are now to do; we are to combine the assumption of the one theory with the conclusion of the other. Apart, then, from any metaphysical consideration, and taking the same empirical view of mental as of material facts, how are we to regard the mind as an individual growing thing?

The facts must be found in the nature of experience. If we say that the mind grows, it is because there is a growth in experience; and if we say there is a mind at all, it is because the nature of experience demands it. There would be no demand if we took the course of experience to be a series of events that had no internal organisation nor mutual dependence. Such a view was taken by materialism when consistent, but it is hardly possible on any other ground.

There is, however, an easy confusion that has the same effect as materialism. The ideal of the physical explanation of the mind is unsatisfied as long as pain, or purpose, or any other experience, is included in the cause of our movements (ii. 1). This ideal being so attractive as well as so distant —as distant perhaps as "the establishment of a penny post between the planets of the solar system,"[1]—it is easy to

[1] Stout, *Analytic Psychology*, i. 34.

forget that, even if it were realised, we should only have completed the physical account. Because we had rid it of mental factors they would not, of course, be explained away; there would be everything to help, and nothing to prevent, a mental explanation as well. The very point of the assumption in monism is that they are not competing explanations of the same fact. Those, however, who are entirely concerned about the physical explanation, are apt to assume that feelings are somehow thrown off from the brain like sheets from a printing-press, and that they are barely formed when they pass into nothingness, being too ephemeral to remain anything at all, or make a difference to anything else. They are likened to words from our mouth, to the shadow and to the whistle of a passing train, and to whatever is incidental and easily disappears. But every analogy brings to light that, whereas this notion might be made consistent with materialism, and with a theory of interaction, it directly contradicts the assumption of monism or parallelism, with which it is apt to force an alliance. Just because experience is merely on sufferance in the physical explanation of itself, it must be given a being of its own; and, if an explanation is possible in mental terms, there is nothing outside to prevent it. It is possible because experience has a structure. From this, the given fact, we infer the structure of the mind, viz. its powers or faculties. I. 3.

If the ordinary notion of a mind is not clear, neither, of course, is the notion of its having structure, powers, or faculties. We have many names for them, *e.g.* memory and judgment, taste and imagination, desire, will, and numberless others. But the same words are also used to name the parts of experience that the several faculties are said to produce: they name the faculties which we infer, and the facts from which we infer them. It may surprise you that we do not trouble to distinguish things so different as fact and inference, especially when the inference is to a cause of which the fact is the effect. But your surprise will be less if you observe that the facts of experience are little more than rechristened by assigning them to faculties as their cause (ii. 11). If we ask how Shakespeare, and not others who tried the same story, came to write *Hamlet*, it may not

I. 3. seem absurd to reply: because he had a great faculty of imagination, or of sympathy, or a great dramatic instinct. Yet the questioner knew so much before he questioned; and he is merely told that what he has found in *Hamlet* he may find in the rest of Shakespeare's work. Even, however, with so little addition as is commonly made to our knowledge of the facts by ascribing them to faculties, it is necessary to keep what is fact clear of what is inference.

There are three words, each of which is frequently used as a general word to denote any and all of the facts, viz. experience, feeling, and consciousness.

The word experience is especially convenient, because it may be used indifferently as a noun taking adjectives, and a verb taking objects. It means the same thing to say, I experience so and so, and, I have a certain experience.

The word feeling is frequently used to distinguish certain parts of experience from others, viz. touch from other sensations, pleasure and pain from everything else, subject-experience from object-experience, and emotions from knowledge and resolution. But there is never the least ambiguity in also giving it the general meaning. It is then contrasted with the absence of all experience, as when we question whether the point of a joke has been felt, or whether a plant ever feels. Indeed the simplest way of stating what we mean by the words experience and consciousness is to reply: it is all that we feel.

The word consciousness is familiar in literature about the mind, but it has been responsible for a good deal of confusion. This is mainly due to its abstract form. It is usually meant to have as concrete a meaning as the word experience; but an abstract meaning is often given to it, and so unwittingly that this must be seen to be avoided. We separate consciousness from its 'contents' as if it were something by itself, or in addition to them. We speak as if it were a light thrown outward on things and inward on ourselves; and again as a platform on which ideas and other contents appear, combine, contend, and from which they disappear; and we are even apt to personify it, making it a spectator of its contents, or otherwise busy among them. But we might as well separate experience from what we

experience. There is no experience that is experience of nothing; when conscious I am always conscious of a definite something or other; and this is called the content of my experience or consciousness. i. 3.

The content need not be an object. So far as we are aware of an object, we have that consciousness or experience that we call a thought. And there is perhaps a tendency to limit the word consciousness to this, and make 'I am conscious of' mean 'I know' or 'I think.' But there are other species of consciousness besides thoughts; and in a thought we feel the thinking as well as the object of the thought. When we rejoice in an object like a piece of news we have thoughts of it, but we need not also make either our joy or our way of thinking an object; we may take no thought of these, and yet we are conscious of them.

§ 4. If, to repeat, we say that the mind grows, it is because there is growth in experience; and if we say there is a mind at all, it is because the nature of experience demands it. We shall have to examine the structure and development of experience throughout these lectures, but our common knowledge of it is enough to make us understand it as individual, or like a thing, the original, indeed, of our notion of a thing (vii. 5). Observe, however, that though nothing can be more familiar to us than our experience, we seldom examine any of it on its own account. It is a common error, we shall see, to read more into it than is there; we read not merely higher into lower forms, but lower into higher, forgetting that the higher economise the laborious methods of the lower forms. But it is quite as common to overlook what is really there; and, by way of practice, let us delay for a moment over the actual complexity of what seems simple, and the unity and mutual dependence of what seems many or merely different. At the same time we shall observe the difference between an experience and the thought of it.

When we set an experience before us in order to describe it, we deal most readily with what was object, or set before us, in it; and we are drawn especially to that part of the whole object in which our interest was predominant. At present, let us say, you hear me saying this,

I. 4. and the object of your interest is the meaning of my words. Examining this experience, you settle first on the meaning they had for you; but that meaning is no easy matter to distinguish and describe. You easily give the essential part of it, the meaning that every one gives who understands the words, and that can be equally well expressed in other words. But on closer observation you will find that this is only part; it is abstracted from the particular form in which my words, and not others, gave the meaning, and in which they gave it to your mind and not to others. Besides the meaning, which was the central point of your interest, you had also the sound of my words before you. It will puzzle you to say what this presented to you besides the meaning. What of their tone, their loudness, their strangeness or familiar quality, their separateness, and the units of their sound? Most of all you will be puzzled to distinguish the meaning from the words, and their bits of meaning from the several words, and say what the difference was in the experience where you did not make any of these distinctions; for each made its contribution to the total meaning. And you doubtless had for object in your experience more than my words and their meaning; your eyes, for one thing, were open as well as your ears. Then, turning from what was object in the experience, there is all that we shall call the subject-experience, including not merely your organic sensations, but your doubt or perplexity, and your attention, interest, or irritation, about the object as you thought it.

And you do not go far without seeing how liable you become to what is called the psychologist's fallacy. It consists in confounding an experience with our thought of it. To describe a physical object we take it aspect by aspect, and so specify what it has in common with other things; and we find more in it to describe the more we know about things that are like it. It is the same when we take thought of an experience, and when we proceed to describe it. The experience is not the same as our thoughts about it; it is the fact to which our thoughts have to be true. Nor does the thought consist in repeating the experience as nearly as possible. We may do that, too, in order to have the fact more fully before us, or in order to verify our thought about

it. But to form a thought of it is to have quite a different I. 4
experience. We take for the object or matter of our thought not merely what was object in the experience, but what was subject as well. And we set the whole before us, aspect by aspect, distinguishing differences that were felt but not distinguished or thought about.

Returning to the complexity of the experience, you will find that every factor which you take for simple at a first glance turns out either to be complex in itself or to be impossible except as a factor. Your feeling of self, your curiosity or languor, your attention, doubt, satisfaction, are obviously of such a kind ; and, though it is not so plain, you will find the same even in so simple and separate an experience as sensation. Every simplest sensation, in addition to the quality from which it takes its name, has a degree or quantity of the quality, and a degree of vividness, clearness, and interest. These aspects are all felt, for it does not matter that they are not distinguished from one another, and that the sensation does not analyse itself. With the gradual change in any one of them, it is felt to alter gradually, and not simply to give way to a new sensation. Even when defined as if a chemical element of experience, because it cannot be analysed further and still felt, "the simple sensation cannot be given alone, but is the result of an abstraction" ; and it is complex enough to have parts or aspects "whereby it is differentiated from other sensations." [1]

With the complexity there goes a unity of the experience, both at any moment and during the period when it runs its course. Taking it at a moment, as if in cross-section, observe that the complexity is without confusion ; or, if a feeling of confusion is present, that you want not less complexity but less perplexity : you want a single thought in which the whole matter is organised or grasped. Nor would the cross-section be what it is, but as a factor in a greater whole. That is obvious when the whole is the execution of a purpose, or the hearing or the seeing of anything that takes time. But so it is always ; for in a cross-section there is the same abstraction as in the notion of a present moment that

[1] Wundt, *Grundzüge d. phys. Psychologie* (4th ed.), i. 281. See also note on the definition of sensation at the end of Lecture ix.

I. 4. occupies no time. Even the most momentary experience occupies some time, and none can be all represented by a series of sections, however many we take to the second, and though experience proceeds in pulses. We might as well say that a moving object is represented by a series of biograph pictures that we take into our hands, examine, and connect in proper order. It is not merely when we take thought of our experience that we find each momentary state to be qualified by its position in the course; the division of the course is part of the experience, without which we should have no sense of time (xviii. 6, 7). Thus, whether we make a cross-section or a longitudinal section of our experience, we find everywhere structure and connection. It is not hard to find sporadic and purposeless elements in it; and we are often distracted, or in two or three minds; but it is only in very abnormal cases that the two or three minds might as well belong to different people.

This unity of structure in the complexity belongs not merely to higher forms of experience, but to that in infants and animals. It is no doubt a common error to read higher forms of experience into lower lives, as well as into lower forms of our own experience; we put notions of geometry into the mind of a bee, and see the sadness of reflection in the eyes of a ruminating cow. But a more subtle error appears when it is sought to correct this one by merely withdrawing from such minds a faculty of reason or intelligence, as if the rational connections might be taken from experience and the elements left as they were, but now in chaos. And we are apt to think of crude experience as chaotic. On the contrary, so far as there is no feeling of connection, the distinctions are absent as well; and wherever difference is felt, there, too, is connection felt as well. A sentence, whose several words give precision to an idea in your mind, is only babble to an infant; and a primitive mind with all its senses in action has a thought so meagre that it would bewilder you and me if we were not falling asleep, for we should not be satisfied in it. But the thoughts of animal and infant are no more bewildering and unsatisfactory to them than ours to us. So also what is simple common sense, and enough to satisfy us, a man of science may call

inconceivable, because it will not fit with his fuller knowledge. I. 4.
Or turn again to your own experience and you will find that, the more poorly it is organised, the fewer the elements that are distinguished in it. Compare, for example, your following an interesting story with your listening to one of which you have lost the thread, or to an argument that perplexes you, or to a comparatively unknown tongue. Is not the complexity greatest when your understanding is most comprehensive? Wherever you cannot grasp and hold as one, the distinctions are blurred and few; they do not even exist for you; they are lost with the point of them. And the more you lose it, as by growing tired or sleepy, or absorbed in something else, the more do the very sounds lose their independence and become babble to you.

From this exercise on the unity and complexity of experience an easy example of the growth of experience will bring us back to the notion of a mind.

A story consists of significant words and nothing else, but it is not a mere collection of them, and your reading of it is not a mere change from one to the next. They combine to form sentence-meanings, which are the tissues of the story; these combine to form the organs or greater divisions; and these again to make the single story. The whole structure of it is designed as a piece of experience. As you read, the earlier parts disappear from your thought, giving place to others. Something, however, remains, and not merely as a series which you can recall; it is carried forward as a power to appreciate and organise the coming parts, so that they are felt with a far richer meaning and interest than if they had begun the story. Now this life-history of a part of your experience may be extended to the whole of it. While your whole history has comprised many a story, some of them so short that they have barely taken time, of little interest in themselves and none beyond, and most of them you have quite forgotten, yet they are all incidents of your single story. For not only did they affect the course of your life-story at the time, and thus indirectly its future, but directly as well; they have gone to build up the organs or faculties by which it is continued, and pursues its individual course. Thus our whole experience exhibits an organic

1. 4. growth; and not only *our* experience, but that of the lower animals, if experience is of value to them (ii. 6). The stretches of unconsciousness are only breaks in the story, and they may fairly be compared with the periods in the life of all organisms when the processes of living are more or less suspended. So also we might refer to arrested, to one-sided, and other abnormal developments. But the general idea is sufficiently clear, that experience has a growing complexity of structure and a deepening unity.

It is to this unity in the complexity of experience that we owe the notion of a mind; it is from this that we can speak of it as individual and a thing. But more usually as an individual than as a thing, because we usually confine the word thing to objects having a spatial quality. The error in thinking the mind as a thing consists in giving it this quality; but the mind is like a thing in respect of its individuality; it is a systematic union of various qualities and powers. Indeed, we shall find that we have formed our thought of physical things on the model of our mind long before we have taken thought of our mind, and made the error of giving it a shape (vii. 5).

§ 5. There are two errors in our ordinary notion of a physical thing which we are also apt to import into the notion of a mind. One is the fiction of a core or substance to which the various attributes of the thing belong, in which they inhere, and by which they cohere. An orange has colour, taste, size, shape, durability, and whatever other attributes we may discover; but there is a vague notion that no list of its attributes can exhaust it or any thing, that there remains the 'it' as the subject which *has* them all. This vague notion was made explicit in that of a substance, substratum, something underlying the attributes. But it was also pointed out that nothing can be known of it. For whatever we might think to know of it would only be another attribute belonging to the 'it.' The poverty of the notion as a hypothesis being thus exposed, it was dropped, and it was seen that the 'it' which has any attribute is just the rest of the attributes. This view has an equally good claim to be common sense, because in speaking of a thing we do not think of an unknowable core.

There is no real advance on the error, however, unless, with I. 5
the useless substance, we drop the notion of the attributes as being a mere collection, and regard them as in systematic connection. This is done when the thing is understood as a system of conditions producing effects on other things and on our senses. And when we say that the thing has an attribute, we simply specify a part or a product of the system.

The same course of thinking has been taken about the mind. It sees and hears, ponders and revolves, is pleased and pained, has, in fact, as great a variety of attributes as there are forms of experience ; and, at the same time, it is the subject which has them, and in which they are united. This union, like the other, seemed to require a substance, something underlying, an essence, or core of reality, which, as before, no one could ever possibly know. It was thought, indeed, to be felt in the feeling of self-identity ; but it was not thought to be this feeling, but to be something which gives rise to it, and declines to reveal itself any further. When this notion of a mental substance was also rejected for its uselessness, there was a similar tendency merely to drop it, and to leave the mental states as nothing but a series of events, and their elements nothing but a collection. But again the real advance is made only when, with the substance, there is dropped that view of the attributes which required it, the view, as before, that they are merely a series or a collection. This being done, the mind as a thing is nothing but the system of its attributes, and the notion of a structure replaces that of an idle substance. The I that thinks, acts, and remains the same individual, that in all experience is aware of itself, and sometimes takes thought of itself, so far from being a simple, structureless, indescribable somewhat, is the persistent growing structure itself.

The second popular error accompanies the first ; it concerns the attributes of a thing. Our early notion of a quality is simply a sensation that we refer to an object. Such are the colour and the taste of an orange ; and, of course, they do not exist as colour and taste when no one is perceiving them. It is, no doubt, a shock to our common sense that things have no colour nor taste when they are

I. 5. not being felt, but are only a structure that has no sort of likeness to these sensations. Still we do not hesitate to surrender them, together with the other qualities called secondary, and the painfulness, the beauty, and the ugliness, which also are qualities of things, though dependent on our perceiving them. There is left only the skeleton of a thing. It consists of the qualities called primary or mathematical, those, namely, into which physics and chemistry seek to resolve colour, taste, and the rest. For these, *e.g.* the shape and the motion of a thing, persist and act as powers when they are not felt.

But we make the same error about this bare skeleton of a thing if we still think to compound it from our sensations, omitting those coming from our more special organs of sense. Yet this is usual enough to be perhaps the best example of our mental inertia. For, if we thought a little, we should hardly be satisfied to say that the qualities and relations of things that we know by our skin and our joints are real, but not those that we know by our other senses. There is nothing in sensations by skin, joint, and tendon, to give their objects a better claim to exist unfelt in the form that we feel them, than cold, colour, and taste. When the physicist, whose business is with the structure of things, reads the secondary qualities in terms of primary ones, and makes these as few as possible, it is not because certain of our sensations are truer than others, or differently related to the things of which they are sensations. He does not think, for example, that some are like real qualities and some are not, or that one sense copies what is real and another does not, but distorts it. We shall see in next lecture that he merely seeks common denominators in whose terms the variety of physical phenomena may be expressed and measured. And the denominators also are phenomena ; they are objects of perception, or aspects of such objects ; they have to be expressed in terms of sensation, for there is no other knowledge of physical things.

But, you may ask, what then is a thing by itself apart from other things, and from being perceived? We have seen that it is not any unknowable core, but just the attributes in their systematic connection. Well, you ask, what

is this system or set of them, apart from other sets? The answer is that we know of none apart from others. It is wrong to suppose that a thing would be what it is, or have any attributes left, in the absence of all other things. To ask what a thing is in that case is really to ask what a thing is which it is not. But, finally, you point out that things exist when not perceived, and are the same whether perceived or not. Yes, but we cannot know them otherwise than as objects of sense. So that the question as to what a thing is in itself, or what a movement, for example, is in itself, is again unanswerable, not because the question is difficult, but because it is absurd. For now it means not merely, What is a thing which it is not, but also, What is a thing more than any one, however searching and omniscient his senses, can ever possibly perceive it to be? A physical thing is neither anything in itself out of relation to other things, nor do we know it for anything but an object of which, directly or indirectly, we can have sense-experience. I. 5.

I have asked you to think of this not for its own sake, but because the same correction is necessary in our notion of the mind; and, if it has not destroyed our notion of a physical thing, neither should it prevent us from regarding the mind as individual or a thing. As an orange is at first thought to have colour and taste when no one perceives it, so ideas and resolutions are thought to be in the mind when it is unconscious of them. Memory is thought to be the storehouse of them, and recollection and reflection to be a bringing of them to the light again. The correction is the same. If, by an idea, a desire, a feeling of any kind, we mean a form of experience, then it is as absurd to speak of unconscious ideas as of a colour in the dark, or a movement which no possible sense could observe. The stores of your knowledge when you are not thinking them have no existence as ideas, any more than your skill exists as skill when you are doing nothing, or the sun is bright if there is no eye to see it. Of the mind, as of other things, there is no saying what it is by itself apart from all its connections, because the question is in error. We know it, as we know other things, by what it does. It does many things, from turning the world upside down to merely feeling the light of the

I. 5. sun. But always what it does is to experience; for whatever it does unconsciously must be revealed in experience, just as the most invisible works of nature are revealed in sensation.

We account for experience, as for every event, by distinguishing two sets of conditions: the occasion or stimulus, on the one hand, and the reacting structure on the other. The stimulus may be mental or physical (v. 3); and we are about to see how a physical stimulus can be understood to act on the mind and experience, and how these can be understood to act on the body. The reacting structure is the mind. We are assuming that it has a physical correlate in the structure of the nervous system, where, accordingly, it is open to description and explanation like other physical structures. But in itself or directly, we know it simply as making and having experience.

It is none the less a real structure when it is not forming experience. We do not call unreal the corresponding structure of the brain, nor any piece of matter or space, when there is no sensation of them. As we speak of these when they are unperceived as if we perceived them, so we have to speak of the mind and its parts: we have to speak of them when they are not experienced as when they are. After the analysis of experience we shall see (v.) what is meant by their producing experience, and by their being experienced.

Thus far of the two lazy misconceptions of a thing, the one about its substance, the other about its qualities. They are combined in the notion that a thing is independent of the rest of the world, and would remain as it is if the rest were removed. I pointed out that this is not so in respect of any physical thing whatsoever. The same is to be said of the notion that our mind is a little self-supporting system, which would be what it is if all else were blotted out, and there were nothing to experience. The mind is a system, a microcosm or little world, but only, like other things, because it lives in the great world. In that sense, but that only, it is an abstraction, though individual or a thing; and in that sense the brain and every single thing is an abstraction.

§ 6. But physical things are also abstractions in a way that the mind is not, and to appreciate this is to reject the

inference of monism or parallelism about the connection of mind and brain. You will remember that we took the assumption of that theory and postponed its inference, namely, that they are parallel aspects of a reality which is neither of them. But you will at once suspect this conclusion if you consider its origin, for it simply introduces again that notion of a substance and qualities with which we round off our lazy notion of a thing. The taste, the smell, the colour, and the softness of an orange are aspects of it that vary with one another, and our common sense regards them as parallel aspects of a substance which is not one of them, nor the sum of them, but something over and above them, to which they belong, by which they cohere, and through which they mutually vary without interaction. Corresponding to this monistic view of an orange is that of the reality or substance to which brain and mind are said in the inference to belong. The reality itself, the theory says, because it is reality and not phenomenon, is no affair of science whether of matter or of mind, but the problem of philosophy or metaphysics. At the same time it is not thought that metaphysics can do anything with it except write poetry about it, and give it a name like substance, thing-in-itself, the absolute, the unknown and unknowable, or even matter. For it is thought that every theory about it must be beyond the reach of contradiction and verification. It is in this impossible quarter that the connection between brain and mind is supposed to lie. We saw that the mythical substance in mind and things has been abandoned, because there is nothing for it to do. But between mind and brain the monist makes the gap again by taking them for parallel aspects, and fills it in the old way. I. 6.

We are all metaphysicians of a sort, holding some notions about what is real, and mythical entities figure largely in them by the conversion of abstractions into mystical essences or substances. But any serious theory of reality, whether called metaphysics or not, has usually anticipated physics in the rejection of these substances and cores of force, and it can do nothing with the inference of monism but reject it with the rest. For it must not merely reject a hypothesis that cannot be verified, and ideas about an object

I. 6. defined as unknowable ; it can see nothing in the inference but the turning of our childish notions about the parallel aspects of physical things into the description of a reality that is not even physical. There are no means of connecting the physical and the mental facts with this alleged reality, far less of connecting them with each other by means of it. And this is the fatal objection to all analogies that represent the two as merely parallel, varying with one another, operated like two dials by a common clock-work that is quite invisible.

But their connection can be understood once it is seen that the two sets of facts are not co-ordinate. And they are not co-ordinate because an abstraction is made in the notion of physical events and things that is not made in the notion either of experience or of the mind. It is due to co-ordinating them that the gulf fell between them which has been called impassable and a riddle of the world. Our final task, then, is to remove this error and observe their connection.

§ 7. We constantly speak of physical facts as phenomena, but, of course, they are only phenomena when they are part of some one's experience, and that is not how we want to know them. When phenomena they are different to different observers, but we want to know them as part of nature, where they are always, and always the same for all. Nature is reality as it is presented to sense, and, in order to deal with it as an independent system, we abstract from its relation to sense ; we regard it as a self-working physical system, the system of what have been called "the permanent possibilities of sensation." The whole system—every thing and law of it—has to be expressed in terms of phenomena, and hence we speak of nature as consisting of physical phenomena. But to take this literally is to think, as a child does, that an orange looks yellow, and has a size, when there is no one to see it ; whereas we ought to say that it is a real thing which we only know in this physical or sensory way. Our own mind and its experiences we may know in this way as the brain and its processes, and in this way other people can know us equally well, or better than we know ourselves. But we also know our mind and its experi-

ence directly, and this no one can do but ourselves, who are our mind and have its experience. I. 7.

It is an error, therefore, to speak of mental and physical facts as co-ordinate. We do it more especially when we call them mental and physical phenomena, as if we had our experience by a kind of internal sense, and as if nature were literally mirrored by our external senses. Rid of this confusion, we have a clear enough notion about the difference and the connection between mind and brain. A mind and its experiences are realities that are presentable to sense as the brain and its actions. In that respect the mind and experience are not parallel with nature, but part of it. And, on the other hand, the facts of nature, including the brain, whenever they are phenomena, are not parallel with mental phenomena, but part of them.

§ 8. It is far more important to be clear about this than to guess how much of reality is directly or indirectly perceptible to sense, and so part of nature; and, in particular, whether all our experience, or any part of it, is so perceptible. The simplest thing is the faith that it all may be, as is commonly assumed in neurology; but the important thing is the relation of the two, and that is the same whether our faith is in error or not. The view of interaction between mind and brain makes the same error as parallelism if it takes them for co-ordinate. If it does not, there is no dispute, we are about to see (ii. 1), in explaining the mutual action of mind and brain. There is only a difference of hope or faith, which makes no difference to the explanation.

It is frequently objected that this and that piece of experience cannot be pictured as any physical process, *e.g.* the feeling of comparing and judging, and especially that the structure of the brain has no concentrating spot or centre for fusing together into one thought any mass of sensations or their stimuli, coming as they do from different areas of the brain. And it is also objected that, even if every element of experience is represented point for point, the two series cannot run quite together, but one a little in front of the other. On the one hand, a cerebral event excited from the periphery must, it is said, precede the sensation that we have by it; and on the other hand, it is said, if we suppose our-

I. 8. selves to be comparing a mental series with its corresponding physical series, the feeling that they agree must come before the event that represents it in the physical series, so that "the mental series must always beat the other by a nose."[1] But so long as we are in ignorance of the immediate physical correlate of every experience, it is impossible to say what can or cannot be represented. And perhaps all the objections presume that the hopeful assumption must suppose an impossible likeness between an experience and its correlate. That would be fatal, for, whatever their correspondence, there can be no further likeness between them, seeing one is a movement of some sort and the other is not. But, as often happens in purely physical cases, there may be complete correspondence without further likeness (xviii. 8).

It is partly due to the same presumption of a likeness that two other objections are made to their correspondence. One is the notion that there is something derogatory in being perceptible to sense, especially in being calculable as the things of nature are, and, conceivably, in mechanical terms. The other is the notion that the dissolution of the brain would mean the dissolution of the mind or soul, and its dispersing somehow or other among material particles. These are not questions that concern us; but I mention them because they are likely to present themselves to you, and because in respect of them also it is essential to remember that the inference is never from what the brain can do to what the mind can be and do, but always, first, the opposite.

[1] In alle Ewigkeit bleibt die psychische Reihe der physischen sozusagen um eine Nasenlänge voraus. Die letztere hinkt immer nach (Busse, *Geist und Körper*, p. 176).

LECTURE II

THE EXPLANATIONS OF EXPERIENCE

§ 1. LET us look at a description of the course of experience in physical and in mental terms; and we may take the course of my experience if I were addressing you. My wish to explain stimulates my 'motor speech centre,' situated in the inferior frontal convolution of the cortex on the left side of my brain. With this area are associated the motor centres of the several organs necessary to speech; and so my lungs, vocal cords, and all the muscular apparatus thence to my lips are adjusted to their task. Throughout I am informed of their exercise by afferent fibres, whose action also secures the discharge of the motor neurones in their proper serial order. The information hardly being necessary, I pay no attention to it, and indeed I only infer that I have it on the ground that I should be put out if it were absent or different. Things going well, the movements in my throat and mouth issue in vibrations of the outer air, which, striking on my ears as on yours, have a varied mechanical history till they reach the proper fibres of my auditory nerves, whence they proceed as a neural action to the centres for hearing in the cortex of both sides of my head, and thence to a neighbouring area on the left side below and behind the motor speech area. It is called the sensory or auditory speech centre, because it is necessary in order that the sounds be heard as words, and that the words take a meaning. If the words and their meaning are satisfactory to me, I continue this exceedingly complex cycle of operations till I think I have explained, and my wish is satisfied. II. 1.

II. I. Here is a typical mixture of the two methods of description. It is mainly physical, but with great gaps, especially at the directive parts, filled by mental units of description, viz. wish, sensation, meanings, and satisfaction. At present, and doubtless always, the physical description must help itself to such factors, but they point to an incompleteness in our knowledge; they are there to fill gaps in our knowledge of nature. When we say that a wish stimulates a motor centre, we are speaking of things that are not co-ordinate, and quite as when we say that a bird pours forth its soul in song, or we pour out our grief in tears. Even the indispensable use of desire, pain, and pleasure, as factors in the explanation of organic evolution, is of the same sort. But the necessity of using mental in lieu of physical causes and effects ought not to confuse us. So far as they are parts of a physical explanation, pains and pleasures, desires, emotions, sensations of every kind, stand for their immediate physical correlates. They are there for the time being, and the ideal of neurology is to complete the physical account, and so to be quit of them, though it may have no hope of reaching the ideal, and may assume no more than that the ideal is possibly there to reach. For, to repeat, we shall see that the work of neurology would be none the less indispensable for understanding the mind if the threshold of the immediate correlate of experience were not only not crossed, but were not there for it to cross.

Neurology requires an analysis of experience, and one task of psychology is to analyse experience, and experiment with it, in order that the gaps in the physical series may be filled. It aids the effort of neurology to translate mental into physical processes, and to bring them under the general aim of science in the causal explanation of nature. This aim is the reduction of everything as far as possible to a common denominator, so that difference of quality may be read as difference of quantity and arrangement (xiv. 3). To observe that this is the general aim is to avoid two types of error about the translation of the mind and its experience into the brain and its working.

The first is an error to which I referred in last lecture: a metaphysical error about what is real and what is not.

If we are able to explain A in terms of B, *e.g.* light as waves of ether, if, that is to say, we can by this reading connect the varieties of A with one another, state the conditions of their occurring, and calculate their effects, we are apt to suppose that A is really B, that B is a superior kind of reality lurking behind A, and so on. It is never a clear idea, but it is especially common when the mind and its experiences are thought to be explained by the brain and its action. It is the vague idea that the revelations of science are the unveiling of a more proper reality lurking behind phenomena. And every physical science does turn its face towards a common point, and take its particular step in that direction. But not because of any 'ultimate reality' abiding there; it is simply because that happens to be the direction in which it finds the means of calculating the portion of nature that it has taken in hand, and of connecting it with the rest. We are not bound to assume that there is a common denominator for everything in nature, still less one that we can use, but only that everything is in systematic connection, and that we grasp the connections better, the better we can reduce things to quantities and arrangements in common terms. The more highly developed the subject-matter of a science, the farther it is from having this ideal, and from intending to achieve it. But the common point of attraction for all the physical sciences being understood, no one can take the world as read from it for more than the abstract or mathematical scheme that it professes to be. And what holds of the ideal of physical explanation holds of every single step towards it: it holds of every physical explanation of the mind, its structure, growth, and experience. II. 1.

§ 2. The second type of error is not metaphysical but logical, and one that it concerns us more nearly to avoid. It is the very common error of setting out to explain without asking where we want to go, or what will satisfy us. We are to follow one explanation of experience, and we have to see how it demands, and is developed by, other explanations. But first there are modes of explaining it that are simply mistaken. There is the popular way by faculties, whose error is in taking itself for more than it is,

II. 2. or for an explanation at all. I shall speak of it at the end of the lecture. And there are two ways whose error is apparent when we remember the general aim of physical explanations. Their failure will direct us to the explanation that we require. Both are a naïve explanation of experience as if it were physical. One is (*a*) a quasi-physical explanation in terms of experience itself, the other is (*b*) a quasi-physical explanation in physical terms.

(*a*) An experience, like everything else, can be analysed into its elements and connections. And this is necessary, of course, to any description and explanation of it. But error appears when the elements and their connections are employed in the manner of physics and chemistry.

(*a*) For what would physics be if its facts did not permit, first, the conception of energy; secondly, the reduction of the properties of matter to a few properties as their common denominator; and thirdly, measurement in terms of the common denominator? Yet experience permits none of them for its explaining. First, there is no constant quantity of it in any mind from moment to moment, let alone a constant quantity in any longer period. Perhaps every experience leaves its mark on the brain, and, physically regarded, this is a potential energy; but apparently there is always decay or leakage of it, as well as addition to it. We speak of mental energy, but it is merely confusing to suppose it like physical energy. The word energy, it is true, has been transferred from minds to things, and is popularly used of things as if they were minds (vii. 3); but in physics its whole reference is to position and movement, and it includes nothing that we mean by mental energy. If, however, by mental energy we happen to mean the corresponding neural energy, it has, of course, no constant quantity. Secondly, there is nothing in experience that might serve as a common denominator in terms of which the rest of experience might be expressed; for we need not consider whether our differences of feeling can be taken for multiples of a primordial one (p. 216). And, thirdly, so far from measuring varieties of experience as quantities of a common kind, or from measuring one kind in terms of any other, we cannot even measure together two experiences of the same kind in the

way we are apt to think.[1] Of two sensations of heat, for example, we can say that one feels exactly like the other, or that one is hotter than the other, but we can never say it is twice as hot. We cannot even if we use a physical measure. Though we know the temperature of one room to be twice that of another, it remains a matter of taste and temperament whether we say it feels twice or ten times as hot. The same is the case when measuring all degrees or intensities of experience. There are the degrees of our joy and sorrow, for example, and we are notoriously prone to deceive ourselves when we measure the real strength of a desire by our experience of it, and not by the extent to which we sacrifice other desires in order to realise it. II. 2.

(β) We have still less reason for dealing with experience as if it were a chemical material. For if we look at the elements of experience and their compounding, we find no likeness to chemical elements and their compounding. As physics is based on the conception of energy and its conservation, so chemistry is based on the conception of matter or mass and its conservation. And if it is hard to regard experience as an energy, it is impossible to regard it as a mass, for it is, at any rate, all a happening or process. There

[1] We are apt to think that, just as we can say that the duration of one sensation is n times that of another, so we can deal with their quality and their intensity, and say, for example, that a note is twice as high, or twice as loud, as another. We can often set out the grades of a quality in a series, and sometimes the degrees of its intensity; and we can compare neighbouring intervals, *a-b* and *b-c*, in the series, and say whether they are equal, and therefore whether the whole *a-c* is twice either of them. We do it in striking a medium between a rather high note and a rather low one, and in arranging the shades of a colour; and it has been done in the classing of stars according to their brightness, and in divisions of the musical scale. But this does not allow us to say that the quality or the intensity, *e.g.* the loudness or the pitch, the shade or the brightness, of one sensation in the series is twice or more that of another. It is still thought, indeed, that such a measurement is "theoretically possible," by taking for unit the quality or the intensity that is just observable, then varying the stimulus till an increase in the quality or the intensity is just observable, when each would be twice the first, then adding another just observable difference, when they would be three times the first, and so on (Gutberlet, *Psychophysik*, chap. iv.). But the limited application of such a method, and, where it does apply, the necessity of taking so variable a unit for measure, and of assuming that just observable differences are and remain equal to it and to one another (whereas, if we proceeded by subtracting them back to the minimum, the result would be quite different), emphasise the essential point that the reduction and measurement of experience in units of itself has a very subordinate use compared with the reduction and measurement of the variety of physical events.

II. 2. is no greater source of confusion than to forget so simple a fact. Even the notion of unconscious ideas, and of the mind or memory as their store-house, depends on the confusion, since no one would imagine a store of events or processes. But I suppose no one takes it for better than a myth to account for the influence of past experience on the present by supposing that the past experience is stripped of feeling, stored in the mind in an unconscious condition, and revived and clothed again from time to time sometimes as a memory, and more frequently as a factor in a fresh experience. It is true enough to say that our thought at any time consists very largely of elements from the past, but there is even more of the same truth in saying that our bodies consist of the food we have eaten and the air we have breathed. A present thought is never an old one brought to life again, but a new one like the old, and due to certain effects left by the old. It is the same when we know by means of what we have known, without our having to repeat the old knowledge; there is a new power which on analysis we see to be a growth of the old as a result of its previous action.

Not only can experience not be treated like a physical mass, nor as having a constant quantity, there are other objections to dealing with it in the chemical way. They are especially apparent if the experiences taken for elementary are those that we have in the beginnings of our conscious life, and if our later experience is regarded as compounded of our earlier; for this employs the myth about unconscious ideas and their store-house. And so nowadays by an elementary experience, or an element of experience, is not meant an early experience, nor any whole actual experience, however simple, but any unit of experience that cannot be farther analysed. This definition leaves room for much difference of opinion about what should be taken for unit or element (p. 215), but always it is a unit that needs an expert, or experimental conditions, to distinguish it from others that are felt along with it, or that feel very like it. The simple experience of an infant, for example, is analysable into factors which the infant does not differentiate, but which it does later, when they appear in new connections.

Whichever elements we take, they cannot be used in

a chemical way to account for our higher experience. Our II. 2.
higher experience is complex in two ways. In the first place, it includes a great number of factors felt differently from one another; in the second place, and especially, it involves, takes for granted, and can suggest, a wealth of thought and feeling of which there is no present experience. It can thus be analysed into a complexity of elements that are felt, and, by a different analysis, into a complexity that is not felt, but involved. And both analyses may be made without any theory as to how the experience was constructed. We introduce the chemical theory of its construction if we suppose the whole to be compounded of the elements in the analyses. The notion is hardly possible without the myth of unconscious ideas, but it is wrong apart from that. It is wrong in supposing that an experience is a compound of simpler experiences in mutual action, sometimes counteracting one another, sometimes fusing into a new experience like nothing in themselves when they occur separately. A rhythm, an emotion, a volition, are each felt as complex, and each also possesses a specific character which "is as little determined by their sensational and affective elements as the chemical properties of a compound body are determined by the properties of its chemical elements."[1] But beyond this negative point of likeness there is a fatal objection to identifying mental with a chemical compounding of elements. The simpler we take the elements of experience, the less there is in them to account for a mechanical cohering, let alone a chemical combining; and so they have to be endowed with a mysterious power of selective affinity and fusion—a power that is somehow nothing at all when they are not in presence of one another. This objection is not taken to real chemical elements and molecules, for they are assumed to have many properties as molecules which we do not know, but which, if we knew them, would account for the properties of the compound. There is no such escape with the molecule of experience, however; it is as it is felt, and that is all. The same is true of every experience, no matter how much it is said to involve; in a general notion we do not experience what it can suggest. Finally, when we speak of ideas

[1] Wundt, *Outlines of Psychology*, 2nd ed. p. 33.

II. 2. begetting, resisting, and attracting one another, we are speaking in metaphor. In fact we shall find (v.) that in accounting either for the forming or for the effect of an experience, no matter what it is, we have to introduce and specify a working of the mind or brain that is no part of experience.

§ 3. (*b*) Besides the mechanical and the chemical explanations of experience in terms of itself, as if it were physical, there are equally naïve explanations of it in terms of the nervous system. Such are the explanations that seek to give a mechanical reading of experience in those terms without thought of the intervening country to be crossed before such an ideal can possibly be reached. A crude but common enough example is the explanation known as phrenology. Here the brain is mapped into organs corresponding to a popular division of the mind into faculties, and the organs are thought to work separately and together like so many batteries. We shall afterwards consider (xviii.) the translation of the mind, its faculties, and experience, into the brain, its parts, and its action; but it needs no knowledge of the facts to presume that we cannot pass at a stride from an experience to a mechanical reading of its immediate correlate, far less to a mechanical reading of the experience itself in terms of its correlate. For, as I said, the more highly organised the subject-matter of a physical science, the farther the way to go. Living matter is farthest from the goal of physical explanation. Of living matter probably nerve-tissue is farthest, considering, among other things, how it has defied the identification of its working with other forms and means of conduction. And of nerve-tissue no doubt that which is the immediate correlate of experience is most highly organised, and thus of all matter the farthest away; for it, again, has hitherto refused to be distinguished in any essential way from the nervous matter whose action is not attended by experience. The distance away, the complexity of the matter, does not, indeed, preclude us from reading the working of the nervous system as mechanical; its rhythm, for example, is read with advantage as a wave-action. For we take the goal to be also model and guide in explaining every physical action, whether the action be an

obvious movement or whether it be a change of state. But the simple mechanical language says as little as possible about what actually occurs. We specify its meaning in the images we form, just as, when speaking of the properties of all triangles, we may each imagine or draw a different size of triangle. Unless we are going wrong, we see in the particular image only the general properties. And so we have to read the familiar mechanical language about movements and states in the nervous system. The language makes pictures of them, but we must take only its general meaning; it says not as much, but as little, as possible. Such it is when we speak about the stimulation of a neurone, and about the conduction or propagation of the impulse in it and from neurone to neurone; and again when we speak of the forming and the blocking of paths in and between the neurones, and even when we regard all their changes of state as a redistribution of their molecules.[1] The fate of heroic or premature theories in physiology points to the risk of forgetting this, and of basing specific inferences on the general reading, before the specific changes are understood and translated into it. "If we are so badly informed concerning the elementary and fundamental phenomena (viz. the transmission of an impulse in a nerve-fibre), we may very well be content to be modest for some time to come as regards a physiological psychology. It is by no means impossible that in the nervous system forms of energy are concerned which do not exist outside the animal body, and which yet remain to be recognised."[2] II.

Finally, there is the step that is longer than any.

[1] "Though at one time I occasionally made use of the expression 'molecular change,' I have repeatedly since then taken occasion to point out that it serves no purpose but to hide our ignorance behind an apparently anatomical expression" (Obersteiner, *Functionelle Nerven-Krankheiten*, p. 63). The vibration theory of nerve-action "should be given up once for all, not only because it is undoubtedly wrong, but because hardly another product of speculative thinking awakens so deceptive a feeling of causal satisfaction in superficial minds by reason of its popular shibboleths, *e.g.* the oscillations of consciousness, the dance of molecules in the brain, and so on" (Kassowitz, *Allgemeine Biologie*, iv. 288).

[2] Barker, *The Nervous System*, p. 249. "And we may perhaps go even further than this, and say that the existence of some such form or forms of energy may be assumed with a very high degree of probability" (W. M'Dougall, *Brain*, vol. xxiv. p. 615).

II. 3. There is no correlate of experience, but of experiences. And the correlate of even the simplest experience is none the less complex that, like this experience, it can be treated as a unit. This is so if by the simplest experience we mean our earliest, or such a kind as we may suppose in the lowest creatures. But especially it is the case if we mean elementary in the chemical sense of element; for it is calculated that a good ear under experimental conditions may distinguish as many as eleven thousand simple tones, so that there is this number of irreducible elements in sensations of hearing alone. Speculations that the elements are compounds of a primordial element of experience (p. 216), found perhaps in all living and indeed inorganic matter (§ 6), make no difference. They do not really add anything that enables us to explain experience in the physical or chemical way in terms of itself. On the contrary, by emphasising the absence of any common kind, that might serve for a common denominator, they point to the impossibility of dealing with experience in this way. It is a way that is only proper to the correlative action of the brain. And they emphasise the error of taking for simple the correlate of the experiences that we feel to be simple.

§ 4. Hence there is not the same ideal in completing the mental part, as there is in completing the physical part, of that account of my experience with which I began this lecture. In one direction there is the same thing to be done for both. I gave the mental factors in very general terms, viz. wish, sensation, judgment, and satisfaction; and as these do not give the specific, still less the individual character of the experiences, there is much to analyse under each of those heads. The experience denoted by each of them may be resolved into elements or differences of feeling in it, and into their connection and organisation; for the elements are felt as factors in those distinctive wholes, and the wholes as factors in the distinctive purpose or unity of the whole experience. The same has to be done with the physical account; for every part also of it, *e.g.* the serial discharge of motor by sensory neurones, is a general description of a very complex process.

There is, indeed, an obvious difference in carrying the

description of the one process into detail, and in carrying out the description of the other. For, in order to specify the physical process, many things have still to be discovered —how, for instance, an impulse is conducted in a nerve-fibre,—whereas it is otherwise in specifying the general description of an experience. Here the material is all before us, though skill in observing, not to say in experimenting, is required in order to distinguish and name the factors that are felt in it. II.

But this obvious difference in their task is not itself the essential difference between the two accounts; it only points to the essential one. Every advance in the physical account goes to realising an aim that is not before the mental account; in that is the essential difference. The physical account of, let us say, a simple reflex action traces the course and transformation of a definite sum of energy possessed by the neurones involved, and by the stimulus that starts this particular action. The state of things at one moment can be equated with the state of things at the next, and is said not merely to cause, but to become, the state of things at the next. But we cannot say this of experiences, for they are never the sole cause of one another, any more than movements are ever the sole cause of one another. We shall find, as I said, that we have always to take the mind into account, as we do the nature of the bodies that move, or transmit movement. And, though we may speak of the mind in one state becoming the mind in its next, there is no equating as in a physical system. Thus the physical account has an outlook which is absent from the mental account. And hence it is that while neurology regards the mental factors as marking gaps in the physical account, psychology does not regard the physical as marking gaps in the mental account.

The reason for specifying the factors in the mental account is not merely to assist in discovering their immediate correlates. It would not matter, as I said, if they had none. The reason is to correlate changes of experience with changes in the conditions on which experiences occur. But this consideration directs us to the point that should have been observed before entering

II. 4. on the explanation of experience in the naïve ways we have been considering. The ideal of explaining everything by reduction to terms of a common denominator is so striking, that we are apt to take it for the only way of explaining. In this we forget its purpose. If this ideal were realised, it would only be the realising of a means demanded by another explanation. The pursuit of it as a means may be compared with the constructing and perfecting of a machine. And if a perfect machine is impossible, there remains in its purpose the same good reason why it should be made as perfect as possible. It is this original and final purpose that we have to consider in setting out to explain experience.

§ 5. Every explanation seeks to lay bare the system or connections of things, and the mechanical explanation does so by reducing them to common terms. But thus reduced there is nothing left of the infinite variety of experience and nature as we have them. Hope and fear, desire and resolution, thought, pleasure and pain, have all gone from it; and so have sight and sound, beauty, ugliness, all progress, and every difference of value; for experience is the one thing that has value, and that gives value to anything. Hence there is the question about the connection of things, not in point of cause and effect, but in point of value; and its answer is a different kind of explanation. How the two kinds of explanation differ, and how they are connected, can be seen by comparing physiology with anatomy and physiological chemistry. The physiologist regards the normal life and growth of the body as an end that it has to achieve. He analyses the work of the body into so many functions realising the end, and he analyses the body itself into so many organs, each with its function. These functions, which are means to the end, have themselves to be achieved, and so, in turn, they are taken for ends. As the whole body and its working are divided into the great organs and their functions, so these in turn are divided into smaller organs and their functions. The division is throughout from the point of view of value, and this is shown by keeping the words organ and function throughout for all the divisions. Now the performance of any bodily function is by means that it is mainly the work of chemistry to discover, and in organs the

structure of whose tissue is the problem of anatomy. These two sciences may therefore be regarded as an extension of physiology, for they carry farther the study of the functions by which life is maintained. But it would be wrong to suppose that physiology is merely introductory to them, and that its kind of explanation is superseded by theirs. That would be the case if the world as read in common terms were the real world, and if the world of value, in which causes and effects are means and ends, were an accident; but not otherwise. So far from being superseded, the question of value remains to the last detail, and with it the division into organ and function. For this is no more than to put the causal explanation to practical use. It would be not less but more necessary to do so, if the ideal of the causal explanation of nature were completed, and our machine made perfect. For in that reading of nature every hint of value, not to say every difference of quality, would be eliminated. II. 5.

This, that is familiar in physiology, is the type of explanation with which we are primarily concerned in dealing with the mind. We have to analyse its working into functions, and its structure into organs or faculties executing these. Neither the analysis nor the explanation is alternative to any other. On the contrary, it is obvious that the functional explanation, if it is one that can grow, must find within itself the demand for minute analyses of experience, and for causal explanations and exact measurements, in order to its own progress (xvii.). It is especially obvious if the functional explanation is in mental terms; and that is its primary form, and the form that we are to follow.

§ 6. But there are other forms. There are two other functional explanations of experience, and again not alternative with it. Their aim is different from its aim, but again both are demanded by it. So we are to see in the rest of this lecture. One of them is the biological, the other the physiological explanation.

The first deals with the function of experience for living, and more especially for a successful physical life. We see the function if we ask about what is called the ultimate

II. 6. criterion of consciousness, that is to say, the test of the presence of experience in others. The ultimate test at present, and the one that is best in dealing with minds very different from ours, is the power to learn. Unfortunately we cannot always tell learning when we see it, for a behaviour may change by other means. But there is fair ground for saying that wherever there is experience there is the power to learn; and that is what concerns us.

The process of living, whether in plants or animals, involves incessant activity, for life is never still; its very existence is in change. Its livelihood has to be selected from the world about it, and, being threatened by many dangers, it must find means of escaping them. A plant appears to do these things without the help of feeling. Compared with animals it adjusts itself little to changes in the world that nourishes it, and so we hardly speak of stimulus, sense, and reaction in connection with it. But animals for the most part lead a wandering life, and are equipped with special apparatus for receiving a variety of stimuli and responding to them, as well as for spontaneous movement. By means of it lowly forms move about, and are attracted or repelled; and up the scale of life it makes the world ever more extensive and full of wealth for the seizing. Many protozoa have been found to respond to every class of stimulus except sound, and even to make a different response for different intensities, as we do to cool and to cold, to warm and to burning. In higher forms among them special sense-organs begin, whereby a stimulus is more readily appreciated; a selection is made of digestible food, of the proper kind of building material, and of just the quantity to serve the future. If two observations of T. W. Engelmann in 1876 are to be taken in the strictness with which they are usually quoted,[1] we should find in the buds

[1] *Morphologisches Jahrbuch*, i. p. 583. Schneider, however (*Der Thierische Wille*, pp. 193-194), remarks on their uniqueness, Verworn (*Protisten-Studien*, pp. 8, 9) on the want of corroboration, Calkins (*The Protozoa*, pp. 222-223, where touching should be read for "tasting" in the one, and contact for "pause" in the other) thinks that the movements may be explained "for the most part" without feeling; and few would now agree with Engelmann that "they reveal a delicate and quick perception, a sudden and sure decision, as well as a nicely graded motor innervation." A list of recent opinions before 1889 about mental life in the lowest organisms is given by Verworn, pp. 7-17.

of vorticellæ the love-antics that are common among birds, II. 6.
as well as a coyness in the loved object, and, in the morsel of a lover, an ardour of pursuit, a fickleness in her presence, and a return to nonchalance in her absence, which would make him the fellow in feeling of still higher brethren. But the marvel makes it the more doubtful whether there is feeling at all. Nor is feeling to be inferred from the presence of a nervous system. Like the other organs of the body, it consists of cells that are specialised for the better fulfilment of functions that are performed, though crudely, with little or no division of the labour, by the single cell of the protozoon. Great sensitivity and a variety of sense-organs are not at all adverse to the view that there is no sensation, and that none is required. Among invertebrates "there may be fifty other senses as different from ours as sound is from sight";[1] but we cannot infer sensation except from perception, except, namely, the animal reacts not to the stimulus merely, but to a meaning that the stimulus could only get by having been felt before. One tendency at the present time is to push this view high in the grades of invertebrate life, till even ants have been thought unconscious automata. And when you think that ants and their household economy are certainly the greatest marvels of apparent intelligence under man, and how sluggards, socialists, and unwary commanders have been invited to learn from them, you will readily believe that, though this is an extreme view, as nearly every one thinks, yet there are wonderfully complex forms of life

They tend to Haeckel's former view that "in these single living cells we meet the same expressions of soul-life, viz. sensation and idea, will and movement, as in the higher many-celled animals" (p. 10). After a review of the facts, however, Verworn denies consciousness to them, and Haeckel in a recent book (*The Riddle of the Universe*, ch. x.) says that Verworn has converted him. Later experiments, especially those of Jennings (*American Journal of Physiology*, viii., and *Contributions to the Study of the Lower Organisms*), have proved a widespread power of acting by "trial and error" among the lowest creatures, even bacteria, beyond what is contemplated in the theory of tropisms which supposes a fixed constitution relative to different forms of stimuli. He thinks it is "to close one's eyes to patent realities" to deny that in the lowest organisms there is "a physiological state analogous to that which is accompanied by pain in man" (*Contributions*, p. 249). But the criterion he uses is not really that of learning. As against his way of putting it the question is not whether the feeling of pain makes the burnt child take his hand from the fire, but whether it prevents him from putting it there again. And this question cannot be answered about the lowest organisms except by excluding other means of prevention.

[1] Lubbock, *The Senses of Animals*, p. 192

II. 6. which thrive by means of an inherited structure that receives no help from experience and suffers no education.[1] They are so well equipped for the environment that concerns them that they do not have to feel it. And their equipment includes a degree of plasticity with respect to it. For, first, their failure in one direction is often the occasion for their trying another way; and, secondly, they grow up in a form to fit their environment according to the reactions that it allows or demands.

Here, then, is one ideal, as it were, of life and growth, where creatures are adjusted to a changing and exacting environment without the intervention of experience. Whether it is realised as the sole ideal in any creature may be a question, and there is additional room to doubt whether a species, whose past is now inherited in such a form, could have developed it without feeling. But the best that can at present be said on the matter cannot be said without considering the lives where it is not the ideal, but a necessary means for the other ideal, namely, for adaptation by means of experience.

The connection of the two is best seen in our individual mental history. What we learn with painstaking steps, we come to do with less effort, and less unnecessary experience. Every advance in our capacity for knowledge, emotion, desire, and action, is made on the strength of what we have already known, felt, and done, without our having to repeat the old experience. The fact is too obvious to be dwelt upon; it is the fact which especially calls for the explanation that we are to follow. We shall observe how the whole development is on an instinctive basis that we have not to learn, so that our individual development continues the same kind of achievement as we have inherited. It is a rising to higher levels of thought, feeling, and action, where, as imme-

[1] This is the criterion on which Bethe, from a variety of experiments on ants, and on the homing instinct of bees, denied feeling to them, and to all invertebrates, assigning them a "purely reflex life" aided by sense-organs of which, and of their stimuli, we are ignorant, but which he claims to have demonstrated (Pflüger's *Archiv*, vol. lxx.). Loeb in *Comparative Physiology of the Brain* gives a corresponding argument for lower creatures, but he agrees with practically all the special observers of ants, bees, and wasps that they learn, and therefore feel. In a later article Bethe says, "I now take entirely the standpoint of v. Uexkull that the question of a soul in animals does not belong to the province of exact science, because one may believe something, but can know nothing about it" (vol. lxxix. p. 45).

diately as at our inherited level, we achieve an experience II. 6.
without having to select the means, or recall the degrees by which we have ascended. We rise from inherited to acquired instincts, if, for the moment, we may call them instincts. But it does not follow that an acquired instinct is one that the race might have achieved, or may still achieve, as an inheritance without the need to learn it. On the contrary, though the acquired instinct, *e.g.* the power of solving a problem, depends on the ability to take many things for granted, this again depends on our having had to learn them, and so having them now at command, though we do not have to re-think them.

We can see the same thing on a wider scale. The nervous organisation of all vertebrates is obviously designed to secure a central conscious control and court of appeal at the highest level of the system, with unconscious reflex action at lower levels under a restraint that is also unconscious. And a comparison of brains from those of the lowest fishes up to our own shows a raising of the level at which experience is found, corresponding to a rise in intelligence; and it shows at the same time a subordination of the levels that had been highest into centres of reflex action, and stations to and from the new levels. The cerebrum of fishes having a nervous cerebrum may be removed without any apparent loss of spontaneous movement or of intelligence, except what is connected with losing their sense of smell. In frogs the result at first is the loss of spontaneity, the animal requiring external stimulation to rouse it, and then responding by courses of co-ordinated action like a machine. But after some weeks, especially after months, though there is no renewal of the tissue, it begins to act like a normal frog, and the more the longer it lives, though not at all if it gets no chance of learning. It is a fair presumption that this is not due to mere recovery from the shock of the operation, but to the lower parts of the brain resuming a power that is normally in the cerebrum or that requires the cerebrum. The same conclusion is frequently drawn about the higher brains of birds and the lower mammals, though the injury is too great for so complete a recovery, and though the spontaneity that appears in the

II. 6. shorter period that they live after the operation is more spasmodic than voluntary or intelligent. The spontaneity and intelligence developed in dogs that have lived for months with very little cerebrum left has probably the same explanation. In our own case it is impossible to say whether we experience at any part of the nervous system below the cerebrum, or, in fact, below its cortex. The various 'primary' or sub-cortical centres of our special senses are only junctions on the way to their centres in the cortex; they probably give no sensation, or none apart from the simultaneous cortical functioning. There is evidence to the contrary in respect of common sensation, but it involves a stricter view of localisation than every one will admit.[1] But there is no argument from the fact that the lower sensory centres give sensation to fishes in which they are highest, nor from the fact that in ourselves they are capable of directing the co-ordination of movements and the expressions of emotion, for this capacity may need and give no feeling. And especially it is to be observed that the cortex appears to be necessary to the learning and retaining of skill,[2] even when our skill requires a type of sensation so low that we have to infer whether there is feeling at all (ix.). We may say, then, that the cortex is the seat of our experience, and of the power to adapt ourselves by means of it. The power is a power to take structure in consequence of function. The cortex adapts itself, rising to higher powers

[1] "The fact that fundamental attributes, such as the simple recognition of touch, pain, heat, and cold, are only dulled, and rarely or never abolished in cases of cortical lesions, is probably due to the participation of subcortical intermediate stations in the receptive act" (Campbell, *Localisation of Cerebral Function*, p. 109).

[2] "As we ascend from the dog through the monkey to man, the skilled voluntary movements, those which have to be learnt, take up a greater and greater share of the total life, and the pyramidal tract increasing in size comes into greater and greater use. So much so that we may regard it as probable that in man the ordinary mechanism for voluntary movements is that of the pyramidal tract. We may also perhaps add that the more primeval mechanism of voluntary movements, that which obtains in the fish and the frog, and in which the parts of the brain lying behind the cerebral hemisphere play so important a part, has in man fallen in desuetude and, when the pyramidal mechanism fails, cannot be trusted to do even its simple work. And even if this be considered as not yet distinctly proved, there still remains the conclusion that man's 'will' is, from a physiological point of view, very different from that of the lower animals, much more different than was once thought" (Foster, *Physiology*, p. 1150).

of experience and of adaptation by means of lower powers of experience and adaptation, which it has already formed or has inherited. And it adapts the rest of the nervous system, so far as it can select among the inherited nerve-paths, and establish habits there too. II. 6.

More than this it would be tedious to say in order merely to show that, the higher the level of experience and adaptability, the more that other ideal must also be realised of adaptation without the need to experience. And, as regards the question of the beginnings of experience, it is a natural suggestion not only that some creatures may need none for their simple lives, but that others are so well equipped for a more complex life that the little adaptation they require may be made without learning; besides, their race being so prolific, it can, in place of learning, afford to suffer much slaughter. It is also possible that experience may have had a share in developing instincts in their race to the point where there is no further demand for development, or no further possibility of it, in the given direction. But there is no positive ground for this notion, though there is room; it is much the same notion as is still taken for the goal of our human experience by men who are weary of emotion.

There are also speculations of a more general sort, but again, I think, with no adequate ground, and not only when they are metaphysical, as they frequently have been since both Spinoza and Leibnitz, but when they claim to be inevitable on purely logical grounds.[1] It is said, for example, that, since our cerebral cortex is a complex of chemical elements, the experience it gives must be their individual contributions, so that every necessary atom in it, and presumably, therefore, every atom anywhere, must have

[1] "We are obliged to assume, in order to save continuity in our belief, that, along with every motion of matter, whether organic or inorganic, there is some fact which corresponds to the mental fact in ourselves. The mental fact in ourselves is an exceedingly complex thing; so also our brain is an exceedingly complex thing. We may assume that the quasi-mental fact which corresponds, and which goes along with the motion of every particle of matter, is of such inconceivable simplicity as compared with our own mental fact, with our consciousness, as the motion of a molecule of matter is of inconceivable simplicity when compared with the motion in our brain" (W. K. Clifford, *Lectures and Essays*, vol. ii. p. 61).

II. 6. some kind of mental property. And it is also said that we make the entrance of experience a miracle, "psychologically a miracle and physiologically a catastrophe," [1] when we suppose its first appearance to be at any grade of life, or even at any date in the life of an individual before or after its birth. I do not think so, but I mention these speculations because they form one of the two grounds for alleging the existence of unconscious sensations, ideas, and will. On this ground these are not introduced to explain the working of experience, but as conclusions. Hence they do not concern us; for it makes no difference to the explanation of experience whether or not we suppose every particle of matter to be "really" mental, or to have a mental aspect.[2]

But there is another ground on which unconscious sensations, ideas, and will are alleged, and now in explanation of experience. It is an explanation that would be clearly mythical, as we saw (ii. 2), if there did not seem to be some ground for it in our own experience. I postponed the point, you will remember, till we should consider the criterion of consciousness.

§ 7. For we have difficulty in telling not only another's experience but our own. And not merely because the telling requires skill in mental analysis and description; we often have difficulty in saying whether or not we have had an experience that we should have recognised if we had had it clearly. When raising a finger to your eye, have you to take thought of the positions of your finger, and of all the positions from start to finish? A patient suffering from

[1] Wundt, *Physiol. Psych.* iii. (5th ed.), p. 259.

[2] The exception is when it is thought that a thorough parallelism explains how sensations and ideas can mirror their objects, and so be true. But it is enough to quote the latest defence of the theory on this ground—more explicit than in Spinoza—against the charge that it explains nothing. "Matter possesses a memory. The objective correlate of this memory consists in states of movement which, working on our cerebral cortex, are associated with parallel processes of consciousness. Kant and Laplace studied the structure of our planetary system, and its consciousness and memory mirrored themselves in their consciousness. . . . Lyall devoted attention to the earth-surface, and its consciousness and memory begot in him, like a reflection of itself, the story of the evolution of the earth. Darwin and Haeckel translated the memory of living matter into human memory. . . . I have shown that psychological parallelism gives a very clear idea of the relations of matter and consciousness. And so I cannot at all agree with Edinger that it is an unfruitful hypothesis" (E. Storch, *Zeitschrift für Psychologie*, vol. xxiv. pp. 192-193).

disease of the body-feeling area of his cortex makes the movement awkwardly, because he has poor sensation of those positions. It can be proved that his difficulty is not in moving his hand, or not only in moving it; but, like an infant, he wants the sensations necessary to direct the movement. Does it follow that we, who have no difficulty, must feel a difference of sensation for every difference of position? The answer is neither yes nor no, but it is perfectly definite. We might say yes, considering the patient; but we might say no on two grounds. First, we can make the movement when otherwise completely occupied, and fairly well even when asleep; secondly, the cerebral cortex is capable of forming habits that work more and more unconsciously. The truth of the yes and no is simply that our movement is directed by a course of sensation which is felt as a whole. Understanding this it is easy to see that we cannot speak of unconscious sensations, and why it is that we cannot say at once what we have felt. II. 7.

For, first, if any necessary part of the course of sensation were wanting, we should not get the whole, or we should get a different whole. Then, like the patient, we should feel confused, though unable to say what was wanting. A child hears the quality of a voice without being able to distinguish the overtones that give the quality. It hears them in hearing the whole, though it cannot analyse the whole and attend to them apart. And it proves that it hears the quality by distinguishing different voices. In the same way it proves by raising its finger to its eye that it has given itself the course of sensation necessary to that, and no longer confounds it with the courses of sensation required for touching its nose or its ear, whereas at first it confounded them, as the patient does. Thus far there is nothing entitling us to speak of unconscious sensations, even if the expression were somehow not contradictory. But of any unit of sensation necessary to the whole we are better able to say that we must feel it, than that we do feel it. And, of course, as felt merely in the whole, it is not quite the same as when we succeed in separating and attending to it.

Secondly, having learnt to distinguish a course of sensa-

II. 7. tion, and having formed a habit by which we give it to ourselves, it becomes unnecessary to feel the course so fully as when learning it; we succeed with less sensation. And so again the same two things: it is wrong to speak of any sensation as unconscious when we simply have dropped it; and it is not easy to say what has been dropped, and what not, from the original fulness. The same two things are still more obvious in higher work of learning and intelligence. On the one hand we shall find that the notion of an unconscious comparing, and other unconscious experience, is misleading as well as contradictory; and, on the other hand, I doubt if you can state exactly what you experience in any thought—in the sound and meaning of this sentence, for example (i. 4), in recognising the pen in your hand or the ink-bottle before you (x. 4), or, in general, in distinguishing between what you have taken for granted and what not. Nor is it necessary, any more than in paying attention to the words that express an opinion; for we can repeat exactly the same opinion in different words so far as we claim it to be the same opinion.[1]

[1] The notion of a subconscious consciousness is sometimes used to avoid the contradiction of an unconscious consciousness, and sometimes to denote an intermediate degree, viz. something not quite a blank and not quite an experience. But so far as there is a blank there is no experience, and, so far as there is experience, there is experience, though it may be hard or impossible to discriminate, and still harder to identify with other experiences. There are psychologists who think the fiction to be necessary if experience is to be explained as the work of the mind. Most, however, of the confusion and mystery associated with it is found where there is less acquaintance with the facts. Since there is no mental work that is not in great part unconscious, there is room for an unlimited use of the hypothesis by those who fail to distinguish between the mind and its experience, and especially between them as factors in explanation (v.). On the matter of fact, as distinguished from hypothesis, the confusion may be avoided by a little pains in asking the question. If I am asked about any slight physical stimulus whether I have felt it, the question may mean merely (*a*) Has it any sort of effect on my experience, or the course of my experience? The answer must be yes, judging from the experimental fact that a stimulus at any part of the nervous system affects its action throughout (xviii. 1). In order to this effect there need of course be no sensation from the stimulus. But the question probably means, (*b*) Have I a sensation from the stimulus? And in answering this I am met with the fact, as mentioned in the text, that I constantly have sensations that I not only do not, but cannot, distinguish. Besides organic sensations there are two great groups of cases. One is the general fact, formulated in the Weber-Fechner law, that we cannot discriminate every change in the intensity of sensation, but only when the difference is great enough. I cannot, for example, distinguish the fading of sunlight from minute to minute of an afternoon, though I can from hour to hour. And I have to infer that my sensations have a diminishing intensity all the time, not merely because the stimulus is

Thus when we need to test the presence of an experience in ourselves we ask what it does, as we do when asking about the experience of others; and in regard to both we are often met by the question whether the same function may not be performed without experience. Consequently we must distinguish the power of learning from unconscious plasticity. II. 7.

§ 8. This brings us to the essential question, viz. the distinctive and specific method of adaptation that we have by experience and not otherwise. But before leaving the general criterion it may be well to make a further remark. For surely, you may say, we can judge that another person or an animal has sensations, without knowing whether they give them a meaning. So indeed we may, but it is because we find that they have had similar sensations to which they have given meaning, or because we know that others with similar sense-organs have done so. A moth may indeed see the candle, but be so intoxicated with the light that it can learn nothing from the singeing of its wings. In such a case our criterion fails. Most people when they see a worm cut in two will believe that its wrigglings are the writhings of pain; and in practice it is as well that the creature should get the benefit of the doubt, though it is unlikely that the tail half, which is the writhing part, does any agonising.[1] The advantage of consciousness to an

diminishing, but because I am unable to perceive the difference at any point of the time. The other group of cases comprises the obscuring of weaker sensations either by those of greater intensity (*e.g.* of one sound or pain by another), or by our attention being directed elsewhere. In either way the obscuring may be not merely a weakening but a complete preventing, even when, attention being relaxed, there comes a "primary memory image" of what would have been a sensation (Exner, *Entwurf zu einer physiologischen Erklarung*, etc. p. 72); for this after-sensation is really no argument that we had any sort of feeling from the stimulus before. Finally, the question may mean not Have I any sensation, but (*c*) Have I a certain sensation from the stimulus? And of course I may be still more unable to answer correctly, because I am now asked to classify the sensation with others. It is not only with obscure sensations that we are in this predicament when answering (*b*) and (*c*), but with experience of any grade, *e.g.* the precise meaning we give a word in the course of conversation. If subconscious means anything but unconscious, it should refer to this predicament, but there is no need for it.

[1] "It would certainly be very strange if only the posterior half of an earthworm should show pain sensations, while the front half, which contains the brain, showed no such reactions. Still more remarkable, however, are the results as one continues with the division of the pieces. . . . Each time the whole animal or either half of it is cut in two the posterior half makes squirming or

II. 8. animal is the advantage of learning. There may, for anything we know, be useless feeling as well,—a luxury or a burden,—notwithstanding the general biological argument against all useless cargo. But so far from animals being conscious automata, we only know for certain that they are conscious, because we know that they are not automata, but can learn.

All organisms, and indeed all their tissues, are more or less plastic, and capable of some degree of training, especially during their growth. It is not only that practice is required to make them perfect, but that different courses are open, and the one taken and made perfect or habitual is one suited to the special conditions of the individual life. The power to learn is a form of this plasticity, and therefore is in so many ways like the form which needs no feeling, that their real difference is overlooked. They are the same thing, it is said, the one a conscious, the other an unconscious power of adaptation. Since they are species of the same, that is true. But it is usually taken to mean that the feeling in the one does nothing, that it is just a gift, and that the two powers are the same with this difference, that the one works somehow in the light and the other keeps the dark. Of course when we say that our muscles or our skin learn strength in the using, and that our blood or our nervous tissue can be taught by gradual experience to defy poisons that would otherwise injure them, we speak of their learning and experience quite as metaphorically as we speak of their defying. So also when a physiologist says that memory is a function of all organised matter, he emphasises the fact of plasticity,—the property that structure follows function. It is a property of metals even; but because it is especially remarkable in the mind, there is some excuse for calling it memory everywhere, say unconscious memory. There is no better reason, however; and this appears to be forgotten

jerking motions, while the front piece makes no motions or reactions that could be considered as indicating pain" (Norman, *American Journal of Physiology*, iii. pp. 273-74). Bethe says, "I have cut off the entire abdomen of bees and then placed them at honey, which they sucked unceasingly for more than an hour. Indeed, while the bee was sitting on my hand sucking honey, I suddenly cut off the abdomen. It straightened up for a moment, then sucked quietly on. Whether with such results one can speak of pain, or indeed of sensations, appears to me doubtful" (*ibid.* p. 282).

when it is added that "heredity is the memory of the plasti- II. 8.
dule, and variation its power of comprehending" (Haeckel). More serious than a matter of words is the error they suggest; for it is suggested that there is no more in learning or mental association than in unconscious adaptation, except the presence of feeling. Now, where feeling is present, there is obviously, in the first place, a greater degree of plasticity both in point of variety and of the rapidity with which a new habit is acquired. But this difference in rate and variety is due to a more fundamental difference, viz. the power to anticipate a consequence. And this belongs to experience only.

Let me quote an observation on how the American king-bird, a great insect-eater, learns what to avoid. "At first, all insects were indiscriminately seized. A vile-smelling hemipteron was as tempting as a luscious grasshopper or cricket. Distinctly unsavoury insects were not touched a second time, except with the greatest caution; though species which were only moderately distasteful might be taken and devoured, but without relish. In one case a large brown ant—the first found—was seized, mulled or mouthed, and vigorously ejected. The next day the bird was taken to the same tree, and on perceiving a second ant of the same species, eyed it closely and deliberately, and then shook its head and vigorously wiped its beak, with unmistakable signs of recollection."[1] We may represent the series of events in the bird's first dealing with the ant as *a b c d e f*, first the catching of the eye, then the movements towards the ant, the pecking action, the opening of the bill, the movements of the tongue, the throw-back of the ant to the pharynx, and finally the avenging taste; and so far there is no direct proof that the bird has felt. But proof is given when another ant presents itself, and *a* is no longer followed by the rest of the series. We have now to say that the tendency to seize is inhibited by an anticipation of the consequence. Not that the bird really stops to think; the eyeing "deliberately" and the "unmistakable signs of recollection" are doubtless misreadings of its action, and even the wiping of its bill need not argue a ghostly recurrence of the taste. There may be

[1] From a correspondence on the learning of young birds in Wesley Mills, *Animal Intelligence*, Part iv.

II. 8. only a change from unaccountable liking to unaccountable disgust at sight of the ant, such as we ascribe to a difference of organic sensation. But even so much is a qualification of *a* by the result of *f*. Hence we must say that *a* and *f* at least were felt the first time. And that there is a course of motor sensation from *b*, *c*, *d*, and *e* may be inferred like the course in raising finger to eye, and especially, as in all learning of physical skill (ix. 6, 7), from its necessity for any improvement in the course of action. The whole series of sensation, you will observe, came from a ready-made nervous structure ; it was the experience of a self-directed course of movement, a course that had not to be learnt. The sensations may, indeed, be necessary to the execution of the course, but in a way that we do not understand ; for with our present knowledge we see nothing to prevent it from being carried out without feeling like the unconscious reflexes. The use of feeling for the business of life is seen in the new power that it gives, the power to react on *a* as on *f*. The ready-made structure is now supplemented by another as the result of its exercise. All learning by experience has this character ; the same object is felt, but it is given a new meaning and value.

§ 9. If we take biology in its literal meaning as the science of the conditions of life, it includes not only physiology, but psychology and all the human sciences. And in a classification of science the word is sometimes used in this general sense. But also, and more conveniently, it is taken to have a special province. It deals with life as physical, and regards the mind and its experience, or rather the brain and its action, as means of living a successful physical life in a physical environment. And it measures success by reference to the life of the race. In this its usual and convenient sense biology includes physiology; that is to say, it demands, and finds use for, the work of physiology.

But it is only in the wide meaning that psychology is a branch of it, and that it can be said to take the biological point of view. For, instead of taking the mind as an organ of the body, and mental life as a means to a successful physical life, the body is taken for organ of the mind, and physical life as means for a successful mental life.

The environment of the mind comprises all that affects it, II. 9.
whether knowingly or not. It includes even the body, or most of it, as part of the physical environment, and it includes those environments or atmospheres that we group as economic, social, intellectual, æsthetic, and religious. The success of the life is in the appreciation of all this world in thought, feeling, and action. There is not the mere question of accommodating itself to this world, still less to the merely physical world. Hence, if the psychology of mental function is said to take a biological view of experience, it is in view of a mental life. It is not meant that experience is treated as a means to a physical life, though that, of course, is included.

But our question is only part of what might be understood by a biology of the mind. We are to ask only about the growth of individual minds, and with an eye to our own, the human mind. The same point of view may be taken about the mental lives of animals; and, for a reason that we shall see, it is useful to consider them, but we are only to consider them for that use. Nor are we concerned with the topic which the words mental biology still more naturally suggest, viz. the growth of mind in the race, and in any race. We shall have to refer to it when considering stupidity, the limits of intelligence, and, in general, the individual inheritance of capacity and environment. But we are not more directly concerned with questions of heredity, with the survival of the fittest minds, for example, the fittest institutions, the fittest truth, beauty, and right. I may point out, however, that what I said about the function of experience in our individual growth applies also to the mental growth of the race. For conscious selection is not, as it were, the holding of a light to unconscious or natural selection. It may, on the contrary, be called an "escape from the bondage of natural selection."[1]

The interplay of mind and its environment, the arrival of new theories and practices, and their admission or rejection, can be described in terms that are familiar in the biology of unconscious life, and this is constantly offered as their explanation. But what is explained? If there is nothing in what is common to account for what is different, there is,

[1] Lloyd Morgan, *Habit and Instinct*, p. 336.

II. 9. of course, no explanation of the difference. There are many different ways of rising in the air, and they are not the same by the fact that they overcome and do the same thing. And this may be forgotten when a conscious and an unconscious evolution are thought to have the same explanation, because they can be described in a common formula as achieving the same thing, one in the light, while the other is not really thought even to grope in the dark. In setting out to explain without thought of the purpose and the way, there is no more common confusion than to mistake a description in common terms for an explanation. It all depends on the value of the common terms or denominator.

§ 10. The other functional view of experience is that in physiology, so far as it deals with the nervous system, which is the organ of experience. We have seen how this view is related to any direct account of the mind and its experience, and I said that it is demanded by the direct account, and that it would be none the less demanded if there were no immediate correlate of any mental faculty or any experience. But we are to confine ourselves to the direct account till the last lecture. The reason is not that a direct account of experience must precede the indirect or physical one, for though that is the case, we might take them together. The physical account, however, is so much matter of dispute that there would be good ground for postponing it. Nor is the reason that the direct account is only an analysis and description of the facts, and should therefore come before the physical account which is their explanation. The reason is that that is not the case, and that there is a direct explanation of experience and its development. It has a right to separate treatment, and the first thing is to see exactly what the explanation undertakes. In the next two lectures we shall take the analysis of experience necessary to it, and in the following lecture we shall see what question the direct explanation undertakes to answer, and in what terms.

§ 11. We are familiar in daily conversation with the direct explanation of experience; for we constantly speak of experience as the work of our self, and of the organs called faculties and capacities, into which we divide our self or mind. Hence it may seem that we have only to start from this and

carry the explanation further. The start is not so simple, II. 11.
however, and for three reasons.

(*a*) For one thing, the popular division into mental faculties treats them as if they were physical. Indeed, it seems almost a matter of course to take the structure or anatomy of the brain as a picture of the structure of the mind, the units of experience being represented by nerve-cells, the connections in experience by their connecting fibres, and mental faculties by groups of cells and their connections. We shall find this notion of the picture to be wrong, but the point is that if we confine ourselves to the direct explanation, we have to do without any picture. We saw that neither our mind and faculties, nor our experience, is perceivable by the senses of others; and to say that each of us can perceive his own by an inner sense is to speak in metaphor and confusion, as you will find if you ask what is meant by an inner sense. But I need not repeat the explanations of last lecture.

(*β*) Suppose, however, the popular notion of the mind and its faculties to be clear from that of the brain and its parts, we find that what is left of the notion retains all the futility of the explanation by faculties to which nearly every psychologist has taken exception, especially since Herbart, and even since Locke. I think, indeed, that some of the energy spent in girding at faculties might have been given to explaining how experience can be dealt with as an effect of mental factors at all. It has been too common to substitute for faculties a miscellaneous collection of experiences in every kind, of processes conscious and unconscious, and even of laws, as combining to make experience, or causing it somehow. It is not at all unusual to meet discussions as to whether feelings depend on thoughts, or whether reason is the slave of passion, whether will controls desire or desire will, whether desire creates feeling or feeling desire, whether attention depends on interest, or interest on attention. There is no end to the number of such questions about what is cause and what effect, and no end to their discussion, so long as it is merely the abhorred name of faculty that is given up; for all the indefiniteness may be retained in speaking of any sort of mental factor as a cause. And I

II. 11. think it a needless penance to use the word 'disposition' in the sense that every one would be willing to give to faculty if he understood. It is no doubt annoying to be thought to deal in metaphysical entities, and to account for speechlessness by the loss of verbal memory; on the other hand, it is to be remembered that such things are said by those only who have paid little attention to the direct explanation of the working of the mind. We shall use the word faculty, but you may be sure that neither our own nor foreign writers would have given it up for 'disposition' without good reason.

(γ) Finally, it may be thought that at any rate there is left in the popular list of faculties a classification of the powers of the mind with which we may begin. And this is usually assumed when, for example, it is said that we have to understand their connection, and again that the end of education is the harmonious development of all our faculties. And no doubt the mind is a collection of organs that are mutually dependent and should grow in harmony. But so is the body, and no one thinks of understanding its growth as a harmonious development of limbs and other organs according to the popular list of them. To understand the structure and growth of either mind or body there is, in fact, the same necessity to depart from the convenient classification of ordinary life, as physics has found for departing from the popular classification of the properties of matter. By way of emphasising this, let us look at the mythical character of our language about mental faculties, and at what remains when we have expelled the metaphor from it.

If we are told that such a one has a strong will, or is a slave to his passions, or is warped by prejudices, or fixes his attention, and exercises his judgment, we know so well what is meant that we take the expressions to be simple statements of fact about his faculties; and yet they are all metaphors, and different metaphors. Our language about the mind often peoples it like a little city in which the self is governor, or like a temple of which it is the high priest. Will, reason, emotion, instinct, memory, and others of great name are the immediate lieutenants of the self, having under them others of less note, like desires and passions, common

sense and reflection, taste and imagination; these in turn control others, and so down the list to the common slaves, viz. our senses and muscles. Here the metaphor is obvious by reason of the personification, and no one mistakes it for an explanation. But it is none the less present when we degrade the faculties from being living agents to the level of lifeless things, and regard them as so many structures each with its proper function. The will, the reason, the conscience, the imagination, all that way of speaking betrays a metaphorical way of thinking that is the more misleading because the metaphor is less apparent. For the mind is thought to be a little world of things that are separate, influencing, harmonising, and contending with one another. Growing more drastic, we turn the agents not into things but into agencies, forces, or powers, made manifest in the processes and products of our experience. From this it is a short step to throwing out the agency with the agent. And then we mean by faculty nothing that is cause or part of a cause; for it is now apparent that the faculty as a cause would only be the effect rechristened. So that the various faculties are finally seen to be merely the heads of a popular description; and if one is said to have a strong or a weak faculty of a certain kind, it is only meant that he has great or small facility in making that kind of experience. II. 11.

Do not think there is anything extraordinary about this history. It was only to be expected, considering that our usual notion of the mind is modelled on our earliest view of physical things. And it would be as absurd to reject this way of speaking and thinking as to refrain from speaking of the rising and setting of the sun, or of the colour of an object as inherent in it. In the thought of material things that is fixed in language there is a similar superficial explanation of them, if we take it for an explanation. But physical investigation has so far outstripped it that no embarrassment is felt, and the physicist continues to talk of things and events in the language that he used when a boy. Only he does not let it interfere.

In particular, he does not think that, having removed the mythical elements from our common notion of things, he has only to take the purified description that remains as the

II. II. best analysis of them, and proceed to find their connections. It is not only that he is no longer content to account for the cutting and lighting effects of a diamond by its faculty of hardness and its faculty of brilliance; for neither is he content to turn the faculties into qualities, the explanation into a description. He no longer takes this description by qualities as the analysis that will guide him to an explanation. He does not regard the diamond as a harmonious connection of form, brilliance, hardness, and the rest, and proceed to find an explanation in bonds between them, or in laws over them. Yet that is what we are apt to do in dealing with the mind, even when we take the faculties to be only heads of description. We are still apt to take them as so many properties, inherent in the mind, as form and colour are inherent in things, and we ask how it comes that they cohere well or ill together, and reach a harmonious or a lop-sided development by their education. We have to define the properties of mind, as we do the properties of matter, in the way that is best for explaining them. And, since we give them familiar names, it is not to be expected that their technical will correspond with their popular use. But there is nothing to prevent both. People, however, are so apt to defend the rights of words that it is always well to remember that our concern is not to find meanings for the given names, but first to find the functions, and so the faculties, of our mental structure, and only then to name them. The first thing is never the right name but the best meaning, however we name it; hence the work of the next two lectures.

At the same time it is always a good exercise to turn popular statements into technical language. And if I add that to be able to do this with popular statements of mental problems is to be well on the way to their solution, you will not suppose that it is a matter of words; for so it is with every problem in applied mathematics, and wherever a system of definitions takes the place of a mere mass of them. The learner begins with definitions, but the science has ended with them, having found those that are best for dividing and mastering its province.

LECTURE III

ANALYSIS OF EXPERIENCE

§ 1. WE saw that the structure of the mind is inferred from the structure of experience, and from that as the organised work of a living being. In our analysis of experience, therefore, we regard it all as bringing our self into conscious connection and adjustment with the world in which we live. This connection is familiarly specified as three forms of experience, viz. we think and know things, we take interest in them, and we act upon them. These relations to the world we achieve at every moment of our waking life. And we shall be occupied with them throughout the present lecture. But they have to be achieved, and so we shall next look at their achieving. In the first we take a cross-section of experience, in the second a longitudinal section, that is to say, a section of the course of experience. Then, thirdly, we shall take the two together. In each of these accounts we shall include all experience except that called mere sensation. I shall speak of it in the fourth place at the end of next lecture. Till then we are to deal with experience after the difference between self and object has begun to be felt in it. III. 1.

It begins when we set any object before us, and this may conceivably be in a first experience. We find nothing more instinctive in our mental action than that the experience of sensation is experience of objects, *e.g.* of cold, or sweet, or a pain, or sound, or a mass of these sensory objects. But we have an object-experience for certain in our first act of knowledge when, namely, we recognise or identify anything.

III. 1. To have an object-experience is also to have a subject-experience; it is to differentiate the object as we think it from our thinking it, our interest in it, and our dealings with it. These are our subject-experience. The experience of the difference of subject and object is not an experience of differentiating two objects. We set before ourselves the object but not the thinking and the rest, not the self or subject from which it is differentiated. We can make the subject in an experience the object in an experience, but only in a new one, not in the same one. In the experience of our self as object we set it before us, but there is at the same time the self doing so, the self thinking, approving, attending to the object,—the self as subject. It will be necessary to repeat this against our temptation to regard all experience as somehow before its subject, and consisting of so much matter of thought (i. 3).

I am speaking of self and object as we experience them, and our experience of both of them is more or less different at different moments. That does not prevent the self from being the same, and felt as the same, any more than it prevents a house from being the same house, and thought to be the same house, when we see it from different points of view. Any confusion in the matter is due to confounding our self and the experience of our self.

Since the distinction between subject and object is the most fundamental in experience, it may seem that we ought to make this our fundamental division, and, in the rest of our analysis, to take different species of our experience of self and different species of our experience of objects. But that would be to omit the essential thing. Our experience is of self and object, but not of one and the other as if both were objects, or as if one could be had without the other. It is of the two in relation: it is experience of an object by a self, and so of the attitude of a self towards an object. The experience of an object is never without experience of our self, and the experience of our self is never without experience of an object; and that is the case when the object is our self, just as when it is anything else. Hence we begin with the division into the three attitudes of our self about an object.

Under the term object we include not merely objects of

nature and other real objects, but any that we set before us, III. I.
whether we set them before us as being real or not. They all form the world in which we live a conscious life. The objects in nature may be individual or general objects, concrete or abstract, objects of reason like laws, atoms, the past, or objects of sense like colours and sounds. We know them, we take interest in them, and we act on them. There is the same threefold division in our experience of the minds of others: we know them and their experience, we take interest in them, and we act with regard to them. Similarly of mental products, *e.g.* theories, institutions, and the imaginary worlds created in literature. So also we may set before us our self, our taste, and any experience, as we are doing at this moment; and we may know them, take interest in them, and have a will concerning them. Finally, we think, appreciate, and alter objects that we do not think of as belonging to any real or imaginary world. Such are the things we think in reverie, and absurd objects like a round square. We may regard them as each an imaginary world of our own creating, and with reference to it we can also say that we know them, take interest in them, and alter them. But if we do not so regard them, then we have to say that we think them, and not that we know them. This difference is one of several that we have now to make in order to see the scope of our three attitudes.

§ 2. (*a*) Of any thing in nature we may have a variety of thoughts. We may see, hear, touch it, and casually or attentively; we may remember and imagine it in various forms; when we read or speak of it we think it, but no further, perhaps, than the meaning of its name, or we may think about and ponder it. We thus have very different thoughts of the same real object; in any one of them the object as it is thought is unlike the object as it is thought in the others, and yet they all claim to be true thoughts of the same real object. We use the word think of both objects —of the object as it is thought, and of the object as it exists or is real. But it is only of the latter that we use the word know. We can also know the object as it is thought, but only when we make a second thought which takes the first for its real object—its object as existing. To know is not

III. 2. merely to think something, to set it before us, to form an object of thought. These expressions mean the same thing, but to know is to think something that has a nature of its own, to which our thought of it claims to be true.

Hence, while a mere thought is neither true nor false, a thought that is knowledge is true, and one that claims to be knowledge is always true, false, or partly both.[1] The claim in the thought is called belief.

§ 3. The difference between an object as it is thought and as it exists is one with which we are familiar from infancy. My perception of this room is a real event of this moment, and has its own attributes: it is clear or vague, long or short lived, true or false, capable of inducing further thoughts in me and of preventing others, and I can analyse it into the course of perceiving and the room as I perceive it. The room itself has quite other attributes. It is so many feet long, is lighted well or ill, and it is not affected by my perceiving it. If we all glance at the ceiling and guess its height, there are so many different perceptions of the one height—so many different heights as we think them. They have various degrees of truth, and those that agree with one another are no more one than the same shot in a cartridge. Your guess of the height as thirty feet is not thirty feet high, and is neither larger nor smaller than another's that makes it twenty-five feet high. How, then, a thought can be true of the real object is a question that we shall have to consider (x. 2).

The object as it is thought is sometimes called the immanent, the object as it exists the transcendent object; but we need not use these words beyond the present occasion. Instead of using words like transcendent and transgredient for the object as existing, we may speak simply of the real object, this being the most important type of it; but you will understand that the real object is used as typical of every object to which our thought claims to be true.

§ 4. We are all familiar with real objects, but what is

[1] As the distinction between knowledge and belief does not concern us, but only the distinction of both from a mere thought, it is convenient, and it is customary, to make the word knowledge include the meaning of belief, and thus enable us to speak of false and doubtful knowledge.

the object immanent in a thought, the object as we think it, III. 4.
or set it before us? It is sometimes called the product of the thought, sometimes simply the thought, and especially when we say that two people have the same or different thoughts about anything. But always it is an abstraction from the thought as actually experienced. It is the second of the two factors into which the experience of every thought can be analysed, viz. into the thinking, and what is thought. As the two factors vary with one another, and as we do not have one without the other, the difference does not appear on the surface. We shall see it best by taking a series of three ways in which we specify it. The first is (α) the difference in the thought between experience of the subject and experience of the object; the second is (β) when the same difference is said to be between process and product in the thought; and the third is (γ) when we compare two thoughts of the same real object and say that they are the same, or that they conflict.

(α) The simplest way to see the difference is to take thought of a real object and then to make this the real object of a second thought. What we set before us in the first we set before us in the second, but we set more, for the two thoughts claim to be true of different objects. What then do we set before us in the second that we did not set before us in the first? We might set many things about the first of which we had no experience at the time, *e.g.* its date, others of which we happened to be aware, *e.g.* our hunger, and still other experience that was only possible because of the thought, *e.g.* our purpose or our interest in thinking the object. But, with all these excluded from the second thought, its object is not yet simply the object in the first. There is also the thinking in the first, *e.g.* perceiving, imaging, judging, believing, and whatever else we say that the self does, and not that the object has. What the self does in thinking is to produce the object as it is thought. The producing is not included as part of the object in the first thought; but it is part of the object in the second thought. And, finally, observe that I have not yet spoken of the whole of the second thought. I have spoken only of what is thought in it and not of the thinking. It is this thinking that prevents

III. 4. the second from being the same as the first, even if the whole of the first thought, and nothing else, were set before us or thought in the second.

(β) The division of a thought into thinking and what is thought, into experience of the subject and experience of the object, is also expressed as a division into process and product. Like every experience a thought occurs and passes; it is a process, all a proceeding and changing during the short moment of its life. But in the process a task is performed, and we separate the achievement of this and speak of it as the product. It neither comes after the process, nor exists apart from it; and, if we want to have it again, we have to produce it again in the same or another way. But we can abstract it, and recognise its like in a new thought of our own, and in another's thought, although its associates are always more or less different. There is nothing peculiar in this. We do quite the same when we speak of our aim with a rifle. This is a product, the product of a complex series of positions that we have taken, but it does not exist apart from them nor after them. And when we say that our aim may be the same in different positions, our expression has the same kind of ambiguity, though not in the same degree, as when we speak of our having the same thoughts as we had before, or the same thoughts as others have.

(γ) The ambiguity is not in the expression, except so far as it does not specify in what respect the thoughts are the same. For, as they cannot be numerically the same (§ 3), it means that they are the same in some respect; and so the expression offers us a useful exercise in the distinction between what we think and the thinking.

When we refer to the thinking we speak usually not of the same thought but of the same kind of thought. We say that seeing is the same kind of thought as hearing because both are species of perceiving, that perceiving is the same kind of thought as judging because they are species of believing or knowing, that measuring is the same kind of thought as pondering because both are species of comparing. All are species of thinking. When we say that two people looking at the same scene, or hearing and understanding the

same argument, have the same thought, we do not refer to the looking, or hearing, or understanding. In respect of these we rather say that they have the same kind of thought. Nor do we mean that the real object is the same, for of course it is, but that the object as they think it is the same. III. 4.

And usually we do not mean the whole object in their several thoughts, but only the part we take for important. It may be any part; but, as a rule, it is the part that we believe or claim to be true. I say, for example, that I have the same thought of a matter as I had last year, though I have quite forgotten the words that I used in thinking it before. It is this that we mean when we say that different people have the same thought, or are of one mind on any point. For they would all express and expound their belief differently, and would thereby show a difference in the point as they think it, notwithstanding their agreement. What we think varies with the thinking, and so, when we say that two thoughts of the same real object are the same, we should seldom be correct if we meant that the immanent object in both is quite the same. It may very well be so in simple cases, as when I hear the same sound a second time; and yet even so simple a thought is affected by the rest of our experience, by time (p. 210), and by the state of our sense-organs at the moment. But the difference is especially clear when the thoughts are complex and need words; for, if we seldom use the same words to express the same piece of knowledge to others, neither are we likely to use the same words in forming it for ourselves. And though two different sentences say the same thing, the thing as it is thought in one is only partly the same as it is thought in the other. There would be a difference even if the words were the same, and the difference were in their order merely, or their emphasis. Finally, in reading the same words we do not all form quite the same thoughts. Even when the words give a simple description of a scene so that every reader forms true thoughts of it, and all are therefore said to have the same thought of it, some are doubtless satisfied with merely thinking the general meaning of the words, others form sketchy pictures, while a few go slowly and carefully enough to

III. 4. complete the picture with something of the fulness that it had for the author, but no doubt with a difference.

Every one sees the importance of distinguishing between a thought and its real object; but the importance is not so apparent of distinguishing within a thought between the thinking and what is thought. And of course its importance is more for understanding the working of the mind than for any other use. Still this has its use. The distinction has this interest in education, for example, that instruction has reference to the one factor, and discipline to the other. What a teacher seeks to communicate is his experience. By instruction he communicates an object as he knows it, whether the real object be a thing, or a rule, or a myth, or a pupil's fault, or any sort of topic. But he has also to communicate his ways of thinking and knowing, and that is the work of discipline in thinking, called intellectual discipline. And there is the same difference with respect to our other two attitudes. By instruction he points out, and gives thoughts about what is beautiful, for example, and what is right; but it is only by discipline, only by requiring practice, that he can teach the actual feeling of any beauty that needs teaching, and an effective desire to do what is thought to be right.

§ 5. (*b*) Our interest[1] in an object is also called our feeling towards it, and this is the technical use to which the word feeling is confined. It comprises pleasure, pain, and all emotions, including satisfactions and dissatisfactions, likes and dislikes of every kind, towards any kind of object.

Hence it is not hard to distinguish our interest in an object from our thought of it. In our experience of an object all that we make object, all that we set before us, we think; how it strikes or affects us, we feel. There is, however, this to confuse you, that we can always turn our interest in an object into a quality of it, as when we call it interesting, pleasant, hateful, tragic, or comic. Then we not only have interest in the object, but see, hear, conceive, or otherwise think our interest to be part of the object, quite as

[1] The use of this word in a technical sense will justify itself as we proceed. It does not go *beyond* the popular uses, for we speak of a painful as well as a pleasant interest; but it is the latter only that is usually meant when the word and its adjective, interesting and uninteresting, are used without qualification.

colour belongs to a landscape and loudness to a sound. III. 5.
Our delight in an object is not a sense of its beauty unless we do this, and do it inevitably. And it is not only our feeling, but our practical attitude towards anything, that we may turn into a quality of it, as when we think it desirable or repellent. But we need not therefore confound the three functions and forms of experience with respect to it. It is one thing to be pained by an object, another to turn from it, and it is a third thing to think the object, or set it before us, and in doing so to include among its qualities painfulness and repulsiveness.

§ 6. What I have said applies to our interest in any kind of object. It includes, for example, our interest in problems, in our behaviour, and in the things we see, hear, eat, or suffer. But at present, you will remember, I am speaking only of the interest that we find in objects, viz. in what we think or set before us. I am not speaking yet of the interest of our mental acts or processes, except when we not merely experience them, but take thought of them. In order, then, to distinguish our interests from one another we have to look to the difference in their objects. One difference distinguishes (*α*) our intellectual interest, and this may be extrinsic or intrinsic. The rest of our interest in an object is in the object itself, and is also to be distinguished as (*β*) extrinsic and (*γ*) intrinsic.

(*α*) We take interest in an object as real, or as having such and such a nature. This can always be called our intellectual interest, though, if the word cognitive were commoner, it would be better to use it for this the interest of the truth, and confine intellectual to the interest of the thinking. But we may use the two indifferently for the whole interest. The highest forms of the interest are called scientific, mathematical, biological, and so on, according to the kind of knowledge. It is an interest in the truth which a thought claims or seeks. It is the interest of a thought so far as it identifies an object; in other words, so far as it answers any question, *e.g.* what? how? why? when? or where? Answering the questions how and why, a thought is concerned with ends and means. In these we may take merely an intellectual interest, recognising a thing to be desirable

III. 6. for others, or ourselves, without actually desiring it. We then have only an intellectual, and not also a practical interest in it.

The interest is not the same for every kind of truth, but varies with the importance of the truth so far as we know it. Very often this is its value for an interest other than knowledge. Our interest in it is then extrinsic. But the value of a truth may be theoretical, purely intellectual, intrinsic. We have a greater interest in one historical or scientific discovery than another, and in formulæ, laws, exceptions, than in truths that seem merely isolated and incidental. This intrinsic value of a truth belongs to it as part of a system, and as a means of determining other truths. It is relatively, not purely or absolutely, intrinsic.

The failure to distinguish our intellectual interest from the rest of our interest in things, and to give both their rights, has led to error in both practice and theory. In practice there is the formalism or intellectualism of literature, art, education, any branch of conduct, even manners, where the letter killeth; and there is the opposite error where the spirit is without light. In theory there are the old notions that virtue is knowledge, that sensation is a form of confused knowledge, and that an emotion is something with which a thought may or may not be 'charged' or 'touched,' and yet remain the same thought. We shall look at these things afterwards, when their error is more obvious; I mention them to emphasise the importance of distinguishing our cognitive from the rest of our interest in things. It is entirely concerned, as I have said, with the thought of an object as real, or as having a certain nature. The rest of our interest is in the object according to its nature; and, as this is familiarly called simply our interest in the object, we may very well recognise this as a specific use of the expression. It is our interest in things as distinguished from our interest in the truth about them.

(β) It is of two kinds: extrinsic and intrinsic. Our extrinsic interest may always be called our practical interest. It is our interest in an object as a means; the value that we feel in the object is borrowed from the end that it serves. Our intrinsic interest, on the other hand, is not merely in

the object, but in the object on its own account—the interest that it has merely as an object that we experience. III. 6.

There is a fortunate rule that things and conduct at first useful or undesirable for a reason, may become delightful or disgusting on their own account. This intrinsic interest, though thus derived, is additional to the practical interest; and it may remain when the other has gone, and even when it is a pity from the practical point of view, and when we wish to be without it.

I have pointed out that there are means in which we may take merely an intellectual interest even when we recognise them as desirable. Those that we actually desire are of two kinds: they are either within, or they are without, the range of our action. The former are the objects of our practical interest proper; and we shall, as a rule, confine the name to them, for it is not usual to speak of a practical interest in the weather and in other objects of futile desire. Still it is convenient to include them under the general name of practical interest, because we can then say that our practical interest coincides with the third of our three attitudes to an object, viz. our practical attitude. The reason for emphasising the other kind of practical interest is the importance of our own practice; and so we call our practical interest proper the interest that we have in an object as a means or occasion for our action. It is an interest in something to be done or used, an interest in a situation as our sphere of conduct. The object may be any that we set before us in this aspect; and so it may be our impulses, opinions, taste, when we deal with them, seeking, let us say, to reform them for any reason.

Hence one species of our practical interest is interest in our own character and conduct, when we think of them as means. This is our extrinsic moral interest. If we include under the name our interest in the conduct of others, in customs, laws, institutions, over which we have no control, we make our moral interest a species of practical interest in the wider sense.

Our moral interest becomes intrinsic when the object takes a value of its own, as when we feel a character to be beautiful, chivalrous, or mean. But this value, like that of

III. 6. a truth, is not in the object apart from the system to which it belongs. Our intrinsic interest in a truth, in a piece of conduct, and in an intellectual, a practical, and a moral character, is in them as parts and examples of some ideal or system of truth and goodness in which our interest has become intrinsic. We may therefore say of them all that their interest is relatively intrinsic as distinguished from interests that are purely intrinsic.

(γ) The group that remains is that of purely intrinsic interests. They are the most frequent and the most important of all. The other two—intellectual and practical interests—are perhaps more imperative; they are of more social concern, and occupy more of the labour of education. But both knowledge and conduct offer first of all a merely extrinsic interest, presupposing, therefore, an intrinsic interest in whose service they are. Our primary and ultimate interest is not in things to be known, nor in things to be done, used, or avoided, but in things that are enjoyed or the reverse. Except in the case of the pleasure and pain of mere sensation, this is not an interest that may be left to look after itself. Indeed, in the great days of hope from education it was made the main imperative. Schiller, for example, wrote one of the most important works in the history of æsthetics for the purpose of saying so; and even Herbart, against whose 'intellectualism' books have been written, makes the central aim of knowledge, conduct, and other specific aims of education to be what he calls the "æsthetic revelation of the world."

I am to speak of this interest when dealing with absorption in an object. The group is so heterogeneous that, except the word intrinsic, I do not think we have another to denote it, especially as we include in it sensuous pleasures and pains. The word 'æsthetic' has sometimes been used for all including these, and the word 'contemplative' for all excluding them. But both words are best reserved for our sense of beauty and other qualities usually called æsthetic. This is the typical group of intrinsic interest, and, as it is often better to name the type than the general group, we may speak of æsthetic interest as representing the whole group of intrinsic interest. The types

of the three great groups of interest, then, are our theoretical, III. 6.
our moral, and our æsthetic interest.

As you may suppose from the multitude of names for our emotions, the further classification of our interest is a complex undertaking. We shall not require it for the present, and we shall find it a simpler matter at a later stage (xvi. 4).

There is never a bare experience of interest; it is always an interest in or of something that we experience. This is conveniently called its base. At present we are looking at interest in the object, and its base is the thought that we form of the object. We have divided the thought into three kinds or aspects, giving three bases for as many interests. Our cognitive interest has for its base the thought as knowledge; its base is the claim of a thought to be true. Our practical interest is always in making or preventing a change, and has the thought of this for its base. The base of an intrinsic interest is the object as it is thought on its own account; and the thought may or may not include a belief in the reality of the object. A tragedy, in which our interest is intrinsic and impersonal, affects us differently from and off the stage. The knowledge that it is real adds a base that is wanting from the stage; and this knowledge affects us not by the mere fact of its truth, but according as our thought of its truth commands much or little of the whole base of intrinsic interest of which we are capable. If the tragedy happened long ago or far away, it has nothing like the interest that it would have if recent or near, and nothing like what it would give if it happened now and before our eyes. Very often it affects us more strongly from the stage than when we know it to be real. Then the greater skill of author and actors gives us a fuller and deeper base of interest—a contemplative or æsthetic interest—than we can give to ourselves. They may hold us more than the horrors of a present war that we know to be real, though less, no doubt, than if the base were by actual seeing. It is not that the players make us think or assume their tragedy to be real. So, indeed, they may, as when the backwoodsman in the story drew his gun on the villain. But the addition of such a belief to the thought

III. 6. adds an interest of its own, which is not æsthetic, though also intrinsic.

We shall see (viii. 2) that while the same thought may be the base of all these interests at one time, one interest develops at a time, and represses the others for the moment, or for a long time. It does so by the thought being developed in its interest. Also it is a familiar fact that the prosecution of one interest may habitually repress others. But we shall also see that the result of every development is to offer a fuller base for the other interests, though there is no compulsion to take the offer.

§ 7. (*c*) Whereas in our thought of a thing we seek to conform to it, in action we seek to make it conform to our thought. Our experience of this practical attitude forms the third group of our experience about an object. It is the experience of our self as cause, but a species of that experience, and, first, of our self as acting on objects in a real or imaginary world. Of the wider experience of our self as cause I shall speak in next lecture (p. 100).

The experience is not the thought that we are acting, but the experience of acting, whether we also take thought of the fact or not. It is often, however, confounded with the thought, and also with the interest, especially our practical interest; and it will be necessary to distinguish it from them. Nor is it the experience of motor sensations; it is not our sense of strain or tension, nor of actual movement. When these are present, and are more than incidental, they are organised in the experience, and felt, as part of the means we have adopted; but they are not our experience of adopting them. Nor have we the experience when we do things accidentally; we then have only an afterthought that we have been the cause. We do not have the experience unless we have some forethought of the result when producing it.

The result we may, or we may not, intend. We may foresee it without seeking either to reach or to escape it, as when we work with unsteady hand, and when a haunting air begins in our head. There is then not merely a thought of what is coming, and that we are bringing it; there is experience of the bringing. Such are our experience of

uncontrollable impulses, and our experience of those that are III. 7.
controllable, but that run their course without our caring one way or another, not even so far as to consent to their running it. The experience of producing a change that we foresee, but that we neither seek, nor seek to avoid, is a considerable one. We need not consider it apart from the other, however, which includes the same experience, together with the addition that we intend the result. This is the complete experience of our practical attitude.

It is the experience that is specified by words like appetite, wish, desire, and will. The important thing is the experience of seeking, and not of the action due to the seeking. And so we include in the group our experience of wish and will when no action follows; we have it when our desires conflict, when we wish to remember a name that we cannot, when we decide to let things take their course, and when we wish a change in the past, or in the weather, knowing the wish to be futile.

The word conation has often been used to denote this attitude; but it suggests a sense of effort which may or may not be present; it is sometimes used for the faculty without regard to whether we experience it; sometimes also for the work of fixed ideas, and indeed for mere suggestion; sometimes for will as distinct from desire, and especially when the desire is a mere wishing. Perhaps these are not very serious objections, but no one regrets that ordinary language has refused the word. The word will, which is always used in connection with the highest form of the experience, is very frequently given the general meaning as well, both in technical and in popular writings; and in the latter this has certainly brought confusion. But, knowing that it has a general and a special meaning, we need have no trouble with the word, and even though it is used for the faculty as well as the experience, and sometimes indeed for physical forces. The same is to be said about the words impulse, appetite, and desire, when they are used in a general sense. They can all very well be used in a typical sense, that is to say, as examples of the general meaning. For it, however, and especially to remind us that we are speaking of experience and not of faculty, seeking is our best word.

III. 7. It is an experience that requires at the same time the other two attitudes towards an object, viz. thought and interest; but it is neither of them, nor a compound of them. To understand this is also to see more clearly in what it does consist.

§ 8. Seeking to achieve anything, whether physical or mental, is so different from taking thought of it that it might seem impossible to confound them. Yet that is done by several assumptions that are frequently made in explaining and in describing the experience. In explaining there is the familiar way of regarding and calling every experience an impression, and to this is due the easy passage that Hume's analysis has with readers of his essay [1] when he says that experience is all either impression or idea—impression when not traceable to any previous experience, idea when traceable to impression. But even when the notion of impression is seen to be a metaphorical way of explaining, there remains the tendency to describe our seeking as consisting of ideas, expectations, beliefs. It is because we assume that experience is all set before the subject of it, and so consists entirely of thought. But experience is never simply of what we think, and of the thinking and believing. Our experience of seeking is not, for example, to expect or believe that our present experience will produce a certain other, though it will; for we expect many a suggestion, *e.g.* the haunting tune or a harassing problem, to run its course against our seeking. Nor is it merely to forecast a course of experience, and an end that will satisfy us, for we do so in those cases. They are self-sustaining and self-developing courses of experience, and, if we desire or will about them, it is either to assist the current while recognising its power, or it is to obstruct it and again to recognise its independence by the resistance that it offers. Nor, therefore, is it right to say that "to will a given act is to think attentively of that act to the exclusion or neglect of the representation or imagining of any and all other acts." [2] This will be apparent when we consider the work of attention, and I shall speak of the error in connection

[1] *Inquiry concerning Human Understanding.*
[2] Royce, *Outlines of Psychology*, p. 369.

with the physical correlates of seeking and attending (xviii. 13). Nor, finally, is the experience of seeking simply a conviction that we are striving, nor our resolve a conviction that we shall certainly strive to follow a course. These are beliefs that we must have in willing, if there is any suggestion to the contrary; but there seldom is. And even if the strength of our belief were more often than it is a good measure of the strength of our resolve, the difference between them would remain. For the belief is not about its own strength, but about the strength of the resolve, that being the object of which it claims to be true. III. 8.

There is no need to take less common varieties of the error. It is enough to observe, in the first place, that every belief is true or false, and that that can be said of no resolve, desire, nor any seeking. And, in the second place, there is another general contrast of even greater significance, both theoretical and practical. When we set before us our desire, resolve, intention, as we often have occasion to do, we cease for the moment to have it for our actual desire, resolve, or intention. We arrest it in order to form a thought of it. All of us know what it is to weaken our purpose by the very act of increasing our reasons for adopting it. On the other hand, the result of our deliberating may be to increase the strength of our purpose, *e.g.* by adding a desire to be resolute, or by making defeat appear shameful, or by making our purpose more necessary or attractive. But, while we are doing this, we are interrupting the desire or resolve that we already have, in order to achieve another, viz. in order to strengthen the desire that we have.

Though our practical, like our emotional attitude towards an object is not a thought, it requires a thought of the object. Hence we exclude mere craving, need, or want, if, indeed, we can use those words when there is no thought of what is wanted, but only organic sensation. Our earliest hunger, thirst, and other organic demands, do not wait for the sight, smell, or other thought of what will satisfy them before they make themselves felt, and set up movements for their satisfaction. There is merely an instinctive course of sensation; and of mere sensation, you will remember, we are not speaking at present. But a creature that has anything to

III. 8. learn passes at once from such a condition to one in which there is some thought. It must at first be a poor enough thought of the object, still a thought of it; we shall see its nature when we look at the thought of absent objects that are expected at the lowest level of intelligence (xi. 2).

The object that is thought in all seeking has a certain character whereby it is called object in a special sense, viz. the sense of end. The thought is of a change to be made. In my appetite for food it is the thought not merely of food, nor of a particular kind of food, but of my eating it. In a desire or resolve to sing it is not the thought of a song or singing, but of my singing; in desiring another to sing it is of his singing. If he is already singing, I desire his continuing when, let us say, he threatens to stop. The point is that we do not desire what we already have; to use the word in that sense is confusing, for we mean simply that we like it, and that is only emotion. In all cases the thought is of a change from an existing to a different state of things, or from one that we think as existing to one that we should prefer. The object in aversion, or seeking to avoid, has obviously the same character if, again, we mean by aversion not merely a strong dislike, but a desire. For then there is not merely thought of what I dislike, but the thought of it as a piece of existence that I seek to remove or prevent.

§ 9. The tendency to describe our practical attitude as thought, and especially as expectation and belief, does not appear in our ordinary language about it, but the other tendency does so appear, viz. the tendency to identify it with feeling or interest, and to include wish, desire, and aversion, in a list of emotions. Desiring seems a species of liking, viz. the liking a change; and the word aversion, which technically is taken to mean the desire to be rid of what displeases one, is used in everyday speech to mean the displeasure or dislike (*e.g.* in v. 9). And if, as I said, one influential essay easily led its readers to an unexpected and mystifying view of knowledge by dividing all experience into impression and idea, another did the same regarding conduct, and even more easily, by identifying desire and pleasure.[1]

To take pleasure in an object is not to desire it. For,

[1] Mill, *Utilitarianism*.

first, we may take pleasure in an object without having a desire to do anything, or that anything should be done. That is so when the object is already in hand, for we cannot be said to seek what we already have. Taking pleasure is only coincident with desiring when their object is the same ; and, as the object of desire is always a change, they are coincident only when the pleasure belongs to the third or practical group of interest. But, secondly, even then, even when their object is the same, it is one thing to take pleasure, to foretaste the pleasure, that we expect from the change, and it is another thing to desire the change. They do not even always coincide. When we desire a change we always take pleasure in the thought of it, and when we take pleasure in the thought of a change, we usually desire it. We often desire it, indeed, when the desire must remain a mere wish because of other desires, or because we know that the end cannot be realised. But not always ; when we take pleasure in the thought of an imaginary, or an impossible event, we are not bound to the childish weakness of always wishing that things had been different. On the contrary, this is both a symptom and a cause of weakness in will (xvi. 7). The point, however, is not that desire of an object, and taking pleasure in the thought of it, are not coincident, and that the strength of desire may not coincide with the degree of pleasure. The point is that, no matter how far they coincide, to take pleasure in an object, real or imagined, is a different experience from desiring it. III. 9.

Indeed, like the merely cognitive attitude, it may, and often does, prevent our practical attitude. If, as we saw, in thinking the end to be desirable and feasible, and in thinking of myself as adopting and realising it, I prevent my seeking it for the moment by occupying myself in thinking, so in taking pleasure in the thought of an end, and in the thought of my resolving and striving, that is not to seek but to stay the seeking.

I have said that we can only desire an object that pleases us. It has sometimes been inferred from this that the only object we can desire is our own pleasure. Later (xvi.) we shall have to consider what we desire and how our desires

III. 9. grow, but the present point would not be affected even if the only end that we sought, if the only thing that pleased us, were our pleasure. Sometimes that is our end, but as the thought of it is one thing, so our foretaste of it is another, and our seeking it still another, requiring the other two.

§ 10. In seeking any end I must have thought of it and be pleased with it, but I only seek it when I give myself to it, and to realising it. An experience of doing this in its several varieties is an experience of appetite, desire, wish, resolve, and striving. In them all there is the experience of giving myself to the end, of making it mine; but it may remain at that, and then I merely wish or resolve, instead of going on to the experience of realising the end. This partial experience is developed from the whole, in the sense that our experience of the whole comes first, and renders it possible. If we look at the whole experience as thus analysed and defined, a word will then be enough about the part.

It may seem absurd to give a difficult and complex definition for an experience so familiar and at first sight so simple. I can only ask you to remember what I have said about definitions in explaining, and refer you forward to the difference between a real and a didactic explaining (xiv. 1). There may seem, however, to be a more serious objection. When we consider how early and universal is the experience of seeking—indeed, assuming that experience is of use and must grow, it is present very likely in all conscious beings —we naturally doubt whether the lowest of them (*a*) can have thought of an end, and (*β*) have the experience of giving themselves to realising it.

(*a*) We do not have to look away from our own adult minds to find an experience of seeking with the barest thought of end and means, and with none of ourselves. Frequently the experience is only possible because we have taken thought in the past, but frequently also we have the most primitive form of the experience, in seeking, for example, to remove ourselves from the source of a pain, or to recover our balance, or to intensify a pleasant sensation. The movements that we use as means are mainly reflex or instinctive; they need no choosing, and therefore no thought; a great part of them we do not even experience. So it is even in

our most enlightened actions. In order to our earliest experience of seeking we must already have had a purely instinctive course of action in the same direction, giving us a course of motor and other sensation ending in relief or satisfaction of the same want. If the instinctive arrangements were perfect and required no learning, there would be no need for the experience of seeking; this is possibly the case with insects, though their persistence is phenomenal. But the more imperfect the instinctive responses, the more the need of the experience; for, the more the need to distinguish an end from other results, the more we must feel ourselves realising it and not them. And this is very likely the case the higher we rise in the scale of intelligence. The movements to which our infant wants give rise are in great part indefinite, and largely dependent on being taken as calls for help. But it is in these rude movements following on our wants and leading to satisfaction that we have the necessary preliminary to our experience of seeking. At first the course is merely a course of sensation; movement follows on the feeling of need, and satisfaction on that again; there is no thought of what is needed or of taking action. The series develops in a way that we shall see, but that we have already seen to be the way of all learning. And the result is a development of the course from being a course of sensation to being a course not merely of expecting or thought, but of seeking or will. The sensations of want become the experience of wanting something, and the sensations of movement and strain the experience of striving. III. 10.

(β) To speak of giving ourselves to realising an end may seem to imply a more complex experience than so simple a wanting; but, if so, it is misleading. We have seen that so far is the experience from being a thought of self, and a contemplation of our giving our self, that either would be a conflicting occupation. The notion of giving ourselves points to the factor that distinguishes every experience of seeking from two others, with which we have seen it to be frequently confounded. One is the experience of our self as cause of a change that we do not make our end; the other is the experience of delighting in the thought of a change, but again without making it our end. Instead of

III. 10. saying that we give ourselves, it is equally common to say that we adopt the end, make it ours, or identify ourselves with it; and again, there is no thought of self, or of giving, adopting, or identifying.

It is only when we take thought of the experience that we distinguish its factors. And, to repeat, it is then that we distinguish the experience from others that are like it. The experience of our self as cause, the experience of attending only to an end, the experience of delighting in the thought of it, and the experience of delighting in the thought of our bringing it about, may each and all be present without the experience of giving ourselves to realising it. The difference is of the greatest importance in practice and in theory (xvi. 8); and that is why we do not include them under our general head of will or seeking. On the other hand, we include futile wishing, because in it we seek a change, though we do not seek to bring it about. Of the real strength of a useless wish there is no very good test, for there is no saying what we should actually be willing to sacrifice in order to realise it, and so there is plenty room to exaggerate without finding ourselves out. But the experience contains a real enough desire; and so, by the way, does many an experience (*e.g.* of hope, fear, and hate) that we name from the emotion that is also in it, and a more prominent part of it than the desire. A practical man gives little place to idle desires, because he delights little in the thought of what is impossible, or of how he would enjoy things if he had them. Other people are not so prevented, and their indulging passes readily into a vain wishing and regret. Their longing is real enough, though it might lead to nothing if opportunity offered, and if something had to be done. It would then be revealed to them, with more or less of irony, that their desire was for an end in an ideal world with ideal means, not in the real world, as they had thought, with its sweat and disappointment. And this is all we should mean if we said that therefore their desire was no real desire. We should not deny that the desire was felt, but only that they were mistaken in their belief about its strength in the manner that we are now to see.

§ 11. Wishing, desiring, resolving is one experience, and

acting or striving is another following it; but is there not III. II.
a power that intervenes to turn desire into action, and resolve into a real work of will? And must not our experience of this power be included under our third attitude, or form a fourth head of experience, say of energy in ourselves? The short answer is that every desire passes into action when it is not thwarted. But a fuller answer is necessary to remove the confusion of which the question is a symptom. And first, there are three familiar facts that will help to do so, and also bring us to the real source of confusion. This real source concerns not our practical attitude merely, but our cognitive and emotional attitudes as well.

The first of the three facts we have seen: it is one thing to think an object desirable, and another to desire it. This is a difference that forces itself on us every day. But, secondly, we may desire and yet not act, for our desire, or the corresponding neural process, is never enough, never the whole cause of the desired effect. Means are required as well, and they may be out of our power. However strong my desire to feel happy, to remember a name, or to move my arm, it may fail for the same reason as my desire to alter the events of yesterday. But, thirdly, our desire may remain a mere desire, not because the means are beyond our command, but because our desire is not strong enough. This is obvious when we refrain from dislike of the consequences, but it may not be so obvious in the only remaining case, viz. when we refrain from dislike of the means. My desire has overcome its rivals, you may say, and become my deliberate will; I have quite made up my mind to act, and yet, like Hamlet, I may not act. That is because you have broken down your mind again, proceeding to deliberate once more, or to enjoy the relief of a mind made up, or to foretaste the good that your action would bring, or simply to confess failure and turn away. But no, you may say, I keep desire and will enough, but want the energy; as if a mysterious force must be added to make desire or will effective, even with the means at command. But to say this is really to flatter ourselves. The difference is no other than that between believing that we strongly desire a thing and the actual strength of our desire. What has happened

III. 11. is that, when the moment has come for action, we think the course desirable, we even believe that we desire it, and we lament our lack of energy. But our belief is wrong, like many another that is too flattering to ourselves. As it is easy to desire to do a thing a year, a day, or an hour hence, so it is easy to believe that we shall without taking trouble with ourselves; and it needs uncommon honesty to take a less favourable view of ourselves. It is quite the same error in belief when we think that our desire to act now is strong, and yet are proving it too weak to overcome our aversion to bestirring ourselves. The aversion, observe, is a real desire, occurring, like every other, on an occasion that provokes it. It is only confusing to call it our inertia, and to regard it as offering a resistance different from that offered by conflicting desires. So far as the resistance is felt, so far as we are averse to action, the inertia has become a conscious desire. There is a disease of will in which the patient cannot act after making up his mind, and another in which he can never make up his mind; and the first, like the second, is an exaggeration of what is not infrequent in normal life. Every one brings it on himself who relies on the easy way of thinking, mourning, and resolving, to give strength to his desires, or, as we say, to give resolution and energy to his character.

But now we arrive at the real source of this and much confusion.

And, first, at regarding our experience as an eye or inner sense wherewith to see and measure our faculties. It is not a question of belief, you may think, but of present fact. The desire is mine, you say; I have simply to feel its strength. Yes, and you can feel it grow strong or weak, and, comparing it with another that you have at the same time, you can say which of them feels the stronger. But observe that many a time you have to distinguish between the real strength of your desires and their strength as you feel it. You have often been deceived, for example, about the strength of your appetite. The desires that you claim to be constant because they correspond to your loves and hates, you do not feel with the same intensity on all occasions of feeling them. And, when you compare intensities of the

same desire or of different desires, you cannot be satisfied with comparing them directly as you feel them, if you want to be at all exact. When we say that one desire is twice as strong as another, we might just as well say ten times, unless we measure not by their felt strength but by their acting strength. Their acting strength is shown in what we are willing to pay or sacrifice for their satisfaction. It is natural enough to think that we cannot be wrong about a desire that we are actually feeling; it is even more natural than to think that seeing is always good believing, and that we must know what is before our eyes. For here there is not even an eye to intervene and distort the object at which we are looking. III. 11.

And so we are brought to a simple difference, but the neglect of it is the ultimate source of confusion. It is the difference between our self with its faculties on the one hand, and our experience of self and them on the other. We shall see in the lecture after next that, though all experience is experience of our self and them, and is their work, neither it nor any faculty is ever an experience. To appreciate the chance of confusion you have only to remember that we use the same word, *e.g.* desire, for faculty and for experience of it, and that we talk indifferently of self, faculty, and experience as the agents of our action. But the nature of self and faculty has always to be inferred. And we cannot infer the real strength of a desire merely from our feeling of it. The feeling is one piece of its work, and, like seeing, is usually test enough for what we should believe. But, and always as a more ultimate test, we have to judge the strength of our desire from the course of our conduct, which is also its work. And especially we have to judge it from what we are willing to pay, and so from the desires that we sacrifice for the sake of it, and to which it thus proves itself superior.

What concerns us at present is not faculty, but experience; and the question has been whether the experience necessary for our action is all contained in the experience of desire as we have defined it, or whether there is not also experience of a mysterious energy intervening between our experience of desire and our experience of will and action.

III. 11. The strength of a desire at any time depends on many things—on our health and vigour, for example. Our desire to remain at rest is weak when we are strong, and strong when we are weak. And just as we should deal a little more honestly with ourselves if, instead of saying I have desire enough but want energy, we said I have the desire but it is not strong enough, so we must understand the passage into action of desire, will, and our other species of practical attitude. Provided the means are at our disposal, desires always do pass into action when they meet with no opposition from one another, or are strong enough to overcome it. The general nature of the struggle in experience we shall see in next lecture, where we take the second analysis of experience.

§ 12. The three functions of experience about an object have an obvious dependence on one another. Our practical attitude is towards things in which we have an interest of some sort, and our interest is in things as we think and know them. To know, to feel an interest, and to desire, is a familiar order of experience about an object. The later among the three must carry the earlier with them: we must think the object while we feel interest in it, and feel while we desire. But also the later affect the earlier. There is not first knowledge, then the addition of feeling, and then the addition of desire, for the things that we select to think have an interest for us, and the prevailing interest is one that calls for action. This mutual connection of our attitudes is perhaps apparent; it is to be expected from the general nature of experience, whose peculiar function is to bring the end to the beginning; but we shall see it a little more closely when now we turn to our second general analysis of experience, viz. the analysis of its course.

LECTURE IV

ANALYSIS OF EXPERIENCE (*continued*)

§ 1. ALL experience is a course, and so, when we distinguish between an immediate experience and a course of experience, it is but a relative distinction, if we refer merely to the length of time that they occupy. When I see at a glance, answer a question immediately, or grasp a point at once, there is some time involved, and its length has the same importance as it has in the exercise of skill, and is affected, as there, by practice and by our fitness at the moment. But, as a rule, we mean to contrast not the lengths of time involved, but an immediate with a mediate experience. All experience is on some occasion to which we adjust ourselves in thought, feeling, or act, and we may do so either immediately or only through a course of experience. The thought that satisfies us may need pondering, or we may have it without; an interest like fear may need reflection, or it may come on the mere shock of a sudden sensation; there are resolves to which we have to bring ourselves, others that need no considering; actions that require care, others that need none. Through practice, and other means of learning, a long course becomes short, and mediate experience immediate. I shall, therefore, take first the long or mediate course. I shall speak of the shortening and of immediate experience under our third head, where we are to put the two analyses together. IV. 1.

We may define a single course of experience as one that directs itself, every next stage in it being determined by the present one. We have examples in thinking out a problem, in repeating from memory, in listening to a voice, and in

IV. 1. carrying out any desire. These are easily distinguished from a mere succession of experiences, where the course is determined by casual sensations. When the sensations are sought, they are factors in a self-determined course; and for the same reason we have also to include an experience like reading a book or listening to music. Except at the entrance point of unexpected sensations, and of those occasional memories and other thoughts that come without an experience to introduce them, it is obvious that all our experience directs its own course. By this is meant simply that every next experience is due, or so far due, to something in a present one.

This self-direction is of two general kinds. One is direction in an old course, the other direction in a new.

§ 2. Two changes are to be distinguished in looking at the repetition of an old course. One is the new way of producing the course, owing to the old association of its factors; it is a new way of having the old course again. The other is a change in the course of any experience, and is due to the frequent repetition of the association. Both results are from past association, but it is important to distinguish them; and, for convenience, the first (α) might very well be called the work of memory, and the other (β) the work of habit.[1]

(α) The law, or general fact, of association is that, when any part of a previous experience is repeated, we tend to think the rest. The parts may have been together in the previous experience either simultaneously or successively, and they may or may not have had an internal or rational connection. What association does is to add a new kind of connection, often called mechanical. Internal connections belong to the experience, and give it coherence; but the mechanical or merely associative connection gives only cohesion. It is not a part of the experience, but simply a tendency to bring thoughts which, on investigation, we can trace to old association. The presence of the two kinds of connection often

[1] This is usual in ordinary speech, but in explanations it is common to find both words used for both meanings, or one made a species of the other. When memory is called a species of habit, or habit is called a species of memory, it is according as the writer happens to think habit or memory the more familiar notion.

makes it hard to distinguish them ; it is not always easy to say, for example, how far one is repeating by rote and how far with understanding. And we shall find how interdependent they are, from so simple a case as repeating a melody or a scene, where our memory of the parts is assisted by our grasp of the whole, up to our hardest thinking, where we should constantly lose ourselves if we did not lay hold, and retain our grasp, by the mechanical means of internal speech. IV. 2.

This effect of association whereby we are able to repeat an experience in a new way is very remarkable. It is so familiar to us that we may fail to see how remarkable, and, in picturing the work of association, we are apt to omit it. Of all mental structure and process those of memory are thought most easy to picture in the structure and action of the nervous system. But the distinctive fact is really hard to place : this, namely, that the brain associates experiences if they occur together, no matter through what different channels they have come, and no matter at what distance their areas in the brain.

Not, however, all kinds of experience. A course of memory is a course of thoughts only, and indeed of the thoughts that we call ideas. If some one begins an old yarn of his exploits, I can give myself the rest of it, but not my old interest in it, nor my old desire to hear it out, nor, perhaps, my old belief in it. I can remember that I had all these, and can think them out fully, but I do not have them now, though I have thoughts of them. If I have been bored by the story before, my being bored by it now is not due to that, but to the same cause as before, viz. to the reiteration. If I have had doubt or disbelief before, I have them again only if there is the same cause as before. And if I seek to escape, it is not because I escaped before. Nor do our sensations recur by this means, but only ideas of them. That is true even of those organic sensations, like nausea, buoyancy, and the quaking of fear, that we can give to ourselves fairly well without external cause. More obviously it is true of our special sensations. In certain of these, viz. sight, sound, and voluntary movement, the ideas may be so like the originals that their objects are called images of

IV. 2. the sensory objects; but others, *e.g.* heat and cold, smell and taste, it is as difficult to bring to the likeness of their originals as it is to bring the memory of a toothache.

It follows, but it is worth observing, that our three attitudes towards an object are not connected, when they occur together, like three thoughts. They are mutually dependent, they are occasions for the occurrence of one another, and their connection is affected by repetition, as we are to see. But it is an internal connection, giving them coherence; it is not due to their association. The new connection due to previous association occurs only when an experience introduces ideas for no other reason than that they, or the experience of which they are ideas, have been with it before.

(β) Repetition of the association strengthens the connection due to it, and frequent repetition makes it habitual. This is the effect of repetition on all connections: we learn habits of thinking and believing, of interest, skill, and conduct. These connections in experience are not themselves due to association, as the other is. An argument, for example, is not formed by its parts having chanced to appear together in experience, and so been connected. A piece of skill is not a series of movements that have become associated by their chancing to occur in succession. When the argument or the skill is repeated, it is repeated by the same means as at first, not by new means like a course of memory. It may also be repeated as a memory, but that, we have seen, is additional. By a habit of thinking, of skill, of conduct, and the rest, is not meant merely a facility in particular cases, *e.g.* in a certain argument, or a single dexterity; it means also a general facility. Repetition increases this too, and not by substituting a new kind of connection, but by making the old more easy.

The work of habit, custom, the mere frequency of repetition, is not to create anything new, but, first, to give fixity or strength, and, secondly, to lower the interest of the experience.

When we speak of the growth of a habit, we may mean two things. We may mean an increase in its strength, or facility, in making the same course as before. This is its

growth as a habit, and is due to repetition or practice. But we may mean its development, and that is not the work of custom. The development is to a new power, which it remains for practice or custom to make habitual. The development of the habit, so far from being its growth as a habit, is a growth in spite of it as a habit; it is a change of habit in some particular. Not repetition, but the want of it, eliminates awkwardness, error, and roundabout ways. IV. 2.

But secondly, there is experience that mere repetition of the course does serve to eliminate. The interest of any experience is more or less dependent on its novelty, *e.g.* wonder and surprise, fear and sorrow, delight in succeeding, and the misery of failure. And what we do habitually we do without the same keenness of desire, as well as without the same effort in striving. Against the loss is the gain in tendency, and when we no longer care for the matter, we may still keep up the habit. This gain in force has an important moral for our conduct, with which we are all familiar; but so has that loss. For we cannot remain in our old satisfaction, since it will not remain with us, and we become liable to an ennui which those escape who have remained at the low level of recurring appetites (xvi. 9).

§ 3. When our experience directs itself in a new course, it is still direction by every present experience occurring in the course. The direction may or may not be by thought of an end. It is not in a course of casual suggestion. Such a course is seldom a long one, but is frequent enough. Sometimes it is welcome, as in reverie, but often unwelcome, as in harassing and in merely wandering thoughts. Though a new course, its matter is old. This is obvious when it includes reminiscences, but also when these are absent. When, as in reverie, all may seem new, we find on examination that every next thought suggested is one with which the present experience was previously connected.

Again the fact is remarkable, and still more that the same is true when the course of thought is directed to an end; for thus it is true of every self-directed course of thought. The thought of the end may not modify the old course, as when I seek to repeat an experience exactly; or very little, as when I pick out the salient points and omit

IV. 3. details. There is more change when I seek to repeat in idea an experience that was originally sensation, interest, or action; and still more when I give some other general alteration, as in repeating an air with greater rapidity, or with more spirit, or in a new setting. Finally, we may have no concern with an old course, but seek something new, requiring quite a new course of thought. Yet, however new this course may be, if we examine the transitions in it from thought to thought, we always find that part of the first thought has been present with the second before. The same fact is expressed when it is said that all thinking is selecting, and that the creative work of genius is a playing the architect with materials already existing. And, after all, this is not so surprising when we remember that every self-directed course is a course of suggestion, and when we ask how, even to a genius, one thought could suggest another, with which nothing in it had any previous connection.

The more surprising fact is that we do not have to recall our past experience in order to make the selection; we are not aware of rejecting anything, or of selecting from anything. We direct the course with no more need to think of the means than in carrying out any course of physical action. In learning to walk we have to take thought of our going, but that directs the means without our knowing what they are; and, having learnt, we select the right means without having to reject the wrong ones. In a course of thought we do not first have a multitude of suggestions at every step, and then select the right one; we do not first bring materials before us, and then become their architect or builder. The essential thing to understand in any course directed to an end is not that we must have had the means somewhere in hand, but that we learn to select them, and hit a course to suit our purpose. We are never in want of suggestions of a sort; to escape from having them we must go to sleep, or be prevented from thinking by hard physical labour, or by paralysing emotions. But to hit the right suggestions without having to think of others is another matter.

Always the course begins in the thought of an end, and consists in what this thought can suggest as means to realising it. The means may be physical, or mental, or partly both.

I pointed out that the simplest experience of seeking presupposes an instinctive course of movements, and through them of sensations, leading from want to satisfaction. The want becomes a want of food or drink, the instinctive efforts become a course of action which this thought specifies, and thus directs. We have experience throughout the course, but only of a small part of the actual physical changes necessary to produce it. These conscious points are the points at which the course develops, as regards both our thought and our action in seeking. We shall have to see this more fully when we begin the growth of the mind ; and in following it we have to understand how, from so simple a beginning, we come to have the ends that we do, and how the thought of them suggests the course of thought and action that leads to their satisfaction. IV. 3.

The use of physical means to carry out our purposes is first of all the use of our organs of movement. They come into our conscious possession, and then under our control, in the simple manner that we have just seen, and that we shall further see in the acquiring of skill. A striking example is in the use of the muscles controlling our organs of sense. Or consider that we get possession of our voice, first as a spontaneous expression of emotion, and afterwards as an equally spontaneous imitation of tone and speech. The use of external physical means is all by means of our movements, including those movements of voice and gesture by which we command the help of one another.

§ 4. But apart from achieving physical ends we have to achieve mental ends. Sometimes they are achieved without trouble, and then we think, feel, or will immediately ; but often they have to be wrought in a course of experience. Let us now examine the course of experience in achieving them.

In every instance there is an immediate thought, or feeling, or desire, that does not satisfy us, and we proceed to improve or prolong it till it does. The course may be called a course of seeking, and of our seeking. It can be called a course of seeking, only if there is some thought of being better satisfied. Often we do take thought, as when we contrast our unsatisfying thoughts, feelings, and desires with

IV. 4. what they ought to be, thus setting them before us. But this needs a human grade of intelligence; and yet no animal is condemned to its first thoughts at any time, though it cannot reflect on them, nor to its first feelings or desires, but may feel them unsatisfactory, and arrive at better by a present course of experience. It cannot be said to take thought of its first thoughts, feelings, and desires; they feel unsatisfactory without that trouble. But we could not call the course that follows a course of seeking, unless the animal had some thought of reaching a better result by means of it. Any expectation, however, is enough, for an expectation is always of something or other to come; and so we shall call the course a course of seeking. And also a course of our seeking and of the animal's seeking. But, till we see what is meant by the work of self and faculties, it is better to continue to say, not that we work on our unsatisfactory experience, but that our experience works itself, or grows, into the more satisfactory form. You will not suppose, of course, that in order to grow, an experience, any more than a seed, must find the material for its growth in its own bosom.

In every instance, then, the growing experience begins in an attitude—a thought, feeling, or desire—that does not satisfy, and it works itself into one that does. We are to look (i.) at this working, and (ii.) at this interest, or feeling of satisfaction and dissatisfaction.

(i.) (*a*) The thought to be improved may be of so simple an object as a present colour or a taste; we improve it by making better use of the organ of sense by which we have it. When the thought is the perception of a thing, we seek other sensation as well, approaching, handling, and otherwise analysing the thing by actual movements. Or the thought may be a reminiscence of an absent object, and we seek further memory of it, trying, for example, to picture it. When the object is a statement, a theory, anything to understand, we work on the material that its author supplies, till we are satisfied that we have taken his meaning. And when it is a problem, a doubt, anything we have to solve for ourselves, we have to find the material as well as to work it; we have to find it in the knowledge we already possess, and

from whatever new observation and experiment it suggests IV. 4.
that we should undertake. In simple case or complex we find an object before us, of which we desire to form a better thought than we have. Our desire may issue in physical action, *e.g.* in setting our senses better to the object, in movements towards it, and taking it to pieces in order to understand it better. Or our desire may issue in the merely mental manipulation that, in various forms, we call analysing it, revolving it, comparing, pondering, debating, and otherwise seeking to grasp or comprehend it. As the words indicate, these modes of thinking are also modes of acting, the acting being not on objects as existing, but on objects as we think them.

We have a single word for denoting this important action in the word attention. The whole course of improving the thought is a course of attending to the object, whether it be a particular object, *e.g.* a physical thing to which we attend by a better use of our senses, or a mental object like an emotion, or whether it be a general or an abstract object, to whose various relations we attend, not by means of our senses, but by reflecting, revolving, analysing, and the other ways of thinking. And the attention may require effort, or it may be involuntary, as in a matter of shame, or in attending to a distracting suggestion or noise, or to a toothache. Always attention is a setting of the object before us; this is the first part of its definition.

But only the first and general part, otherwise we should make attending coincident with all thought, and that is neither a usual nor a useful application of the word. To attend to an object is not merely to set it before us, but to set it before us in order to a further experience of it. The further experience always includes our continuing to think it, but this may either be in order to think it better, *e.g.* to think about and understand it, or it may be in order to indulge our feeling towards it, or it may be in order to act upon it, as in watching an opponent, and in observing our laziness before spurring ourselves to effort. Attention is thus in one or other of our three interests in an object. When we lose interest we cease to attend, when we have to force ourselves to be interested we have an effort to attend,

IV. 4. when we cannot but take interest we cannot but attend. Both interest in an object and attention to it are matters of degree, and at a high degree we are said to be absorbed. Thus with respect to any object it is not attention and thought, but attention and interest, that coincide.

Besides this, the work of attention has, as I have said, its own interest, which we are to take in next paragraph when we have finished with the work itself.

(*b*) In describing the growth of a thought from one that does not satisfy us to one that does, we are describing at the same time the growth of our satisfaction. It is an intellectual satisfaction, and it is obvious that any intellectual interest reaches satisfaction in this way. But so also do we describe the growth of all our extrinsic and intrinsic interest in an object on any occasion. Suppose that the feeling excited in us at the sight or other thought of an object does not satisfy us. Frequently it then becomes the occasion of a practical attitude towards the object, as when we are in fear and anger; and the object may be ourselves, as when we are shy or remorseful. Then we seek a different feeling. But frequently it is not a new feeling that we seek. Our present feeling may not satisfy, either because we seek a fuller or merely a longer indulgence in it, or because there is a conflict of feeling, as when we like and dislike, or hope and fear, or feel sorry and angry, towards the same person and event. We resolve the conflict by thinking the object further in the interests of the disputants. And again if, instead of having a conflict to resolve, we seek a fuller feeling: we attend to the object, we take further thought of it, seeking not a better understanding in the sense of more knowledge, but what is sometimes called an æsthetic understanding of it. We dwell on it as we know it; we live it, and so feel it more fully. This is especially the case when our feelings delight us, *e.g.* love and gratitude, but also when they pain us, *e.g.* grief, pity, and horror. We shall see the course of the experience more fully when (viii.) dealing with the experience of being absorbed in an object.

(*c*) Finally, our practical attitude may not satisfy us; we desire without acting, though the means are at hand. Occasionally it is because the desire is too weak or too

strong to command the means ; but we need not distinguish IV. 4.
this from the usual case where we are prevented from acting by a conflict of desires, including our aversion to act at all. The conflict proceeds in a course of experience in which we revolve the object or situation in the interests of the disputants, and so the course can be described in the same terms as in a conflict of opinion or of emotion. As you may suppose, there is a great difference in the conflict at different levels of mind ; it is in this connection, for example, that we distinguish responsible from irresponsible minds. But there is a corresponding difference in each of the other two conflicts, and yet they have a general description, the same in both. The strength of a desire does not rise and fall as we may desire it to do, nor even as we may believe it to do, but a conflict of desires has the same general character whether it is waged in a responsible or an irresponsible way. And there is the same general description of it as of the course of the other two conflicts.

This is obscured, however, by a common way of speaking about it that we never use about conflicting thoughts, and seldom about conflicting emotions. Victory, it is said, falls to the strongest desire ; the strongest motive determines the will ; will is nothing but the last appetite in deliberating. We might speak in this way of any mental conflict, and indeed of any conflict whatsoever, if we merely meant that the winning side is the stronger and holds the field. But we do not trouble to say anything so obvious of other conflicts, and when we say it of a conflict of desires, it is because they seem to have their strength independently of us, and to assert their claims without regard to us, beyond our being their battle-field.

Especially we appear to contrast a conflict of desires with a conflict of opinions, where victory is given by our assent. But it is not always easy to give our assent. No doubt it is easier to change our opinion about an object than our feeling or our desire regarding it ; but only easier, and as a rule. In all three we make up our minds, and, if it often takes years of practice to make them capable of a difficult feeling or a difficult desire, it may also take years of study to make them capable of a difficult thought. The

IV. 4. quarrel is never confined to the first opponents. Thoughts conflict because, though their claims are inconsistent with one another, they are supported by the beliefs, and the grounds for believing, that make up the system of knowledge that we already possess. Here lies their strength, and here, indeed, lies their very power to meet and be felt as conflicting; for we often embrace contrary opinions that ought to conflict without any thought that they do. And, if we feel them to conflict, there is merely paralysis while they remain what they are. They have to add to themselves in order to succeed, and in order even that the conflict may continue to be waged. Knowing them to conflict we often bring the struggle to an end, admitting their claims with more or less of a grudge, and blaming the incompetence of our system of beliefs.

It is really the same in a conflict of desires at any level of intelligence. Among the sources and supports of a desire those that have not been learnt, and that are therefore harder to change, are far more numerous than among the sources and supports of a belief; and so it is easier, as a rule, to give up a belief than a desire. But, like beliefs, desires that really conflict may not be felt as conflicting. And, if known to conflict, they may yet be admitted, with more or less of a grudge, and we lay the blame on the system of our desires, called our character. So far as we experience the conflict, it is carried on in a similar way to a conflict of opinions: we bring forward supporting desires. And they are brought forward in the same way, viz. by revolving the situation that contains the conflicting objects of desire. As the strength of a belief depends on its position in the system of our beliefs, so the strength of a desire depends on the system of our desires. The strength reveals the strength or the weakness of this our practical character, and not merely on great occasions, but in the very hearing of a challenge, and in the outpost encounters that are always going on (xvi. 7). That is why from small occasions, and the very absence of great conflict, we are able to judge both a man's practical and moral character, and his character for knowledge and feeling, viz. his intellect and disposition.

§ 5. (ii.) The achieving has its own interest. The course

begins in an attitude that does not satisfy and proceeds to one that does. The satisfaction and dissatisfaction are with our attitude, with our work, and not with the object. They are the interest we feel in achieving a thought, a feeling, or a desire, as distinguished from our three kinds of interest about the object. And, you will remember, we do not set the attitude before us in order to be satisfied or dissatisfied with it. That would be to take a new attitude, having the first for its real object, a thing we often do at higher levels of intelligence, but only when the first already feels unsatisfactory. We take thought only then, unless, of course, we have a purpose like the present, or some one bids us reflect. When we do reflect on our attitude, we have an ordinary case of interest in an object. But it is with the first dissatisfaction or satisfaction that we are now concerned; and it is felt in the attitude—in the subject-experience—not in this made the object of a second thought. There is an experience of failure in it that is unpleasant, and an experience of success that is pleasant. It is never, of course, the sole interest of an experience; and we shall distinguish it best by taking separately our three types of interest about an object, and seeing its connection with them. IV. 5.

(*a*) We saw that our cognitive interest is in the truth of a thought; it is our interest in an object as real or as having such and such a nature. We saw, too, that this interest differs according to the value we put on the truth—not merely its extrinsic value, but its theoretical or purely cognitive value as part of a system, and so as a means for determining other truths. So far the interest belongs to the object as we think it, to the particular truth as we know it. But we have also the interest of grasping it, viz. the satisfaction of seeing it clearly and assenting or dissenting, and the dissatisfaction of being confused and doubting about it. The interest is most easily distinguished in our exercise on puzzles of any kind, for here the other interest is all but absent, the result of our seeking having little or no value for us, but only or mainly the search and the finding. In the pleasure of novelty, and especially in surprise and wonder, the two interests are obviously complementary.

(*b*) The same thing is to be said of achieving a practical

IV. 5. interest. There is pain in a conflict of desires, and a satisfaction in making up our minds what to do. And so it is in our practical attitude to things beyond our control. If in a question of opinion most people find it more comforting to take a side than to suspend their judgment, we all know how practical suspense may seem worse to bear than the worst that might happen. We either keep recounting the chances, passing from despair to confidence and back again, or we remain in one or the other according to our temperament; we do not make a final count and adjust our feeling to the odds. A Russian gunner in the recent war wrote that, when he saw every burst of shrapnel find victims in the men about him, he began to say at every flash of the gun against them, "Thank God, I am dead at last." The interest in achieving is again most easily distinguished from interest in the occasion when, as in games, the result has little or no importance. The whole fun in playing a game is in adjusting our conduct to a more or less difficult situation, and the pleasure is in overcoming, more than in the hope, and still more than in the certainty.

(*c*) An object of intrinsic interest pleases or pains us simply as an object of experience. But it is not an interest in which we have nothing to do; we have to think the object, and in a certain way. If we think it fully, and not merely in order to understand it fully, we enter into its spirit, we are absorbed in it, and have whatever emotion it is capable of giving us. The emotion is a matter of degree. We often have thought of objects like home and country, our aims and our errors, with very little feeling, because we do not think them fully, or because the fulness that we give is for the sake of our knowledge or our conduct. We only enter well into the spirit of a thing when we can enter spontaneously, and have no trouble in thinking or grasping the thing. But though we can, we may not. We may be prevented by the object, as when we seek to sympathise with another, but find something repellent instead; or by circumstances, as when we should willingly give ourselves to the music but are baffled by the conversation of others, or by cares of our own. Or, more often, it is our hardness, our selfishness, or our critical attitude, that prevents us from

yielding ourselves. The pleasure of success is in our sense of expansion, and there is pain in our sense of repression. This pleasure and pain in achieving, or failing to achieve, adds itself to our interest in the object, but, as before, can be distinguished from it. There is a luxury in yielding ourselves even to our woes, mental and physical. There is a pleasure in imitating apart from what is imitated, and from the pride of success. There is even a satisfaction in weeping with those that weep, as well as in rejoicing with those that rejoice; and with people, too, who need not be on the stage, but near and dear to us. A narrow and conventional life misses the pain of repression as well as the joy of a more reckless living; those whose habit it is to sit in judgment, rather than enjoy, have their spring of satisfaction; but the full well of life is only for those who can devote and lose themselves. Since it matters less in what they lose themselves, there is joy in the mere achieving apart from the special form of interest which they achieve. IV. 5.

§ 6. In taking the second analysis with the first we have not to add new attitudes to the three of last lecture, for we have been looking only at them. We have been looking at them as having to be achieved, and we have been distinguishing in each of them between our experience of the achieving, and our experience of the attitude achieved at any stage in the achieving. The difference is between two aspects that are separable, having their own properties and varieties, but are not separate. Our experience of the working or achieving does not come before the experience that is wrought; and the experience that is wrought is not apart from the working.

The difference between them is clearest in difficult courses, but it is also to be observed in courses that are habitual, in those that have been shortened till their result is immediate, and even in the experience called passive.

When a course becomes habitual there is still the experience of achieving it; and this has its interest. There is not, indeed, the same occasion for giving attention and other effort, and getting their interest; but there is a new interest in the action. A habit pleases, because it is a habit, even when the matter has lost its interest, and sometimes

IV. 6. when we had rather not follow it but for the pain of resisting, or of not acting at all. This is true in the exercise of general habits of thought, emotion, and conduct, as well as in particular habits, like putting our hands in our pockets, and mannerisms of all kinds.

A course also shortens, and not only in the time it takes, but, unless we seek to keep it as it is, by omitting parts, or by their better organising. It may shorten to what we do not call a course at all, but an immediate reaction. But still we feel ourselves acting, and not merely when it is physical, as in the exercise of any skill that we have learnt, but also when it gives immediate thought, feeling, or desire. This is apparent wherever there is attention, for with it there is experience of a course, however short, working to an end. We speak of attention being momentary and immediate, but it only occurs when a thought is being improved or maintained in some interest. So only does it occur when involuntary, and perhaps against our will; even then, though it is not our seeking, the attending is ours, and is felt as ours.

And, lastly, there is experience of acting when our thought is not attentive. This happens not only, in the first place, before a thought begins to better itself, but secondly, in immediate thoughts that seek no bettering. Such are the thoughts we give to sights and sounds when thinking of something else. The mere exercise of our senses, and the mere variety of sensation, are a well-known source of pleasure, and in fatigue of pain, whether their matter be interesting or uninteresting. The pleasure is in giving meaning to the sensations as well as in exercising our organs of sense; and the pain is in having to give it, as when a distraction annoys us, or when we are tired. Thirdly, the total object of our attention at any time contains a multitude of aspects to which we do not attend, though we think them. They are thought in the object, but, because they are not abstracted and made the object of our thought, it is not to them that we attend; and we may never have attended to them, or we may have attended to them and thought about them before. Now it is true that the less we attend to an object at any time, the less we think it, and the less interest

we take in it. But inattentive thoughts, even when they are called passive, are experience of our attitude as well as of the object, in the little experience that they give at all. IV. 6.

§ 7. Putting our two analyses together, we may place this aspect at the head of our general analysis of experience with respect to things in the real or any imaginary world. We take three attitudes concerning them, viz. thought, interest, and action ; each of these is experience of self and object ; and this experience of self may be called experience of self-activity, meaning merely that it is experience of taking and occupying an attitude. Experience of self-activity is thus the most general factor in our analysis. No experience is only of what we set before us, but of the setting or thinking, of desiring, fearing, and so forth as well, that we do not set before us. In these we have the experience that is sometimes described as an experience of self-activity. But it is a description of our subject-experience that needs explaining. It is not to be identified with our sense of effort, for that is not always present even in the experience of seeking.

Every experience is an action, since it is all a course of events, and every event is an action. The action is explained as the reaction of the self, mind, or brain. The mind acts in every experience, in the experience we call passive as well as in that we call active ; the one needs producing as well as the other. Similarly we say that our tissues are active in submitting to a poison as well as in rejecting it ; and, of course, of the two factors necessary in every cause both are active, both acting according to their own nature. Hence all experience is experience of self-activity, in the sense that it is due to self-activity. In the same sense a flying bird, rising or dropping, has experience of the earth's attraction, and, indeed, of the equation of gravitation. But I am not speaking of the activity to which an experience is due, but of activity as part of the experience. And of course I am not speaking of an activity in the objects that we experience, as when we look on a change in nature, or in our selves. I am speaking of our subject-experience as always including an experience of acting.

It is distinct enough in all experience of seeking, less so in a habit when we feel as passive as active, still less when,

IV 7. having given way, we lie entirely passive to the course of experience, least of all when the course is so short that we call it not a course but momentary, and especially when we are also inattentive. But in all experience beyond mere sensation the difference between subject and object is felt. It is not felt as a difference between object and object: we do not think the difference. It is felt as an attitude towards the object, as a dealing with it, viz. making it an object, enjoying or disliking it, inclining to it or averse from it. It is in this respect that we may call our subject-experience one of self-activity.

This is the general meaning of the word, common to all three attitudes. The special meaning confines it to our practical attitude, which does not include, though it requires, the other two attitudes, viz. knowledge and interest. In the general sense of the word these also are experience of self-activity about the object. In the special meaning the opposite of activity is passivity, whereas the general meaning includes the passivity, *e.g.* indulging as well as refraining, yielding as well as resisting, having the object before us merely, as well as attending to it. The opposite of the general meaning is quiescence—no action at all. Of it we have no experience. We have an object-experience of it when we wake and think that we have been asleep; but we have no subject-experience except of the subject in action.

While it is important to analyse our experience into the three attitudes, it is also important, first, to distinguish between the subject-experience and the object-experience in each. For though we easily avoid the crudeness of counting only what we set before us, as a child forgets to count itself when counting the number of people in a room, we are apt to assume that an experience of our self must somehow be a thought of our self. Indeed, the more we are interested in an object, or an occupation, to the point of absorption, the more we are said to lose consciousness of ourselves, whereas we never realise ourselves more, and never have more experience of ourselves. What we lose is thought of ourselves.

And it is important, secondly, to see that all these are attitudes of self-activity, in order that we may understand

their connection as well as their difference. Their mutual dependence, which we saw at the end of our first analysis, has appeared to be still closer in the second, where we have seen that at every point in any single course of experience all these attitudes are not only present, but determine one another; and we shall see this more intimately when we come to the growth of experience. But there may remain the notion that the three attitudes merely co-operate, or that the faculties producing them co-operate. The notion of co-operating is not a wrong one, but, like everything superficial that does not seem so, it is misleading. If, for example, we say that attention is added to thought—a third attitude to a first—in order to produce a better thought, we are not wrong, but we are obviously breaking up what is quite continuous, and saying nothing to include the connection that is felt. The thought is already an action, viz. the act of setting the object before us; we simply do not name the act in this case apart from the thinking. When we attend, we continue, in a more thorough fashion, the same act of setting the object before us, and now we name the act as an act, besides continuing its old name of thinking. IV. 7.

The self is divided into faculties according to the differences in its action. What explanation they give of experience, and how they are themselves to be explained, we shall proceed to see in next lecture.

§ 8. But a word in conclusion about the analysis of mere or undeveloped sensation. It is the experience that we have by way of our senses special, organic, and motor, without any learning. My reason for not including it is that the same structure is not present in it, or not so clearly. But there is a native tendency to take the same structure. Indeed it is possible that there is not merely a tendency, but some feeling of the difference between subject and object even from the first. We can only say, however, that there is a tendency to learn it, and that the learning begins in our first act of knowledge. We may therefore expect to find differences in mere sensation corresponding with those that develop when sensations are organised to form the higher experience. It is with this in view that we are to analyse mere sensation. I shall speak of the analysis into

IV. 8. elements when dealing with the definition of sensation (p. 213).

It may seem the simplest plan to look to the different sources and organs of sensation for a parallel to our analysis. And two at once present a claim. One is a parallel to the division of experience into experience of subject and experience of object. The other is a parallel to the three attitudes in the subject-experience.

The first is that our sensations of special sense correspond with our experience of objects, and our other sensations with our experience of self. And it is true that our special sensations are those whose data we have the greatest instinctive tendency to objectify ; but otherwise the parallel is wrong. There is the same ambiguity to avoid as we have just seen in speaking of our experience of self-activity ; for here, too, 'experience of' may be taken to mean 'experience from or due to' ; and with that at present we have nothing to do. And, of course, the difference between subject and object in experience does not correspond with the difference between our self and the world, that is to say, between our real self and real objects. For our whole experience—object in it as well as subject in it—belongs to our real self. The object in it is whatever we think, and there is no subject in it unless there is also object.

The second comparison continues the first ; it distinguishes three groups of sensation in accordance with our three attitudes to an object. The use of our senses corresponds with thinking an object ; our organic sensations are very closely connected with our interest, especially with emotion ; and our motor sensations, other than those included in these two groups, with our experience of acting on the real object. But we should at once fall to dispute and conjecture if we sought to localise the factors of our analysis more definitely. I shall deal with the question when we come to consider the correlates of experience (xviii.). And so we must continue to confine ourselves to experience itself.

§ 9. In a mass of mere sensation the sensations are not distinguished from one another as they are when part of a higher experience. The process of organising them does not simply add connections to a multitude of elements

already separate. The elements are not given separately but in mass, and, though the differences are felt, it is not as when they come to be distinguished and connected. With such a mass we may begin our lives, but, just as there are always things that command our attention more than others, so there are parts in the mass that we tend to make object. And when we begin to attend to them, we have an experience of self as subject, as well as of them. It is made up of certain other parts of the mass of sensation; these are now felt as attention to what is made object, as interest in it, and as acting with respect to it. The rest of the mass remains an experience of neither subject nor object. But later this too comes to be worked up in the same manner, and ceases to be mere sensation. When more than half asleep, or when worn out, we may fall to a condition of mere sensation. And in our full waking life mere sensation is very likely present, though then so weakly that it needs proving whether we have not organised it as part of the subject or of the object in the experience. IV. 9.

For usually we find organisation when we think to catch merely sensation. In response to the stimulation of our special senses we probably objectify all the matter that we have at any time from them all. For it is not only the particular object to which we are attending that we make object. We think it as belonging to a world of which at the time we have other sensation; and therefore, however indefinite these other sensations may be, they are not mere sensations. To meet this mass and variety of external stimulation we have a subject-experience that includes a variety of organic and motor sensations. These, therefore, are not mere sensations. They are sensations of using our senses, together with the organic and motor sensations that are involved in our interest and action about both the special object of our attention, and the total object. Finally, besides the external stimulation to which we make all this response, there is an independent stimulation from within our bodies. When marked, and especially when painful, we remark it, and have thus an object-experience of our self. When we do not remark or attend to these organic sensations, they are not, as a rule, mere sensations. They are felt

IV. 9. as belonging to our self quite as all data from special sense are felt as part of nature, the total external object. And, since our self as an object of special sense is included in this object, they are often felt as belonging to object and subject at one and the same time.

It is not difficult to see in mere sensation a correspondence and preliminary to our three attitudes. (*a*) We have seen it in regard to our practical attitude. Sensations come in a self-directed course, reflex or spontaneous, which is the necessary preliminary to our experience of seeking. (*b*) To thought corresponds the tendency to objectify. (*c*) And corresponding to our interest in objects are the pleasures and pains of sense, and our so-called instinctive emotions. This last correspondence brings us to the point that I postponed when speaking of our interest in objects. Our interest in objects is our experience of being affected by them; and I am now to point out that the pleasure and pain of mere sensation may also be called interest, but that, not being interest in an object, they are not emotions, and that the so-called instinctive emotions are, properly speaking, merely organic sensations.

When we come to objectify the content of a pleasant or painful sensation, we very often include the pleasure or pain as part of the object. In the case of organic sensations, indeed, we make them the substantive part; we speak of headaches, gnawing and stinging pains, making pain the substantive and the rest a quality of the pain. With other sensations we do the opposite, speaking of unpleasant sounds or tastes. And it is sometimes said that sensuous pains and pleasures are not to be grouped with higher interests, because they are objects in which we take these higher interests. To be displeased with a toothache, it is said, is not merely to have it; it is a subject-feeling, an emotion, having the ache for its object. True, but we constantly make higher forms also our object, have an emotion about an emotion, and yet feel both. When an artist is pleased with the beauty he has created, he is also feeling the beauty. One may be sorry to find oneself glad at another's ill-luck, and glad to find oneself sorry or remorseful. But, though we may group sensory with emotional pleasures and pains, it

is only the latter that we call our interest *in* the object. IV. 9.
Our sensory pleasures and pains when objectified might be called the interest *of* the object, and, in mere sensation, the interest of the sensation. It is only so far as they are organised in the subject-feeling about an object that they are interest in it, or emotion. There is a theory, of which I shall have occasion to speak when dealing with the neural correlate of emotion, that emotions are organic sensations. But it is not possible to take this for a definition of emotion, and say that organic sensations are emotions. Just as there is no desire, no seeking, so there is no emotion, except there is thought of an object. The experiences preceding these are called instinctive desires, and instinctive emotions, only by anticipation ; they are motor and organic sensations not yet organised into desire and emotion.[1]

We find the same correspondence and preparation, if we compare the course of mere sensation with the course of experience according to our second analysis. Every successful stimulus gives occasion for a course of sensation in some interest. It is a self-directed course, beginning in an experience that does not satisfy, and proceeding to one that does. It is self-directed, for every present sensation brings a movement, which gives and brings further sensation. But it is not a course of seeking, because the mere sensation includes no expectation nor other thought of the end. The ends that are thus unconsciously produced correspond to the three interests that we have distinguished as cognitive, practical, and intrinsic. Corresponding to the first we have, for instance, the instinctive movements in our sense-organs to secure a clearer or a fuller sensation ; there is a remarkable example in the instinctive movements of the eye. Corresponding to the second we have, especially in animals, the instinctive manipulation of things, instinctive movements to or from them, persistence against obstacles, and the restless-

[1] "The young infant does not feel a desire for food but hunger. If we call it a desire for food we are committing 'the psychologist's fallacy.' Preyer is convinced that in many children certain impressions (dogs, cats, darkness, etc.) awaken fear before there is thought of danger. Still more emphatically is the same thing present in young animals. The facts are right enough, but do they show the presence of what we call fear? Can there be fear without the slightest thought of danger?" (Stumpf, *Zeitsch. für Psychologie*, xxi. p. 52).

IV. 9. ness that goes with a sense of want. And in all instinctive indulgence or absorption in a sensation we have a parallel to the third, viz. to the experience of realising an intrinsic interest. I shall give some illustrations of the instinctive course of sensation at the end of next lecture.

LECTURE V

THE DIRECT EXPLANATION OF EXPERIENCE

§ 1. THE best guarantee for the clearness of any explanation is to be clear about the problem; and nowhere is it more necessary than in an explanation of experience in terms of mind, faculty, and experience itself. v. 1.

In the beginning of our conscious life we achieve experience immediately, and purely instinctively. From this we grow to a fuller and higher experience. Sometimes a thought, feeling, or resolve requires to be wrought in experience, before it will satisfy us. But we also learn to succeed immediately, and then, because the power has been learnt, we do not say it is purely instinctive. We may say, if we like, that it is instinctive and works instinctively, because it works immediately; or we may notice that such is a common way of speaking (§ 8). Apart from a certain growth without learning, of which I shall speak in its place (xvii.), the mind grows by its own working, and its way of working reveals its organisation. We know, for example, by means of what we have known before; but how we use this knowledge without having to think about it, how it gives depth of feeling, how we seize a point, how hold a mass of knowledge in a single thought, and drive new courses to results that surprise ourselves, these are questions of the organisation that our minds have learnt to take.

We explain every experience as due to the reaction of our mind on an occasion. We may take as the occasion a physical stimulus on an organ of sense; then sensation is the reaction of our mind upon that. Or we may take sensation as the occasion; then any instinctive course of action

v. 1. and sensation that it initiates is the reaction. Or, if the sensation becomes or begets thought of an object, the thought is the reaction, and so are any interest and any desire about the object. If there is a course of thought, feeling, or conduct, then every part of the course is occasion for the next. So it is when, for example, a creature is looking for food. And when we are looking for the solution of a problem, every present experience is occasion for the one to come, provided we keep to the course. Obvious though the point is, there is nothing more necessary to remember than this, that when we explain the action of the mind it is always its action on an occasion. The mind frequently starts the occasion for itself, but always because it had occasion, organic or other, to do so—an occasion that it did not have, say, the moment before. We are not to ask how the mind reacts on a physical stimulus, and so has its purely instinctive experience. To that question there can only be a physical answer. The occasions with which we are concerned are already experience, and ultimately, of course, they are purely instinctive experience, *i.e.* mere sensation.

Now, what is our mental action on any such occasion? Always this: it develops the occasion. We turn sensation, for example, into knowledge of an object, have fear of the object, and take steps to be quit of it. Or the occasion is something we happen to remember, and we develop thought, feeling, or will about it. Or it is a question we answer or try to answer, or a plan we seek to form, or, having formed, to contemplate or to carry out. It is always this developing of an occasion that we have to explain, whether the developing is immediate, or whether it occupies time, and whether it is so easy as to be inevitable, or so hard that it is all an effort.

So far of the scope of our question, and what exactly we have to explain. Later (xvii.) we shall see how the direct explanation extends to all the conditions of experience. Let us turn now to the terms of the explanation.

§ 2. We constantly speak of three causes of mental action without, as a rule, intending any great difference. Sometimes we make the cause to be an experience, as when we say that pain or hope induces us, that a word suggests

its meaning, and a purpose the means to accomplish itself. v. 2.
But again, secondly, we ascribe our action to faculties or character, as when we say that memory gives meaning to words, reason discovers means, will executes our purposes, and that according to our disposition is the way we take a loss. And thirdly, we ascribe everything to self, and say I remember, I find the means, and I grieve or am indifferent. Still another way is to ascribe our mental action to laws, *e.g.* a law of association, laws of thought, of emotion, of attention, of anything; and, of course, they are as many as we like to count. But to call a law a cause is always confusing, and usually due to confusion. Mental laws merely state the behaviour of one or all of our three causes, viz. experience, faculties, and self. And so we shall not call it a fourth way.

Of the three, we speak most frequently of self as cause; and we may always do so, but simply because we need not specify the other two, which are its parts. For the whole is nothing over and above its parts, namely, its doings and its faculties. If you do not think its faculties to be a mere collection, there is, we saw in the first lecture, no contradiction between saying that it *is* them and that it *has* them. If we group them into characters, *e.g.* intellectual, æsthetic, and practical, it is the self that we are dividing into three; and according to the number of faculties that we care to distinguish in each is the number of parts into which we divide it.

It is never our whole self that we experience as subject at any time, but only, we saw, the self-activity required by an occasion. As we experience our self differently according to what we are doing, so also there is a difference in the self engaged when we say I remember, I sympathise, I am absorbed in an object, or I barely notice it; we simply have no more need to specify the difference than when we say of a stone that it is hard and that it is heavy, making the stone the subject of both. But just as we may discover the property or 'faculty' of a stone which makes it hard, and that which makes it heavy, so we may discover and specify the faculties of self. And remembering that a stone would not be hard if it had no weight, and yet that weight and hardness do not vary with one another, you will not suppose that

v. 2. mental faculties must be separate from one another if they are separable. When, then, instead of saying I produce my experience, we ascribe it to my experience or to my faculties as its cause, we are only specifying the self as cause more nearly. To remove any doubt about it you have only to remember that a cause is always a set of conditions, and that the set of conditions producing one experience cannot be quite the same set that produces a different one.

But how are we to adjust the claims of the other two, viz. of experience and of faculties, to be the cause of our experience? The answer is that experience is the conscious occasion, and the rest of the cause—all the reacting part—is faculty. There is nothing strange in speaking of either as the cause without mentioning the other, for we do so constantly when we specify the cause of any kind of effect; we mention the factor that strikes us as important, and assume that the others are known. So we ascribe a fire to the match, or to the wood, or to the oxygen.

Especially we mention the factor that finally completes the set of conditions required for the effect, *e.g.* a match as the cause of an explosion, a blow as the cause of pain, a desire as the cause of movement, an idea as the cause of another. Distinguished from the other factors in the cause, this is the one that is called the stimulus or the occasion. When we say that the hearing of good news makes us glad, that the thought of the gladness makes us smile, or want to sing, and that the want makes us actually smile and sing, we are only stating in each case the occasion as cause. In this example the whole is a course of experience, and each occasion comes before its effect.

But we also analyse simultaneous experience in the same way, viz. into part of it as occasion, and the rest of it as the result of our reacting. And the line between occasion and reaction is still drawn at whatever point we begin to question; it is quite optional. Thus, in analysing the thought of the news, we might take the physical stimulus for occasion and the whole thought for reaction, though, as I said, it is going beyond our province to take the merely physical occasion. Or we may take the mere sounds for occasion, and take the action to begin from our distinguishing

them. Or we may take this for the occasion, and ask about our making words of them. Or we may take the words for occasion, and ask about their special significance for us. Or we may begin at any higher level. We shall find that these are not a mere series, but that the lower levels are determined by the higher, though the higher are only possible on occasion of the lower. Similarly at any cross-section of the course of our experience on hearing the news. For the thought of the news remains with the gladness, both with the desire to sing, and all with the singing. And they remain not quite the same, but vary with one another, *e.g.* with every new suggestion in the thought. These things obviously make the question very complex, but they do not alter its nature. v. 2.

§ 3. Besides the occasion there is (*α*) always another factor in the cause, and (*β*) it is never another experience, but (*γ*) the self specified as this or that faculty. To be clear about these three statements is to avoid much confusion.

(*α*) The first is apparent, but needs observing: an experience never evolves another from itself. What it is indifferently said to suggest, become, produce, or beget, was no part of it; and it has the power at all, only because there is another factor besides it. For the cause of any event must consist of more than one factor. To see this you have again only to remember that it produces its effect at one moment, and not the moment before.

(*β*) But it may not be so apparent that the other factor is not an experience. Being accustomed to think of ideas on the model of physical things and forces, we are apt to suppose that they can add themselves together, fuse into something new, and contradict, or otherwise conflict, with one another. Such language, being taken literally, has proved very misleading. It will be sufficient for us to look at these examples of it, viz. at the adding, the fusing, and the conflicting of ideas.

No one would think that the thought of two added to the thought of two must give the thought of four, for, of course, they may not in a child. And only a careless person would think that the thought of one added to the thought of one makes the thought of two. But it may seem that the

v. 3. two thoughts might add themselves together and be the single thought of one and one, and, in general, that the single thought of any complex object is due to a multitude of thoughts adding themselves together, and especially if the object is an object of sense like a melody or a landscape. Our thought of any complex object may correctly be said to consist of many thoughts of many objects. We shall see, indeed, that it is a system of the many thoughts, and not a collection of them. But it is one thing to say into what the thought can be analysed, and quite another thing to say how it was made. It was made by giving form to a mass of sensation, as in hearing the melody, and by giving meaning as well, *e.g.* in seeing the landscape. What meaning is given depends, of course, on the self that sees, and this on what it has learnt to see. We all began by seeing only a splash of colour; we formed this single simple thought of the object, and now, with the same stimulus, we form a single complex thought of it.

We are even more liable to confusion in speaking of the fusion of thoughts or other experiences. We say, for example, that the sensation of purple is the fusion of a sensation of red with a sensation of blue, that my perception of a leaf is the fusion of perceptions of colour, size, and form, my thought of Frenchmen a fusion of parts selected from my experience of individual Frenchmen, that despair is the fusion of a desire with the thought of its defeat, and so on. We may mean several things in speaking of such fusions. Sometimes we only mean that the experience is complex, and then we are no more wrong than in saying that a tree is a fusion of root, stem, and branches. But to say that the tree is due to their fusion would, of course, be absurd, even though the parts could be taken apart, and no longer be parts, but things on their own account.

Finally, when we ascribe an experience, *e.g.* perplexity, to a conflict of ideas, emotions, or desires, we might think that the factors of the cause, that both factors, are simply experience. But we saw that the conflict is only the occasion for a further development of experience by the introduction of new factors in support of either side; and it needs the self not only to supply these, but to produce the

very sense of conflict and perplexity. We often find ourselves with mutually inconsistent beliefs, or feelings, or impulses, without being aware that they are inconsistent. That is a further experience, for which they are only the occasion, and not the whole cause. v. 3.

(γ) Neither the self nor any of its faculties is an experience. It would be absurd, of course, to suppose them anything so evanescent; and we saw that the self is known, as we know anything, from what it does. Hence it is known to ourselves from our experience; all experience is experience of self, and now of this, now of that faculty. We do not very often make our self or a faculty the object of thought, feeling, or desire; and brutes are not supposed to be able to do so at any time. But they and we in thinking, feeling, desiring, experience our selves and our faculties, and are our selves and faculties at work. And when, on occasion, we take thought of ourselves, this experience is the material that we set before us in order to form our thought of our self, faculties, or any portion of our character. We are notoriously liable to prejudice in forming such a thought, but we may be more correct than others who have no prejudice about us, but have only the sensible outcome of our experience to go upon. Especially they cannot see our grounds for believing that we are capable of better work. We alone have our experience, and it is all experience of our self and faculties; it is our self working. But the working is neither self nor faculty; it is a process due to them, but they are not a process, not an experience.

§ 4. To distinguish a faculty from a subject-experience of it is as necessary as to distinguish a real object from an object-experience of it. But the difference is very frequently ignored, because there are two erroneous reasons that seem to make it needless.

While we readily distinguish thoughts from their real objects, we may be far from clear about the difference; and to this, indeed, is due our confusion about thoughts being general, abstract, vague (p. 316), and especially about their being true (x. 2). Still we are constantly compelled to recognise the difference between things as we think them and as they are. It is not so with the difference between

v. 4. our experience, and our self with its faculties. They are not our experience of them, but there is no sense-organ to help us to separate them from our experience of them, as it helps us to separate a real colour from the colour as we see it. And we are neither compelled to take thought of our self, as we are compelled to take thought of external objects, nor, if our thought is wrong, are we so readily compelled to correct it. Hence if we are so easily satisfied with thinking that our senses act like mirrors or means of impression, it is not surprising that we should be vague about our experience of self and its faculties. We assume the same metaphors to account for our experience of them: we suppose that they somehow mirror or impress themselves on themselves, or on an inner sense that we invent for the purpose, or even on an abstraction like consciousness. It is obvious, therefore, that we have little cause in practice to understand the difference between faculty and experience. In an explanation, however, we have every cause.

Provided there is really an explanation. But the other reason for ignoring the difference is that there appears to be only a mysterious, or else a merely nominal explanation by means of faculties. If we say that faculties are not thoughts, emotions, resolves, nor any other experience, we appear to throw all explanation by means of them into a mystery of unconscious mental action. And to say unconscious mental action is to say that so far there is no direct explanation, but only the indirect or physical one. We have seen (ii. 11) that the explanation is merely nominal if, for faculties, we merely take agents or forces named after the experience that they are then said to produce. It is no better than nominal if we add that a faculty works only in reacting on an occasion. But it makes all the difference if we can say how a given occasion is the occasion for just the faculty that it does command, and how the faculty produces the experience that it does in the given case.

That is the explanation we are to expect, and that is why we must follow the growth of the mind. For always what self or faculty does is to develop the occasion. Whatever the experience we take for occasion, we have to know how it acts as a stimulus commanding the reaction that

develops it. We cannot do this unless we are able to analyse v. 4.
the occasion itself, and know how it in turn has had to be wrought from occasion and faculty, till we come down to our work on an occasion or stimulus that can only be read in physical terms. And as with the occasion, so with the faculties that act on it: we know how they act only so far as we know their growth beyond the stage at which they are called pure instincts. Beginning with our earliest form of experience, with sensations, feelings, and impulses, that need no learning, we have to consider how we grow to form the complex thought, emotion, and will of our adult experience. And, finally, we have to follow the growth because we can never say why the mind must grow, but only how it does. That, indeed, is all that our knowledge usually allows us to say of the growth of any living thing; but we are apt to forget it in dealing with the mind, and I shall have to return to it when speaking of stupidity.

§ 5. Let us now return to the meaning of a mental faculty, and of the species of mental faculty called instinct. After looking at the confusion about these words, we broke off at the end of the second lecture to analyse experience, and to see what explanation of it we expect. A mental faculty being simply a power to experience, there are thus two ways of specifying or classifying them, viz. (*a*) according as we seek to describe experience, and (*β*) according as we seek to explain experience.

(*a*) In the first way we simply ascribe an experience to a faculty as the power of producing it. We may take any experience, or aspect of experience, for our unit of achievement, and speak, for example, of a faculty for fear, or for matching colours. Indeed, we may take the unit of achievement without reference to experience, and speak, for example, of a faculty for blundering or for quarrelling. Obviously, there is no explanation of an experience in ascribing it to a faculty. We do it simply to describe the mind that has or produces the experience; and we select our units and faculties according to our intention in describing. Considering the vagueness that may go with the notion of a mental faculty, the first thing is to see that in taking units of experience and assigning them to faculties, and in taking

v. 5. connections among the units and assigning them to connections among the faculties, we are making no explanation; we are merely saying that the real self has the power of having or producing this and that experience.

The power of having an experience is often called a capacity, and is sometimes distinguished from the power to produce the experience, which alone is called a faculty. But as the mind has no experience that is not of its own producing, the distinction is merely confusing. And we should only emphasise the confusion if we took capacity to mean the power of being affected by a stimulus, and faculty the power of reacting; for every change, however forced on anything, is due no less to the nature of the thing that suffers it than to the nature of the force.

Most of the faculties for experience of which we ordinarily speak are merely descriptive; they are faculties for this or that experience of the same name. As it is useful to have a scheme in terms of which to analyse all experience, so it is useful to have it for analysing and describing minds in a systematic manner. The scheme that we adopted in analysing experience is with a view to its explanation, but it is quite as useful for this purpose. It begins with a single general heading, viz. the experience of self-activity about an object, takes for its most general species thought, interest, and action, then species of these, viz. sight, reasoning, pitying, striving, and so on. For each of these we have a faculty, and to their mutual connections correspond the mutual connections of their faculties. Each, however, denotes only one aspect of an experience, thus excluding those that may be indispensable to it; thought, for example, is distinguished from intellectual interest and effort. This, of course, is needless and inconvenient in describing people, and so we find included in any unit not merely one aspect but the others so far as the one involves them.

The result is the grouping of faculties into characters. They have three main heads: intellectual, emotional, and practical. It is a division according to the three functions of experience; under each character we take one of the functions, and include our whole ability to carry it out. We

include in our intellectual character the interest and will with which we think, and pursue knowledge, on any occasion; in our emotional character we include the necessary thought and will; and in our practical character the necessary thought and interest. It is also a division according to our three groups of interest; from this point of view, every character includes the faculties of thought and action necessary to achieve its interest. Each head of character has its own species, *e.g.* a logical, a sentimental, an energetic character. It is because the three groups are so well marked by the difference of interest that the word character is appropriate; we shall see this in concluding our account of the development of intelligence (xvi.). But other units may be taken, and any aspect may be taken for characteristic, *e.g.* a dull or a brilliant character, an obstinate or a pliable, a frank or a suspicious, a superficial or a solid character. Always the word is descriptive and not explanatory. When we speak of a person's character without specifying it, we may, according to the context, mean all three, that is to say, his whole self; or we may mean the one that is most prominent in him; but usually we mean the one that is most important, viz. his practical character, and especially the most important part of it, viz. his moral character. v. 5.

§ 6. (*β*) The other analysis of the mind into faculties is not for description but for understanding. It is in order to explain the descriptive faculties and their working. The factors that it finds are also, of course, powers or faculties of the mind, but, unlike the faculties of which they are factors, they are not experienced except in the sense that experience is due to them. There is no question as to whether the descriptive faculties are experienced. The case is quite analogous to that of the properties that we ascribe to an orange. We have experience, viz. sensation, of its colour; and our experience, we say, is due to its colour. We can analyse the colour into its shade, intensity, extent, all of which are experienced, and so we can analyse our faculty of thinking, or taking pity, into what we feel when we think and pity. But when we seek to explain the colour of the thing as a cause, as the cause of our sensation, we do not analyse it into factors that we feel in the colour, but

v. 6. into factors that we do not feel at all. It is the same when we regard our faculty for thinking as producing thinking, and our faculty for pity as making us pity. And observe especially that you may demur to saying that the colour of an orange is the cause or stimulus of our sensation. It is not the colour, you may say, but the factors into which physics analyses light and its sources that are the cause; we only say it is the colour till we know better. The same is to be said when we regard mental faculties like reason or sympathy as cause of our experience of thinking or pity. It is not wrong, but it explains nothing. As it is the colour, so it is those faculties that we have to explain. And the explanation of a faculty consists in analysing it not into anything that we experience in it, but into the conditions of the experience after which it is named. These conditions, of course, are also faculties of the mind, just as the orange has invisible powers that account for its colour. If we care to speak of them as the unconscious faculties of the mind, we are doing nothing more mysterious than when we speak of the invisible powers of the orange.

Thus in three ways the comparison is instructive. In the first place, no one supposes that the invisible powers of the orange are the visible ones stripped of their visibility; neither are the unconscious faculties the conscious ones stripped of consciousness. In the second place, it easily passes into an error, the error of taking the object of sensation for the stimulus (vii.), to suppose that the visible property is the cause of our perceiving it. The colour has to be explained, it is not the explanation; and so it is with any conscious faculty. In the third place, as it is the aim of every physical explanation to destroy the singularity of the faculties or properties of matter, so it is the aim of the direct and every explanation of the mind to destroy the singularity of its faculties. The conditions producing a colour connect it with other colours, other facts of radiation, of wave-motion in any medium, and so on. It is in the same sense, and for the same reason, that we explain a mental faculty that we experience by faculties that we do not experience.

§ 7. When a faculty is all inherited, and thus purely

instinctive, the explanatory analysis can give its factors only v. 7.
in physiological terms, as faculties, so to say, of the nervous system. And so only can we explain the powers of growth and decay that are not due to experience. But, so far as a power has been learnt, we can state, first, the conditions necessary to its learning, and, secondly, those necessary to its working when learnt. There are examples of the first in our power of forming associations, and of forming habits of skill, thought, interest, and conduct. For, in forming these, we are usually occupied with the present, and not with forming them ; but, whether we wish it or not, our mind is thus forming itself at the same time in a manner that we can trace. And so, secondly, when we analyse any power to experience in order to explain it, we analyse it into factors that show this growth. In thinking, in appreciating, as in any form of physical skill, we find ourselves able to select a course and achieve results immediately, that formerly required effort and pains. Recalling, comparing, and pondering, for example, are no longer required. It is frequently said that we still use them, though unconsciously. But an unconscious comparing or pondering is meaningless. It is to suppose that experience may be taken from the course and matter of thought, and the course and matter somehow remain. And we shall see other objections to such an explaining (xi. 9). On the contrary, we have grown to a power that can dispense with those means, just as in skill we do not have to reject wrong or awkward courses before taking the right one. This acquired faculty gives us a facility such as we possess in every inherited faculty, *e.g.* in the power of moving a limb. It is a power to achieve experience by means that we do not experience. There is a simple example in every act of suggestion, for one thought brings another without any feeling of their previous association. We may happen to remember their previous association, but the remembrance follows the suggestion and does not make it. This unconscious factor occurs not merely in the repetition of an old connection, but, as I have indicated, in the formation of every thought and course of thought in whatever interest. We shall have to see how all matters of thought beyond our present sensations are brought in this

v. 7. way; and especially we shall have to consider the growth of thought and interest not merely in the matter at their command, but in their organisation. We have to see, for example, the growth of all thought and belief, including such a variety as perceiving, imagining, conceiving, supposing, judging, pondering, reasoning. We do it by analysing all knowledge into the identification of objects, first of sensory objects, and then of objects with all degrees of generality and complexity. We are as unconscious of how, and with what, we identify, as of how we remember. We may see that we know the present object by identifying it with others that we have known before; but that is a reflection which can only follow the knowing or identifying.

Why, if faculties like those of associating and identifying are so important in explaining the growth and working of the mind, do we find them called faculties so much less frequently than others like reason, memory, and will? The answer is twofold.

First, the parts of our mental structure that are usually taken for units, and called faculties, are taken for the purpose of description. If they are also spoken of as causes, it is exactly as when we explain any process of life by assigning it to a 'vital power,' *e.g.* breathing or digestion. And the description for which the units are taken has usually a practical purpose; hence the unit of faculty, like that of character, is made to include a variety of factors. Memory, for example, is taken to include the power of learning by heart, the power of retaining what we have learnt, the power of repeating it, and the power of recognising an object or an experience as having been thought or felt before. Reason, again, is taken to include not only powers of understanding, pondering, judging, inferring, but the power of furnishing itself with matter to reason about. Will is taken to include the deliberating and the emotion necessary to conduct. Hence the frequent reference to these units is more common than to such abstract units as we took when analysing experience, and far more common than to explanatory units like associating or identifying, when they are inferred and not felt.

Secondly, the farther we go in explaining anything, the

less we speak of it as being due to a faculty. To explain v. 7.
a property, no matter how singular, is not to assign it to a singular cause, but to analyse its cause into conditions that are common to other effects. When we have explained a faculty in this way, we may still speak of it, or part of it, as faculty in the sense of cause; but there is not the same need, and so we use the word as descriptive, and keep it for the old unit. When we speak of our having no faculty, or a poor or a great faculty for anything, this is our intention; by faculty is then meant merely a facility.

To repeat on the uses of the word faculty. We may take for a mental faculty our power of producing any sort of result, *e.g.* a faculty for setting people by the ears; this is the widest use of the word. Or we may confine the word to our power of producing our own experience. When one experience is the occasion of another, it is part of our power to produce the other; but itself also was produced; and the ultimate factors in the explanation of any experience are an occasion that we can read only in physical terms, and our power of reacting on it. Hence it is most convenient to confine the word faculty to our power of reacting, as distinguished from the occasion, whether it be a conscious or an unconscious occasion. We have divided this power into faculties in two ways. One is for description, and precedes explanation; it follows any division or classification of experience. In this arrangement every faculty is a conscious faculty, and for no mysterious reason, but simply because we assign the subject-factor, like the object-factor, in experience to a power of producing it, and name the power after its product. As we ascribe our sensation of colour to a real colour, as its cause, and not without the risk of error (vii. 4), so also we ascribe our seeing to the faculty of sight, and thinking to the faculty of reason. The other way is in order to explain. As we are no longer satisfied to call the colour the cause of our sensation, so we seek to explain our faculty of sight, and all faculties of the descriptive grouping. The factors in this explanatory analysis, whether we express them in physical or in mental terms, are mental faculties. They are not conscious faculties, but only faculties to which consciousness is due. They name conditions that account

v. 7. for the systematic connection and growth of our conscious faculties. And so we shall see them, and have them always before us, in following the growth of the mind. But there is, of course, no other virtue in calling them faculties than to prevent the conscious faculties from taking their place.

§ 8. The word instinct might very well be confined to biology, which is concerned with questions of heredity. In that case the work of instinct would be never experience, but always a physical action. In popular use, however, the word usually has reference to the work of some sort of mind, and if it is well to make this definite, we may as well take a meaning that is useful. If we simply called that experience instinctive which corresponds to instinct in the biological sense, the word and its meaning would be useless in psychology, for the same reason that they are useless in physiology. This, however, is the only reason for saying that "no adequate psychological definition of instinct is possible." [1]

The grouping of our actions into three classes, viz. those of which we are unconscious, those that are conscious but have not had to be learnt, and those that are conscious and have been learnt, is useful enough to deserve the three names of reflex, instinctive, and intelligent action. And it marks the three great levels of our nervous system. But it is

[1] *Dictionary of Philosophy and Psychology*, i. 555. The word instinct, if used in psychology, must define a property of mental faculties. Two properties may be taken: (1) the perfection of a faculty or group of faculties for producing any given experience or conduct, (2) the property of being inherited. By taking the former for the general meaning, we are able to include any piece of structure, physical or mental, that is ever called an instinct, or said to produce its effects instinctively. The property of being inherited specifies this general meaning, and marks a group that may conveniently be called instincts proper, or pure instincts. When the question is biological, or concerned merely with heredity, the specific meaning is the only one, and there can be no confusion in speaking of the inherited group simply as instincts, and of acquired faculties as habits (Lloyd Morgan). The reason for taking the general meaning in dealing with the mind is that we have to go further than biology undertakes to go. There is still the contrast between what is inherited and what is acquired; but, being concerned with the growth of what is acquired from what is inherited, we do not leave a mere contrast between instinct and intelligence. We have to see how experience is the growing point of instinct; how powers already perfect for certain work grow adequate, by doing it, for higher work. It may be as well to add that there is no question, and no assumption, about the origin of inherited instincts. We are concerned with individual development; whether, and how, our or any race has developed inherited instincts by means of experience is another matter.

usually assumed that instinctive actions are simply reflexes with sensation superadded, and that intelligent actions are a different thing altogether, or at least add quite a new element called intelligence or reason; whereas neither sensation nor reason is a mere addition. They cannot, we have seen, be a useless addition; for we only know for certain that they are present in another at all, if they are the instruments of learning. And they are not superimposed, sensation on reflex action, and reason on sensation, as the master is set over the steersman, and the steersman over the wheel. v. 8.

Though the word does not matter, for we shall have little cause to use it, there is a frequent meaning of the word which it is well to observe, whether we think the word a good name for it or not. A faculty is any unit of the mind, and we take it according to any unit of task that suits our purpose. When the faculty is perfect, it does its task in the best way, and merely for that reason it is called our instinct for the task, doing it instinctively. If the faculty for the task is still growing, its work is done partly instinctively, but partly there is a failure—a failure to produce the right experience in the best way. There is need of effort till the facility is learnt, the effort becoming less the more it succeeds, till finally the learning is complete, and the best way is taken spontaneously. Then, if effort is still of use, it goes to the maintenance and growth of the mental unit, which thus becomes competent for more difficult tasks, till they are easy also. It now becomes an instinct with respect to this new unit of task. We use the words immediate and spontaneous in the same negative sense as instinctive, applying them to every mental action that produces its results without awkwardness, deliberation, or any roundabout course that a better learning can dispense with. The more instinctively the result is produced, the greater the saving in experience; and there is no confusion in applying the word, if we choose, to purely unconscious acts that have needed no experience. We frequently do so when the results in plant or animal appear marvellous enough to deserve it.

The difference between inherited and acquired instincts is that between faculties whose perfection is inherited and

v. 8. those whose perfection is acquired. There is the same difference within a faculty between the part inherited and the part acquired. In neither case is it always easy to mark the difference. There are sensations, interests, and desires, that need no learning, and yet that do not occur till long after birth, either because the occasion is wanting, or, and this is very common, because the power does not appear at birth. Birth is but an incident, though the most important, in a life-history; some powers appear before it, and others long after. It is often hard to say whether the last have required learning or not (xvii.); but it is fair to say that they would not be late unless their way had to be prepared. The simple rule is to regard the powers that are common to a species as inherited, and those that are not as acquired. It is a good enough rule if we include among inherited powers the power of acquiring others. For there are some which are known to be acquired though they are, or might well be, universal to a group, *e.g.* speech among ourselves, and the singing of many birds. The difficulty of saying what has been learnt, and what inherited, is always in cases where, if there is learning, it has been easy; it is the difficulty of distinguishing between the inheritance of a lesson learnt and of the lesson nearly learnt. The race, of course, is not always to those who have nothing or little to learn; the lowest creatures have least to learn. But the race is always a handicap, and especially among ourselves; for, the higher the species, the greater the inherited powers of learning, and the less the finished education.

One individual has to labour before he can reach a facility with which his brother has the fortune all but to begin, and he will very likely have to be satisfied with a slower rate of progress throughout his life. It may therefore seem that, in dealing with the structure and development of the mind, we must profess to consider only one kind of mind, or the average mind, and to be only approximately correct. We shall find, on the contrary, that the direct explanation affords a scheme whereby individual differences are found, and can be treated, simply as differences in the rate of learning. We shall find that it is essentially the same course for one who can take it flying, as for

another who has to feel every foot of it, and stops at every obstacle (xvii. 7). v. 8.

Finally, there is not the chasm between inherited and acquired faculties which is presumed by that mistaken dispute, whose echoes persist, as to whether our minds have innate ideas and faculties, or whether everything in them comes from experience. The dispute will answer itself as we proceed, but you will not even look for an answer when you see what can and what cannot be inherited, and if you remember two things: first, that we acquire no faculty that we have not inherited the faculty to acquire, and, secondly, that, beginning with faculties which need no learning, there is an infinitely graded series up to those which need years to complete, or may never suffer themselves to be completed.

§ 9. In the lowest creatures, and wherever we assume that there is no feeling, we always take the beginning of the reaction to be the reception of the stimulus. But, when feeling is present, we usually take the distinction between stimulus and reaction at a different point, making the initial sensation the stimulus, and only the subsequent movements to be the work of instinct. But here, too, of course, the instinctive work begins in the reception of the stimulus, that is to say, in the sensation. And we do not first have a sensation and then add a sense of its value, viz. its pleasantness or unpleasantness. A sensation is our first instinctive grasp both of the nature and of the interest of a situation. The process that follows is our instinctive prosecution of its interest. It is a conscious process, a continuous course of movement and thence of sensation. But what gives it continuity and brings it to an end, that is unfelt throughout. Only an onlooker sees it instinct with purpose; to the creature the excitement, and the preference, are quite unaccountable, and so is the final satisfaction.

I shall expand this by an example or two, confining myself to pure instincts. A typical case is when, without any learning, an animal recognises its natural food or its natural enemies. There is really no recognition; there is only a very interesting sensation which develops by means of various movements into a longer or shorter course of

v. 9. sensation, till the interest of the situation is exhausted in the satisfaction of the appetite for food or for safety. Instincts are usually classified as individual or social—as concerned, that is to say, either with the individual's own well-being, or with the continuance of the species. The individual animal, however, makes no such distinction, and its social instincts are often the more intense. Its first sensations can have no meaning for it; they are attractive or repulsive in themselves, and start the course of action. We have no doubt about this when the stimulus is an organic one, or one that attacks our skin, or our palate, or when its assault on any of our senses is violent. It seems natural enough that a creature should writhe when in pain, should encourage a sweet taste and reject a bitter one, should start at the loudness of a sound, and shy at a sudden apparition; for in like case we exercise the same instincts without any learning. But that an insect should deposit its eggs in the right animal or plant, filth, or carrion, if guided by nothing but a sense like smell, seems unreasonable to us, and we are apt to supply its mind with a reason or a mysterious insight. When Mr. Spalding put his hand which had been stroking a dog into a basket of kittens three days old and still blind, it "set them puffing and spitting in a most comical fashion;"[1] they could not have had any suggestion of a dog, they had simply an unaccountable aversion to that particular odour. It seemed a marvellous thing that ants should at once know the presence of a stranger-ant in their nest; but experiment has proved that what excites their fury is not the idea of an intruder, but simply the smell; and they will fall upon and kill one of themselves who has been rubbed in the dead bodies of their enemies. One experimenter was able by such means to turn friend into enemy among them, and, with more difficulty, enemy into friend, and both in degrees.[2] No sense originates more remarkable instincts than the sense of smell, and among the lower animals there are certainly no instincts, whether individual or social, that are more indispensable. Yet no

[1] Quoted with other examples by Romanes, *Mental Evolution in Animals*, chap. xi.

[2] Bethe, *Pflüger's Archiv*, lxx. pp. 33-37.

sensation is less fitted to represent a complex object. v. 9.
Though the sense is probably degenerate in us, its character is presumably the same as among animals, and its very supersession by sight and sound is evidence of the instinctive and thoughtless character of the reactions upon it. But sight and sound have also an instinctive interest. This is well demonstrated in the precocity of certain birds—in their response to the danger-note, for example, even before they have left the shell, and in the pecking at all small, round objects by chicks that can have had no example to follow.

The sensations of smell, sound, and sight inform the animal of distant objects, just as it is informed of more present objects by sensations of contact, including taste, heat, and cold, and of itself and its movements by organic and motor sensations. Every sensation is of interest, and may inaugurate, or serve to continue, one of those long and complex courses of action, which are called instinctive because they need no learning, and because they lead to a satisfactory end without thought of it as a purpose. The appropriate means are selected and the end is reached, but it never enters the animal's head to ask how and why the means happens to satisfy it in part, and how and why the end satisfies it altogether. Simply an end is put to the course of movement and sensation ; the interest of the situation comes to be exhausted ; for want of further interest there is no more action in that direction.

The interest is very different in different cases: what puts one to flight attracts another, while a third may have no sense for it, and be indifferent. And in the same animal there is a different reaction to the same stimulus at different times. In the presence of food, for example, it is a question whether the animal is hungry ; and, if it is pre-occupied with fear, there may be no feeling but for danger and the means of safety. And perhaps no example is more striking and instructive than the extraordinary contrast between the devotion, cunning, pugnacity, and sacrifice, which most creatures exhibit in the care of their young, and their utter indifference a week or two later. There is, in short, the unaccountable liking, indifference, or aversion, that we find in ourselves for the same thing according to our

v. 9. years, our health, and all that unconsciously controls any of our appetites. Desire has happened to come, or desire has failed; we experience only the fact. "Does a mother find no pleasure at the bare sight of her child, and, without other stimulus, is she not driven to clasp it, kiss, and cherish it? Does not the mere perception of an infant or a doll stir the hearts of very little girls, who can have no notion of the meaning of the impulse?"[1] And with even less thought of the reason a child would take

> A folded rag,
> Of which she made a pet for lack of dolls,
> Because none other wanted her poor heart.

When feelings, however reasonable or suitable they may be, have not to be learnt, their course is determined, not by ideas, but by a structure which we can only know as we do reflexes that work without giving any experience. Biology investigates the conditions that have demanded and furthered its growth as an organ of life; it regards nature as a schoolmaster, if also a judge without mercy, and instincts as the more elaborate lessons that have had to be learnt. The explanation is the same whether or not the nervous action is marked by feeling; but it regards the conscious form as a superior development for the business of living, because of the new and far greater plasticity. This is apart from any value in feeling for its own sake. With such an inheritance an individual can meet far more risks, and live a far more complex life, through a learning of its own. We pass now to the nature of this learning.

§ 10. It is manifest in the development of greater skill and of a better appreciation of the occasions that are offered to the animal, and that it makes for itself. Both of these lessons, both skill and knowledge, an animal might learn in the stress of life; for in the pursuit of prey, and in the flight from danger, there is interest enough. But the actual struggle is always a bad time to learn, and, as things are, would be fatal. The greater part of training must be accomplished in youth before the real struggle begins, and therefore the necessary interest must be found before the critical occasion. It is found in what is called the impulse

[1] Schneider, *Der thierische Wille*, pp. 177-8.

or instinct to play, which is no additional instinct, but simply the exercise of any activity for the mere delight of it. "The higher the attainment required, the longer the time of preparation. . . . Youth probably exists for the sake of play. Animals cannot be said to play because they are young and frolicsome, but rather to have a period of youth in order to play."[1] Now and then the play is like a task, as when the parent bird sweeps the timorous youngster from nest or branch, or pushes it into the water. Even so much schooling is uncommon, for, where play is not spontaneous, example is enough to make it so. But whatever the start, the lesson proceeds for the fun of it. What makes it proceed is the simple present delight, not any prudent eye on the future in either teacher or pupil. Thus, too, when their days of learning are past, many animals keep themselves in training by the same love of the sport. They have each their own way, and it is a preparation for the real contest to come. The gazelle frolics in the long leaps that save its life by fleetness, and the goat in the high leaps that overcome the rocks on its native mountains. Kittens stalk and pounce, young dogs course and worry, and alternately act the pursuer and the pursued. A maul is one of the domestic joys of all the great fighters; and as nearly every beast must fight to some extent for food, for defence, or for a mate, a struggle of some sort is the common sport, and to each after its own kind. Birds do not learn to fly, nor fish to swim, at a stroke. True, these are instinctive activities, the members of the same species flying or swimming in the same way; it is in great part by their flight, for example, that birds are distinguished in the open from one another, and not only by sportsmen but by less observant persons who cannot tell the reason. But, though there may be only one lesson that the bird can learn, it has to be learnt; the special tricks of rising, poising, dropping, darting, and gliding need the practice that is given in play, and possibly the example too. A shoal of fish is called a school by happy accident; and among all gregarious animals the flock is a school that follows upon the family, and brings the instinct to perfection. It is a place of leisure from the real

v. 10.

[1] Groos, *The Play of Animals*, p. 75.

v. 10. business of life, where the traditional learning and discipline are preserved, and must be learnt as in a school, if they are to be learnt well and in good time. And among animals that are less gregarious there is often found a playful exercise of instinct, giving a self-education, a private gymnastic, in addition to the training of real life.

We may distinguish two means of learning by which an animal comes to take its place in the world. They are imitation, or learning from another's experience; and practice, or learning from its own. The first is really a case of the second, for, whatever is learnt, we have seen to be learnt by our own doing. But it is convenient to consider imitation by itself to begin with, because it introduces us to what is sometimes, though confusedly, called inner imitation, and, better, our sympathetic and æsthetic understanding. There is advantage in taking it before following the growth of 'mere' understanding.

PART II.—SYMPATHETIC AND ÆSTHETIC INTELLIGENCE

LECTURE VI

IMITATION

§ 1. IMITATION appears at all grades of conscious development. In point of use it is continuous with the unconscious mimicry whereby one species enjoys the immunity of another from attack, by being like it in form, colour, marking, or attitude. Such mimicry is, no doubt, as unconscious as the masking of a plant by its happening to have the colour of the ground about it. It does not need the presence of the model, and would persist were there none; so that, except for its use, it has no likeness to imitation. Between this unconscious mimicry and imitation, however, there are numerous cases where it is doubtful whether there is feeling or not, and, if there is feeling, how far, as in the death-feigning instinct, the act is involuntary. "I have seen surmullets," one writes, "when going from the brown sand to the dark rocks, quickly change from the one colour to the other, and I know about forty other fishes that can do the like in more or less time."[1] There are tree-frogs, ordinarily green in colour, that turn brown when resting on the brown bark of a tree or other brown surface. Experiment has shown[2] that the stimulus is by the eye, and that the brown is maintained by a heightened nervous activity. Probably the frogs VI. 1.

[1] M. Dunn, *Contemporary Review*, vol. lxxvi. pp. 202-3.
[2] Cope, *Primary Factors of Organic Evolution*, p. 499.

VI. I. feel a difference, but there is presumably no feeling of purpose any more than in the "goose-flesh feeling that we have when we are in a violent terror. It is a cutaneous mimetic reflex."[1] From that stage, where there is no more a feeling of likeness to anything, no more a thought of the present or the original service, than we feel in the expression of our emotions, imitation is found with every degree of intelligence and intention, up to the most laboured of our own attempts to follow what we admire, and even to admire because others do.

And observe how universal it is to imitate: how the sight of running starts a dog, how a restive horse communicates his excitement, how the flight of one bird gives wing to all the rest, and the wrath of one jackass sets others a-chattering. It is doubtless present in all the higher gregarious animals, and Wasmann claims to have proved it experimentally in ants.[2] Perhaps it is in the family that its presence has most interest for us, and because its full force is far from obvious. A young animal learns by so spontaneous an imitation that a spectator takes its action for original. The truth is only to be seen in experimental cases, where the young one is offered every opportunity of development except a model. Its backwardness and stupidity are then relatively as striking as would happen in a child that got nothing to imitate. Progress is found to be slower, and activities may not be acquired at all, or very imperfectly, which in normal circumstances are common to the species. This is very remarkable in birds of a singing variety, and not less significant that experiments give different results, some not singing at all without a model, others making painful attempts, and so far succeeding in the end, and others again succeeding perfectly without assistance. Even in so essential a matter as the choice of food and drink, a young animal may depend partly, or even altogether, on an example being set to it, and may otherwise perish in presence of its proper food. Finally, we find not merely this instinctive imitation of actions that are common to the species, but a general

[1] Le Dantec, *Revue Philosophique*, vol. xlvi. p. 390.
[2] Wasmann, *Instinct und Intelligenz im Thierreich*, pp. 111-2.

instinct of imitation. It may be fairly widespread; we VI. I.
have stories of puppies reared by a cat acquiring a cat-like habit, of birds in a new country altering their nests a little in accordance with new models, of a sparrow taking to the chirp of a grasshopper, and so forth. But it is certainly far stronger in some species than in others, and it is notorious in monkeys and in certain birds: in the bull-finches, magpies, and parrots that we train, and in the mocking-bird and our lyre-bird.

Let us look first at this inheritance, and then at its value.

§ 2. It has the purely instinctive character that we saw at the end of last lecture. The animal takes an unaccountable interest in certain acts of another, and develops and exhausts the interest not by more observing, but by repeating or sharing in the action. The interest begins when it observes, for in doing so it selects the action from the other objects before it. What it selects, what direction its movements shall take, and how long the interest shall last, are matters at first of native constitution. One animal takes up a chase or a song, another is all but undisturbed by them, while a third moves out of their way. And, finally, the animal does not have to select the means by which it succeeds. The song that it hears is produced by means of which it knows nothing, and the mere hearing is enough to start the proper means in itself, of which also it knows nothing.

But the experience is not thrown off as from a machine with as little influence on it as the contents of a newspaper on a printing-press. The points of interest are growing points of the structure. The growth is apparent in the course of an individual life, for an old animal never imitates quite like a young one; and also when we compare the imitative powers and interests of different species, which are doubtless due to the encouragement that the instinct has received on account of its value.

It is a growth in two directions, without and within; and from a beginning where the impulse is thoughtless and indefinite.

At first an animal imitates for the delight of its action;

VI. 2. it is pleased to do what another has begun, just as if it had made the beginning of its own accord. And at first its imitation is indefinite as regards both the effort it makes, and what it chooses to imitate; for it succeeds but roughly, and it frequently imitates the wrong thing. Let me quote from a very sympathetic observer. "I have," he says, "frequently observed newly born lambs on the pampas, and have never failed to be surprised at the extreme imbecility they display in their actions. . . . This imbecile condition continues for two, sometimes for three days, during which time the lamb apparently acts purely from instincts, which are far from perfect; but after that, experience and its dam teach it a better way. When born, its first impulse is to struggle up on to its feet; its second to suck, but here it does not discriminate like the newly hatched bird that picks up its proper food, for it does not know what to suck. It will take into its mouth whatever comes near, in most cases a tuft of wool on its dam's neck; and at this it will continue sucking for an indefinite time. . . . The next important instinct, which comes into play the moment it can stand on its feet, impels it to follow after any object receding from it, and, on the other hand, to run from anything approaching it. If the dam turns round and approaches it from even a very short distance, it will start back and run from her in fear, and will not understand her voice when she bleats to it, at the same time that it will confidently follow after a man, dog, horse, or any other animal moving from it. A very common experience on the pampas, in the sheep-country, is to see a lamb start up from sleep and follow the rider, running along close to the heels of the horse. This is distressing to a merciful man, for he cannot shake the little simpleton off, and if he rides on, no matter how fast, it will keep up with him, or keep him in sight for half a mile or a mile, and never recover its dam."[1]

This indefinite interest grows by association in an outer direction. It allies itself with the other social interests, and thence receives a greater intensity and more frequent and definite occasion. It becomes a prominent factor in the spirit

[1] W. H. Hudson, *The Naturalist in La Plata*, pp. 106-8.

of rivalry: we have examples in the effects of pace-making at all kinds of races, in birds outsinging one another, and wherever the presence of rivals adds keenness to a contest. For, if an animal must take practice in activities that have little interest of their own, then, as at school, the spirit of rivalry, the appetite for success, adds an extrinsic interest of the utmost importance. And this is what we have in the mutual imitation of a common play, as well as in the individual efforts of monkeys and the mockers among birds; for they appear to take as much interest in the sense of their success as in what they imitate. VI. 2.

Of the other, the inner or deepening direction in which the primitive instinct develops, there is a familiar example in the trooping of fowls to the spot where one of them has been seen to run with intent. Some have acquired too much character to be easily led away, while others need little to set them in motion. It is the unfelt purpose in a course of instinctive action that gives it coherence; and the inner growth of the instinct is towards bringing the purpose to consciousness. This is the path to intelligent imitation, where the course is selected with thought of the purpose, and not left to the rote of instinct. But animals learn by what we still call rote, even when they are intelligent enough to know the purpose. For the purpose, though no longer unthought, is not yet a separate idea. If it were, the course would be set out in idea before being taken, and difficulties would be met by thinking, and not by mere trying in one direction after another. But in nothing do animals appear to us so stupid as in their failure to learn our purpose when we seek to make things simple for them. In trying to teach a dog how to do or get something about which he is keen, we often fail because his very keenness for the result prevents him from attending to the process. On the other hand, if he is not keen, he is hopeless. He learns best if we do not elaborately separate cause and effect, process and purpose, but let both be combined in a rote of interesting action, into which he is broken or disciplined, rather than instructed. His best teachers are other dogs, and they need to make no analysis of the lesson for him. He very rapidly comes from an interest in their movement to appreciate

VI. 2. its purpose, and to follow their example from interest in the result. He has still before him the doing of others, but he follows its meaning, a meaning that he has learnt from his own doing in the past. He rises from a merely sensory to a perceptual imitation. A higher grade of imitation is possible when the model is absent, and an image of it, visual, auditory, or motor, serves in place of it. Higher than perceptual and imaginative, there is conceptual imitation; it requires thinking, and it differs from acting on principle in this only that the principle is embodied in a material of some kind, as in a life, a story, or a work of art. But here, as always, the higher forms of intelligence, so far from dispensing with the lower, organise and emphasise them, and give them more to do. Indeed the higher forms of imitation are only to be fully understood by observing a still deeper sensory and perceptual imitation than is apparent in the obvious imitation of conduct of which I have spoken. But let us look first at the value of this obvious imitation.

§ 3. It is the means by which animals enter into possession of the skill and wisdom of their race without our painful process of education. As counterpart of the instinct the animal inherits a specially organised world in the family and the flock to which it belongs, where the traditional skill and wisdom are preserved. Other instincts are valueless without a world for which they are fit, but in this one of imitation the dependence is mutual. For its world is so organised that neither could exist without the other. Not only would this instinct be useless without the tradition, but the tradition would be impossible were it not for the instinct.

By this arrangement, it is often said, nature secures an economy of individual structure, this one general instinct serving instead of a variety of particular instincts; the individual animal, for example, need have no instinctive knowledge of food or danger, when it can so easily learn them in the daily school of its race. The saying is true on the face of it, but it is also misleading. Even if it does not suggest that nature is here indulgent enough to sacrifice efficiency to economy, it puts the case on a level with that of the skunk, which has sacrificed every other means of defence

in favour of the vileness of its smell. And we are prone to think that, the better the external inheritance, the less need be the inheritance of ability; for, among ourselves, it does not matter so much that a youth is a born fool, if his father has left him a fortune. But the bequests of nature are not made in that way; they fall only to those who can take and use them to advantage; so that the greater the external inheritance, the greater the internal, *i.e.* the ability to use it. The economy which nature effects by the instinct of imitation is no mere saving in instincts for which there is now no need. It is that too, but it is essentially an economy of risks, brought about by a special organisation of the world with a corresponding organisation of the individual. VI. 3.

The advantage is twofold: the present advantage and the advantage to the race.

The first is in the diffusion through the whole flock of the results of the superior abilities, or the accidental discoveries, of any of the members. It is not only that the acquired abilities of the elders are thus handed on to the young, but in every flock there are leaders who maintain themselves there by a superiority that comes to be acknowledged by the rest to their own advantage. There is this leadership even among the young themselves. "I have several times observed," says Lloyd Morgan, "that in broods of chicks brought up under experimental conditions by themselves, and without imitating older birds, there are one or two more active, vigorous, intelligent, and mischievous birds. They are the leaders of the brood; the others are their imitators. Their presence raises the general level of intelligent activity. Remove them and the others show a less active, less inquisitive, less adventurous life, if one may so put it. They seem to lack initiative."[1]

I need hardly illustrate the other case of this present advantage, namely, the diffusion of the fruit of any discoveries by one member among the rest of the flock. It is well seen in the protective advantage whereby, when a bird, a fish, or a beast of the field perceives danger, it is enough for the rest. The importance of it is seen in the fact that though birds, as a rule, require to learn their proper

[1] *Habit and Instinct*, pp. 182-3.

VI. 3. song, they have an instinctive appreciation of the danger call which gives the signal for flight or concealment.

The second advantage is the result of the first upon the progress of the species. The characteristic disadvantage of a particular instinct is its meagre plasticity, and the learning which takes place at its conscious point is entirely for the instinct. But the general instinct to imitate is rather in the interest of learning, and for the race as well as for the individual. Only by means of it is the learning of one generation handed on to the next. For the modification of instinct in a parent would probably have no direct effect on that inherited by its offspring. The advantage is secured not by inheritance of the modified instinct, but by inheritance of the model. There is a notorious example in the keas of New Zealand, which have become a pest because they have accidentally learnt of the kidney fat of sheep, and how to reach it.

But the value of imitation as a means of learning has, of course, its limits. It has the limits of all rote-learning—of learning conduct without thinking of its reason or purpose. Indeed, if imitation were entirely mechanical, the value of it would be more than doubtful, as in the incident of the lambs on the pampas. The migration of many birds appears to be unnecessary, and certainly the length of their journey. But the more general the instinct the less blind or mechanical.

§ 4. Ideas, art, and conduct have always been explained as due more or less to imitation. No one thought there was any great depth in the explanation, and a notion that ideas are copies of things is the "universal and primary opinion of all men," which "is soon destroyed by the slightest philosophy." [1] But of late the word is frequently met in the explanation of every kind of mental process and product, and in their explanation at the deepest. Imitation has been made the essence of all moral and æsthetic feeling in a special sense, of which I shall speak in next lecture. And even all knowledge, from the first turning of sensation into thought, has been assigned to an "imitative activity." [2]

[1] Hume, *Inquiry concerning Human Understanding*, sect. xii.

[2] Groos, *Einleitung in die Aesthetik*, pp. 99, 100. What we imitate in our thought of a real object is usually said to be the real object, but sometimes the

What is meant, however, is not imitation in its old and VI. 4.
everyday meaning, and hence no little confusion. First there is said to be imitation wherever a thought, a feeling, or an action is merely suggested, though they are not like what suggests them, but something else. "Let a child or a man see a wound in his hand and at the same time feel the pain of it, wound-vision and pain-vision are associated in his mind. Let him next see a wound in his neighbour's hand, the pain-feeling is revived. He thus imitates his neighbour's pain-feeling, . . . he copies his neighbour's experience."[1] He might quite as well be said to copy his own past feeling; but, of course, he copies neither, for neither gives him the suggestion; the sight of the wound, and that alone, gives it to him. Secondly, every true thought is said to be an imitation of its object, the sight of the wound, for example, to be an imitation of the wound. But whatever we mean by saying that our sight of the wound is like the wound, surely we cannot be said to imitate or copy the wound until we already have sight of it.

In every act of memory we repeat what we have known before; in every course of thinking we follow a common plan; and only because our subject-experience is much the same, do we feel our self to be the same. But we do not, therefore, speak of imitating. Again, every thought, every step in a course of thought, is suggested from without or

corresponding thought of it in other minds, and sometimes the corresponding thought in our own minds in the past. "All our higher conceptions, just in proportion as they are thoughtful and definite, involve conscious imitations of things" (Royce, *Outlines of Psychology*, p. 291). "All perception is more or less reducible to an imitation, to the creation within us of a state corresponding to what we see in others" (Guyau, *Education and Heredity*, p. 14); and again it is made "an unconscious imitation of ourselves by ourselves" (Tarde, *Les Lois de l'imitation*, 2nd ed. p. 81). Or the words are transposed, and instead of perception being made a form of imitation, imitation is made a form of perception: "Imitation is that form of perception in which the mind interprets what is given in sensation" (Smith, *Methods of Knowledge*, p. 172); and, as if to show the evil of loose meanings, "on this analysis, voluntary action is resolved into perception" (p. 177). There is not the same room for confusion in speaking of conduct as an imitation. The explanation may, of course, be superficial, but not as in accounting for all knowledge and all art as an imitation. For this merely empties the word till it means taking any sort of hint; and, to quote a critic of the theory in its application to art, "in that case the imitation-theory only says that we are not in a position to make something out of nothing" (Cohn, *Allgemeine Asthetik*, p. 107).

[1] Smith, *Methods of Knowledge*, pp. 178-9.

VI. 4. self-suggested; but neither for that reason do we say it is an imitation. To imitate is more than to be like, and more than to follow a suggestion. We imitate that only of which we have present experience, and to imitate it is to have it for stimulus and standard. When some one merely suggests an air, an argument, an action to us, we do not imitate what he suggests, however our thought or conduct be like his. We imitate when we are guided by a present experience of what we repeat; this is an important meaning, and we do not want to lose the word for it. Hence we imitate our own thought, feeling, or conduct in the past, only when we set them before us. And we do not imitate another's unless our own has been suggested or caused by the thought of his. If an author or an inventor is charged with imitating another, he can, of course, deny the charge if he has never heard of the original. But he can also rightly deny it if he has once known the original but has forgotten the fact, so that he now takes his own work for original. Without a present thought of what he has learnt he does not imitate it. It is sometimes said that he then imitates unwittingly or unconsciously, but it is confusing to speak of imitating anything when one has no present experience of it at all.

It is confusing because there is an important form of imitation called unconscious and unwitting, but better unintentional, where we copy without intending, and sometimes even against our will. We may not even know that we are imitating, till we find on examination that our thought, feeling, or conduct is modelled on what is before us. It is unintentional, and often unwitting imitation that we are now to consider.

§ 5. To distinguish it from imitation that requires a decision, and usually an effort, we shall call it spontaneous. The difference, however, is a matter of degree, namely, of the degree to which we have to think about the object and about our means of reproducing it. In learning by imitation to whistle an air, a boy has the trouble of grasping or attending to it, as well as trouble with his own production. As he becomes expert, he not only succeeds better, he needs less effort in attending, and can produce it while thinking of other things. Later, when engrossed in other occupation,

and the air is whistled in his hearing, or played, or merely its rhythm is rapped out in any way, he may find himself whistling it, or find it running in his head, without knowing that he is imitating, or even that he has had a suggestion of any kind. He has heard and grasped it without having to attend,[1] and he repeats it without thinking how. VI. 5.

Two things, then, require an effort in imitating what is difficult: in imitating, for example, the handling of a tool, and in copying abstract objects like a demeanour, a literary manner, or a method of argument. We have to attend to the object, setting it before us clear as a whole, and with its parts distinct; and we have to attend to our means or way of reproducing it. The easier the task, the less our effort both to grasp the object and to take the right means; and when perfectly easy, the less we expand our thought of it, and we do not think about the means at all.

Indeed, there comes a time when, if we think about the object or the means, we do not produce so good a result as when we make no effort, but act spontaneously. This is the rule for all our skill, physical and mental, and not only when our skill has been learnt through effort, and become habitual, but when it is native. So it is with our skill in imitating. "One fine morning in May," says a writer, "I took the little boy R. for a walk through a beautiful avenue, where the trees on each side met overhead in a mass of foliage. These trees were full of birds busy with their nest-building, and full of song. The little fellow was fairly enchanted. He could not go on. Every few steps he would stop, . . . and, looking up into the trees, with his head turned on one side, would give back the bird-song in a series of warbling, trilling notes of indescribable sweetness. I very much doubt whether any adult voice, however trained, or any musical instrument, however complicated, could reproduce those wonderful inflections."[2] The song affected the hearing of the child, and

[1] He may not even have heard it, the stimulus being too weak for hearing, but not for leaving a neural effect which works out as his whistling either immediately, or when he is less engrossed, or hours after.

[2] Tracy, *Psychology of Childhood*, p. 105. Such imitations "are almost always performed more quickly when they are not sought, when the child-brain is not obliged first to get its bearings, but acts spontaneously. If I clear my throat, or cough purposely, without looking at the child, he often gives a little

VI. 5. through that his motor mechanism, selecting its way better than if it were thought about. So children take up the pronunciation of people about them with a fatal facility, guided merely by the sounds, without thought of the means for reproducing them. Even in learning any difficult piece of skill, mental or physical, there comes a point when it is better to let our self go, and repeat itself, than to look ahead and niggle with the reins. The thought of a model to follow is then all but absent; and so far we repeat without having to imitate, becoming independent.

You have observed how children delight in a mechanical repetition of themselves. This is frequently due to the tendency in a nervous process to repeat itself, and, though the repetition may be maintained by a circular stimulation within the nervous mechanism involved, there is no self-imitation unless an organ of special sense is involved as well. But the amount of repetition is greatly augmented when there is also imitation. It occurs when they delight in reiterating the same words or note, not merely for the exercise, but for the sake of hearing them again, whether for the pleasure in the sound or merely for the sake of making a noise in the world. "The stimulus starts a motor process which tends to reproduce the stimulus, and, through it, the motor process again."[1] And because the sound is at once model and stimulus, this "circular activity" is a self-imitation.

Spontaneous imitation takes place at all levels of intelligence. At the lowest there are the purely instinctive imitations that we saw in animals. Apart from isolated and doubtful attempts the instinct is deferred in children till the second half-year of their life, when they begin to repeat gestures and sounds without thought of their purpose. Soon they also imitate for the sake of the meaning, at first without having to think about it. Later, when they can debate or think about what, why, and how they imitate, their imitation is less spontaneous, and especially when they come to select complicated or abstract objects, such as I have mentioned.

cough likewise in a comical manner. If I ask, 'Did the child cough?' or if I ask him, 'Can you cough?' he coughs, but generally copying less accurately (in the fourteenth and fifteenth months). The bow too tightly strained shoots beyond the mark" (Preyer, *The Senses and the Will*, p. 288).

[1] Baldwin, *Mental Development in the Child and the Race*, p. 133.

Always, however, the effort becomes less with success, till the imitation becomes as spontaneous as the imitation of sensory objects. This result, of course, is the reward of our efforts to think for whatever purpose, and not merely for the purpose of imitating. VI. 5.

§ 6. If to imitate is not merely to repeat, neither is it, on the other hand, to apply a principle. I have said that there is little difference between the highest forms of imitation and acting on principle. Indeed, we might say that in acting from thought of a rule we imitate it, for we set it before us and seek to repeat it in a particular form. But this is more and harder than merely to imitate or repeat it. And so if we are said to imitate a rhythm, a law, a manner, in a new material, it is when, instead of having to separate them out and think them as abstract objects, we take them embedded in one material and transfer them directly to another. Even this, however, includes adaptation, being more than a mere copying; and some degree of adaptation may be found in most imitation, but it is easily distinguished. We imitate so far only as we are aware of a model, present or absent, and seek to reproduce it. The importance of distinguishing this from our other acting on suggestion, from mere repetition, and from adaptation, is simply that there is a model which serves at once for stimulus and for ideal.

§ 7. There is nothing in our environment, animate or inanimate, nothing that we experience, but goes to form us, determining our interests. But most of all we are influenced by our mental environment—by the 'tradition' of ideas, institutions, aims, sympathies, into which we are born. And the ideas and practices that have most influence with us are not those that need recommending, and that we adopt after thinking about them, but those that every one has, and is expected to have. So it is with the tone and other traditions of a school, a profession, or any society. Most of what is distinctive in the 'soul of a people' is directly due to the distinctive character of its tradition, and what of it is inborn is no doubt indirectly due to the same.[1] Class feeling is

[1] Differences in native endowment are no great embarrassment in education; but they would be if, for example, "civilised man and woman, even when the latter is highly educated, . . . may have common interests and sentiments,

VI. 7. notorious; misunderstanding is more the result than the cause of not feeling in common; the people who do not tend to feel together tend to feel averse and resentful. But the ideas, tastes, interests of all kinds, that we copy without question because no one has questioned them, we hold with all the assurance of common sense. Manners, beliefs, idioms, all fashion and change of fashion, once they have made some way, gather strength as they go, need less recommending, and are adopted by a more and more spontaneous imitation. "The social state," says a well-known writer on these matters, "is like the hypnotic, a sort of dream—a dream forced on us and at work in us. To have ideas suggested to us and to think them our own, that is equally the illusion of man hypnotised and man social."[1] But writers in search of social laws are peculiarly fond of obvious exaggeration; man is not quite so amiable, dumb, and driven. Children, however, have little wherewith to resist example; and, with youths who are well beyond childhood, example remains far more potent than precept. To Plato it even seemed that by impersonating different characters their own would become a medley; and if we demur to that, thinking they must also learn to see evil, it is the more necessary to wait till reverence is established and evil seems vile.[2] With the growth of our intelligence we can seize aspects of others' thought, conduct and feeling, without having to think about or abstract them; and we should imitate these more than we do, were it not that we also learn to be habitually critical. We remain

but never like chains of thought. . . . The difference in their logical faculties is alone sufficient to create between them an insuperable gulf" (Le Bon, *The Psychology of Peoples*, p. 36). Of a negro or a Japanese the same writer goes on to say, "It is easy to give him in ten years the culture of a well-educated Englishman," but it would take a thousand years to "transform his soul," and "make a real Englishman of him" (pp. 37, 38). On the contrary, the chances are, if his origin were not written on him, and he were brought up in England from infancy, that his soul would be English from the first (*cf.* Gulick, *The Soul of the Japanese*). If not, a thousand years would do little.

[1] Tarde, *Les Lois de l'imitation*, p. 83.

[2] "Let parents bequeath to their children not riches but the spirit of reverence. We indeed fancy that they will inherit reverence from us if we rebuke them when they show a want of reverence. But . . . where old men have no shame there young men will most certainly be devoid of reverence. The best way of training the young man is to train yourself at the same time" (*Laws*, tr. Jowett, v. p. 300). Juvenal's check for an erring father—*maxima debetur puero reverentia*—has long been read as a rule for every adult in presence of youth.

imitative, however, to what we admire; and, though there VI. 7.
are people who dislike the notion of following any one, they are the reverse of obstinate towards themselves. Husband, voter, or pupil, they willingly follow a suggestion whose origin is so well concealed that it seems to be their own.[1]

§ 8. Imitation plays a great part in all our learning, both as regards the standard that satisfies us in knowledge, conduct, and feeling, and as regards our way of reaching it. This needs no showing, and under the general development of intelligence it will be apparent how we take possession of the knowledge and other mental achievements bequeathed to us. But I shall begin next lecture by taking one work of imitation, viz. fellow-feeling. I shall take this as the first of three experiences that can best be understood when taken in seriès. The second is fellow-feeling with nature. The two involve the act of reading ourselves into others and into things. And they illustrate our experience of being absorbed in an object. This experience of being absorbed in an object I shall take as the third of our three. The three have been called 'inner imitation,' but only because the word imitation is given an indefinite meaning. It is because the third, which includes the other two, is our thought of objects for their intrinsic interest, and gives our æsthetic or sympathetic understanding of them, that I begin with this before following the growth of intelligence as a mere or intellectual understanding. The second of the three will introduce us to the instinctive origin of all intelligence. We may call the three, for short, (1) fellow-feeling, (2) individuation, (3) absorption in an object. They will occupy the next two lectures.

[1] Indeed one psychologist, on the strength of some experiments, thinks that this familiar fact of human obstinacy should be raised to the dignity of a law, called the "law of normal suggestibility." Whereas hypnotic subjects follow direct or open suggestions far more readily than indirect, we do the opposite: "normal suggestibility varies as indirect suggestion, and conversely as direct suggestion" (Sidis, *Psychology of Suggestion*, p. 89).

LECTURE VII

FELLOW-FEELING AND INDIVIDUATION

VII. 1. § 1. THE word fellow-feeling is sometimes used without reference to the means by which we come to have the same feeling as another, *e.g.* a fellow-feeling makes us kin. But we are concerned with the experience, only when we have it by imitating another's feeling, thought, or expression, and not, as in the feeling of patriotism, when we happen to have the same feeling. We speak of sympathy in the same sense, but this word has still another meaning. First it means fellow-feeling: I am in sympathy with another if I feel as he does about anything, and especially if I do so because I know and copy his feeling. But, secondly, I am said to sympathise with him when I have a certain feeling about himself or his feelings, though I may not repeat his feelings in myself, *e.g.* his fear, or love, or ambition. I may sympathise with him having these, and not have them myself. With this meaning we are not concerned, but with the sympathy that is fellow-feeling.[1]

[1] The word sympathy is so frequently used in one or both meanings that it is well to be clear about their difference and connection. The difference is not carefully marked in common language but to some extent, perhaps, in the difference between 'being in sympathy' and 'having sympathy.' We are said to *be in* sympathy when we have the same feelings towards the same object, *e.g.* a good polo pony is in sympathy with the player; but to *have* sympathy with another and his feelings is to have a new feeling, one that he does not possess, a feeling that has him and his feelings for its object. (Having sympathy *with* is the general expression, having sympathy *for*, or having pity, is a special case.) As opposed to the first meaning of sympathy, apathy would mean not having the feelings of another, and antipathy would mean having opposite feelings to his; but we seldom or never use the words in this sense. They mean the opposite of sympathy in the second sense: apathy is indifference, and antipathy is dislike to an object, whether the object be a person, his feelings, or any other object.

I may have sympathy or antipathy towards another's feelings without re-

To imitate the experience of another we must have thought of it, and the thought is an inference in which we give meaning to words or some other physical expression. In learning to connect meaning with expression we may begin from either. (*a*) We begin with the meaning and learn its expression when, having feelings and desires of our own, we express them in cry or action. (*b*) Or we may begin by a spontaneous imitation of another's action or attitude, and so give ourselves his sense of effort, vigour, languor, or other feeling. In this second way of learning two things are to be observed. First, we cannot yet be said to imitate his feeling, for we have no thought of it before having it ourselves; we imitate an action which brings us to the feeling. Nor, secondly, do we feel it as in ourselves before imputing it to him. It is our feeling that we read into him, but we do so directly; we do not first think it ours. Such a thought, even if we could take it so early, we never do take at any time when absorbed in the object; rather we lose or forget ourselves to live the life of the object (viii. 1). VII. 1.

We may enter into another's emotion or mood in this way, viz. by imitating the natural expression of his feelings. When we copy the expression we tend to have the emotion

peating them in myself. I may sympathise, for example, with his hope, though I know he is doomed, or with his wrath, though again I feel none of it. No doubt the sympathy we like is the other, viz. fellow-feeling, and that which we resent, or to which we are indifferent, is the sympathy that does not, or cannot, realise a like feeling. For though such a sympathy may be warm enough, we do not want another to make us his object of sympathy; we want him to have our feeling towards our object. Naturally, the warmest sympathy is when both are present, but always the two are clearly distinguishable. The connection between them is that we seek to realise in ourselves the feelings of those with whom we sympathise, and not the feelings of those to whom we are apathetic or antipathetic.

But the connection is often thought to be more than this. Why are the two meanings of the word confounded when they are so different? The answer points to the error of the crude or common form of the imitation-theory, viz. that the thought of an object is a copy of it. When the object is physical, *e.g.* an apple, or an inch, or a law of nature, the error does not appear; for no one assumes that the idea of an apple must have its flavour, or that of an inch or a mile be inch or mile long; and we are not driven to ask how then it can be like the flavour, the inch, the mile, or the law of nature. But when the object is mental, *e.g.* another's pain, there is less to prevent the full result of the error, and we readily assume that to have sympathy with another's grief or anger requires us also to grieve or be angry a little. As if, in order to think of another's tooth-ache, I must give myself a twinge, in order to sympathise I must suffer it with him, and why must I not also have to suffer it if I happen to delight in his misery?

VII. 1. or the mood, provided we are not critical at the same time. But our usual way of repeating another's feeling is to think the same thoughts as he. We look, for example, at the thing he points out, listen to his tale of triumph, or read what he has written about anything. But neither in this way are we bound to have his feeling. We may think his thoughts without having his feeling; and we may also know and understand his feeling, but, instead of imitating it, we may be indifferent, or laugh at it, or be repelled by it. We constantly use both thought and expression, both matter and manner, in order to produce emotion in others. Actors and orators do so intentionally, and so do preachers and teachers, if they are not mistaken about the fire in the dry light of truth and a mere understanding. Enthusiasm is catching even for dry studies and for hard work; and, though languor hardly needs to be caught, it is the more ready to come, like sighs and yawns, by a spontaneous imitation.

Having learnt to read another's expression we may imitate his feeling without imitating its expression. We tend unwittingly, however, to imitate the expression when we are very intent, as when we repeat the movements and attitudes of an acrobat or any player whom we are watching intently; and frequently we substitute an expressive movement of our own. When we give up all exhibition of our interest, as we give up thinking aloud, we may continue to give ourselves expressive movements and attitudes so far as to innervate the necessary muscles, just as we continue to use internal speech in our thinking, and are often on the point of speaking out. The vividness in our view of vigorous, slothful, mournful attitudes is largely due to this. The attitude itself is what we think bracing or depressing, it is not ourselves that we think braced or depressed; but we find it bracing or depressing the more we live it, the more our own bodies are braced or depressed in sympathy. Finally, even this tendency to imitate the expression with the feeling may be inhibited, just as we need not use our throat in internal speech. And if we made the tendency, let alone any actual expression, too prominent, then, so far from helping, it would prevent our full imitation of the feeling. In the same way, to

continue the comparison, we cannot think so well when we have to think aloud, and we could not think so well if we had to use as many words in forming a thought as in uttering it (xv. 11, xviii. 17, 18). VII. 1.

In reading an experience into other minds, and in our feeling it with them, we have the most obvious examples of two mental acts that we are to consider in this lecture and the next. One of them is the individualising of an object; the other is the being absorbed in it.[1]

§ 2. School education would do little to supplement the training in conduct at home and out of doors, and to counteract the example of evil anywhere, but for the mass of example that is offered in literature. For what is read of people is not merely understood; it is always more or less lived as we live with the people in a novel or on the stage, needing no moral nor epilogue to point the lesson. It serves for a rehearsal of realities to come; it is a way to reverence and aspiration, and the only way of presenting evil with safety, and as a thing contemptible or detestable, and not only liable to punishment.

In this living there is also the best discipline that the study of nature offers in the education of the young. Every one thinks the love of nature a fine thing to learn; but the study is usually recommended as a means of cultivating curiosity, or a habit of observing detail, or a hobby to occupy

[1] These two acts comprise what is vaguely called 'inner imitation,' especially by German writers on the sense of beauty. The term has now been given up for *Einfühlung*, a word coined expressly to mean (α) our reading a spirit into others and into things, and (β) our having fellow-feeling with them. In all early *Einfühlung* both factors are present; just as we do not feel a colour first as ours and then as the quality of a thing, so, as mentioned in the text above, we do not first find another's experience as ours, and then transfer it to him. And always the first factor is present if the second is present. But frequently the first comes to be present without the second; we think an object to have an experience without ourselves living it with him. Hence the two factors have been distinguished, the first as *Einfühlung*—the reading an experience into an object; and the second as *Einsfühlung*—the feeling at one with it. When the question arose how much of ourselves we read into things, the word was naturally extended from reading an experience to reading a life, and then (most fully by Lipps, *Æsthetik*) to reading any individuality, into things. With this extension *Einfühlung* corresponds to the first of the two acts mentioned in the text, viz. to individualising. The second of the two—absorption in an object—includes *Einsfühlung*, but extends to our living in any object whether we individualise it or not; it is our experience of any object in which we are finding a purely intrinsic interest.

VII. 2. one pleasantly; and these intellectual and practical interests are far from the intrinsic interest called the love of nature. For the love of nature is a sympathy, a fellow-feeling with things lifeless and living. A fellow-feeling with lifeless things may seem a contradiction, but it fills the poetry of nature old and new. The trees of the field clap their hands, the little hills shout for joy, great mountains have a voice, break forth into singing, look abroad with silent brow; there are souls of lonely places, the moanings of the homeless sea, the sullen river and the woods waving and muttering. In poetry nature is constantly represented as the body of spirit, as concentred in a life intense. To mingle with the universe and feel, not only with rattling thunders, self-poised stars, or the quiet of her sky, but with common plants, the silver-fall of springs, and other quite earthly things, and in the golden time, our time of learning, to fling arms of love round Nature and find her living, as Pygmalion found the statue, that is the language of the literature that we have to get by heart when we are young. And, to quote Wordsworth, in that fellow-feeling we are expected to find bliss ineffable:

> I was only then
> Contented, when with bliss ineffable
> I felt the sentiment of being spread
> O'er all that moves, and all that seemeth still;
> O'er all that, lost beyond the reach of thought
> And human knowledge, to the human eye
> Invisible, yet liveth to the heart;
> O'er all that leaps, and runs, and shouts, and sings,
> Or beats the gladsome air; o'er all that glides
> Beneath the wave, yea, in the wave itself
> And mighty depth of waters.

If this were exaggeration, or if it were only play, and a falsifying of things as a refuge from the realities of life, our schools might be little concerned with it, and not be greatly annoyed when accused of destroying the warm fancy of childhood and its taste for fairy tales; for it is the real world that we must learn to fill with interest, till truth seem finer than error.

And, to the apparent contradiction of making lifeless things feel, we appear to add another; for in sympathising

with them we are sometimes said to give them our spirit, VII. 2.
but as often we are said to enter into theirs. We speak of giving them the colour of our minds, of clothing them with sentiment, of charging them with emotion, of throwing a veil of mystery over them, and so giving them their beauty. On the other hand we certainly have to find, and not feign, the beauty in them, if it is real. If their beauty or ugliness, their glory or meanness, is always or ever felt in a fellow-feeling with them, it must be with them as we find them, and directly, not by way of after-thought. A tree is in many ways like a man, erect and defiant, or bowing to trouble, gnarled and crippled with years, stretching out its branches like arms, but "the branches and the stretching would not give a better æsthetic effect, but would be ludicrous, the more nearly they resembled the form of human arms and their movement." "Nor is a tree more beautiful because I make a dryad live in it, nor mountains because of nymphs or dwarfs; and the stick that a child treats as a living thing, dressing and undressing it, is not made more beautiful than it is in itself."[1]

The beauty of things belongs to them, and just as in making knowledge we have to conform to nature, so beauty in the arts has to be contrived according to its nature. Our theories about beauty have to conform to it as it is actually felt. If a tree would seem ridiculous made more like a man, so a column would be ridiculous made more like a tree. And as knowledge at first convincing has often turned out to be wrong or inferior, so it has been with many a style and many a work of art.

§ 3. Thus we have three familiar statements in need of explaining, viz. love of nature is being in sympathy with the things of nature; it consists in filling them with a life and a spirit like our own; but it also consists in filling ourselves with their spirit.

The two in-fillings are easily distinguished in our fellow-feeling with one another. By one we form our thought of another's feeling; we read into him the feeling that we should have in the same circumstances, or if we exhibited the same expression or conduct as he. By the other we sympathise,

[1] Lipps, *Aesthetik*, i. pp. 166, 168.

VII. 3. imitate, fill ourselves with the feeling that we think his. In the first we may think him glad; in the second we are glad with him. Hence they are complementary and not contradictory statements when we say that we read our feeling into another, and that we imitate his feeling. In fact, as we saw, the reading and the imitating begin as factors of the same experience, and factors that are not distinguished in the experience, but only by psychology. It is only later that we can think a feeling, and think about a feeling, without having it (viii. 3).

It is really the same with our thought of material things and our feeling with them. We have a fellow-feeling with things because we read ourselves into them in perceiving and in explaining them. And in neither (*a*) perception nor (*β*) explanation is the reading artificial or gratuitous.

(*a*) Our thought of any object must consist entirely of what we have experienced, and merely for that reason we may be said to read nothing into things except ourselves, meaning by ourselves our experience present or past. In this sense we read ourselves into the ultimate properties of matter; into those, namely, by which we account for the change and the permanence of things. But we also perceive properties to be in things though we do not use them for such accounting, *e.g.* colour, sweetness, and the other properties called secondary. And we think things pleasant, though the pleasure is ours, beautiful and ugly, gloomy and lively. We give them even our action in perceiving them as when we say that a rhythm rises and falls, or that a vertical line arises and falls, though the rise and fall are named after movements in our organs that follow and apprehend them. Some of the properties, *e.g.* the visible form and the colour of an orange, we think quite as inherent in it as its mass and its tangible form. But others are detachable, *e.g.* its sweetness, and still more its pleasantness; these we refer indifferently to ourselves and to the orange, as when we say, This has a sweet taste, or, I have a sweet taste of it, This is a pleasing tint, or, I am pleased with it, I fear this noise, or, it is a fearful noise, The tune beats time, or I beat it. And beauty, though notoriously a matter of taste, must be felt as belonging to the object, or it is not felt at all; it has

even been defined,[1] though too widely, as our pleasure in a thing turned into a property of it. Thus in that thought of a thing before our senses which we call a perception of it, we throw into the thing not merely the properties by which we account for it as part of the independent system of nature, but all other properties that it has in relation to our senses, and even those that it has from our interest in it, and from our action in perceiving it. And there is nothing false about this thought of the thing. It would be false only if we added the reflection that the thing has these properties when it is not an object of perception. But that addition, though an error, is the work of a higher level of intelligence than perceiving. VII. 3.

(β) Our way of perceiving things is made explicit in our first way of explaining them, and especially in that explanation of things by a life and a will to which the name animism is now applied. It is a universal way in primitive culture, and the source of much mythology; to children it seems natural enough that not only animals but lifeless things should talk with one another; and we are all tempted on occasion to think that animals and things offer us a calculated and spiteful resistance. There is nothing strange in this way of explaining, for we never do confine our thought of things to what we can demonstrate. So far as they concern us we account for them somehow, always, of course, by what we know already, at first by our experience of analogous conduct in ourselves, and first of all by our effort in meeting their resistance. When we have yet taken little thought of ourselves we give to lifeless things, the more mysterious, spontaneous, and capricious they seem, the mystery of life, and life is given an experience and directed by a will. As a way of explaining, though wrong, this is not gratuitous. It only becomes so when we reach a better explanation; and that is not by a revolution but by a gradual correction that keeps pace with our growing knowledge of the system of things. The notions, for example, of force or power, and of activity, passivity, and spontaneity in things, even the push and pull by which we

[1] "It is value positive, intrinsic, and objectified. Or, in less technical language, Beauty is pleasure regarded as the quality of a thing" (Santayana, *The Sense of Beauty*, p. 49).

VII. 3. explain both movement and static condition, all are obvious remnants of our primitive explanation.

As knowledge does not prevent the sun from seeming to rise, and the earth from seeming fixed, so the sea continues to threaten, billows to aspire, and rivers to hurry and tarry, though we know it is all push, pull, and friction. For the animistic explanation begins before we set out to explain, let alone to make fancies, and before we learn it from language. Consequently it is universal, we all understand it; it appears to be a description of things rather than a hypothesis; and there is no sense of fiction in our entering into them, as if they too had a spirit. Sometimes we merely feign things to have feeling, and then imitate it; or first we may have the feeling ourselves, and then pretend that they feel with us. Such intentional personifying does not seem absurd because of the other, but it is artificial. If *it* were meant by our feeling with nature, and nature with us, we should grow out of it with advancing years, as we grow out of the fun of make-believe. And this is what is usually thought when it is said that science must destroy the poetry in things. But, on the contrary, it is inferior poetry, as it is inferior art of any kind that we enjoy better as children; we tire of 'the pathetic fallacy' which puts a fictitious spirit into things. But the return to nature at the end of the eighteenth century was expressly from fiction and abstraction to what was called the soul of nature, and the spirit in things. And it may fairly be claimed that in the next century the poetry of nature made "so decisive and so splendid an advance," as to be compared "with the parallel progress of physical science."[1]

We have, therefore, to look more nearly at the reading of ourselves into things. It takes us to the root of intelligence. I have spoken of the purely instinctive character of sensation; we are now to see intelligence as purely instinctive.

§ 4. A tune, a shape, a movement, a thing, a group of

[1] Palgrave, *Landscape in Poetry*, p. 182. "What was knowledge of nature now became intimacy; this word may perhaps fairly sum up the modern mode of landscape treatment in poetry. . . . We have at once greater accuracy of detail, and what in one word, though imperfectly, we might sum up as deeper penetration into the inner soul of Nature" (pp. 181-2).

things, may seem to need no construction for our apprehending them. But they do; they need constructing as mere sensations, and a further constructing as objects of thought. Both constructions imply our individuality, and the individuality that we ascribe to the objects as real is borrowed from our own. VII. 4.

Our sensations occupy time, and there is usually, if not always, some sense of their duration and order of coming; and to feel a continuity or an order of sensation we must be the same throughout the change. Suppose that in the course of a second we are given a series of sounds A B C D, two things are required to hear them as a series. When we pass from A to B we must still have some sensation of A, say a; when we pass to C we must retain something of this a and of B, and so hear *a* b C; and when we pass to D we hear *a b* c D. But we do not hear this complex sound as if it were a tone D with overtones c *b* and *a*. We carry forward not merely the sounds but their temporal order, so that, though in the last quarter of the second they are all felt simultaneously, they are felt at the same time as in succession.[1] Similarly, in order to feel any mass of sensation as a simple or complex whole, part must be added to part; and for this the subject feeling them must be the same. The whole is felt, and has character, as a whole, only if it keeps and does not lose the difference of its parts; and this is the case the more characteristic the whole, *e.g.* a melody, a shape, a rhythmical movement.

The second construction is in turning mere sensation into a thought by setting its content before us. This makes the sensory content more definite, but it does more. For, so far as the thought is also knowledge, the content of the sensation is identified; the thought has for its object not the content merely, but its sameness with others present or absent, and its difference from others present or absent. This begins our construction of the world of things, classes, and connections as every one makes it.

In speaking of our construction of sensations and of things we sometimes say that they take form in our minds,

[1] For an expansion of this in regard to the neural correlate of the sense of time see xviii. 6, 7.

VII. 4. but again that we give them their form, and again that the structure we give to them, or find in them, is an integral part of them as real objects. These statements are not inconsistent, but they seem so because of a persistent source of confusion.

The connections that we feel in sensation, the individuality of things, their having qualities, uses, number, spatial, temporal, and causal connections, likeness to some and difference from others, we *find* all this order in the world. But when we find that other people have the same experience of them we take them not merely as objects but as the stimulus causing us all to perceive alike; we take an object that we perceive for the stimulus by which we perceive it. And it is true that nature is at once the system of objects that we perceive, and the system of stimuli whereby we perceive them. But, first, we are always wrong in identifying any object of sensation or perception with the stimulus that produces it. And, secondly, we are always wrong in taking our sensation or perception for a copy of either object or stimulus. It is meaningless, we saw, to call any thought a copy or imitation of its object, for we could not copy it till we had already felt it; and to call a sensation a copy of its stimulus is to forget the organs of sense and the nervous system, or to think them windows or mirrors. Science easily convinces us of error in this with respect to colour and sound, taste and smell, heat and cold; and if we doubt with respect to other physical objects, viz. space, time, motion, and something or other to move and resist, it is because we retain the error that a thought must be a copy in order to be true, and because we mistake the aim of science in discovering truth. We shall find that the notion of copying or mirroring does not account for the correctness or truth of our perceptions (x. 2). And we saw that the aim of science is simply to carry further than in perception our knowledge of the construction of nature. As part of this it discovers the stimuli affecting our organs of sense. But these, and the whole scientific construction of nature—of the world as we perceive it by our senses—are found in terms of this world itself.

And if a sensation cannot be copied from anything, neither do we copy the connections among things. Things

might be alike, follow one another, be parts of a whole, be cause and effect; but, in order to think two things to be alike, it is not enough that they should be alike and affect us alike; and, in order that we observe their succession, it is not enough that first one should strike us, and then the other. So it is with the thought of every connection, from the simplest likeness, or temporal or spatial connection, up to any law of nature that generations have gone to discover. VII. 4.

Avoiding the error that our experience of things is a copy or impression of them we also avoid the error that we learn part of things by sensation, and supply part from our minds. If we say that our minds give form or connection to things, we have also to say that they give them their sensory qualities; and, if we say that things take form in our minds, we must also say that they take sensory qualities. We may say either give or take, but it is better and usual to unite these partial meanings by using the word 'find'; we *find* things to have colour, shape, energy, independence, and so forth; and we often find that they are different from what we had believed, and seemed to find. The reason for speaking frequently of our giving connection, and seldom of our giving sensory qualities, is quite intelligible; it is simply that our efforts, and the growth of our experience, are far more in finding connections than in finding sensations. But, on the one hand, we shall see, what indeed every one knows, that our power of sensation grows by learning, and is not all instinctive; and, on the other hand, that our power of constructing, or finding connection, has not all to be learnt.

§ 5. True, we have no instinctive ideas; we have to learn all the meaning that we give to our sensations. But, first, we have seen how reflex or instinctive movements, following on sensation, bring the data that we make into meaning. The meaning to which we are brought in this way is in accordance with our needs: different creatures find different meanings, take the aspects of things that concern them, and so find each a different world in the single world to which we all belong. And, secondly, the instinctive bringing of data would be useless, but for the power of making them into

VII. 5. meaning by grasping their connection. It is not enough that our sensations be connected, we have to feel the connection; not enough that they be like and different, we must identify and distinguish them. We do so instinctively: we instinctively set the contents of sensation before us, attending, identifying, differentiating, selecting them, and constructing new thoughts. This procedure—the process of intelligence—is as instinctive as our power of having sensation in response to a stimulus, and of following this up by a course of movement.

If it is hard for us, who rely so much on the look of things, to realise the thoughts of one who has never seen, and to follow the thinking of a deaf mute who cannot use internal speech, we may well suppose that a dog, relying on its sense of smell, gives a form to things very different from ours; and still more, of course, do creatures whose senses and habits are still more unlike our own. But quite as worthy of remark as the difference, is the sameness in our construction of things as we find them, and especially in our constructing them as things. For I suppose no one doubts that at least all the higher animals convert their sensations into thoughts of things possessing qualities, connections, and powers. It is the more remarkable, because the construction is one that science has to correct or keep to its place, much as the Copernican system controls our common opinion that the earth is steadfast and has the sun for a moon. We are always more or less astonished and disillusioned when we examine our thought of a thing. Besides our general surprise that no thought, not even a sensation, is produced by its object impressing itself on sense, brain, or mind, it comes as a revelation how far we model the attributes of a thing on our experience of ourselves. For this is what we do in regarding a thing as the subject of its attributes. We make them belong to it as to a self.

How we begin to read our sensations as things, and of this sort, we can readily understand; we have only to look at the occasion that forces on us the difference between our self and things. It is our experience of resistance, at first of resistance to our movements, and then of being thwarted in

any expectation.[1] In our first sensations of resistance we do not yet assign part of the force to our self and part to the object; there is mere sensation. But, as our effort persists, the division appears. The resisting object takes a practical interest as resisting, and so as a force opposing ours. It is a force of the nature of ours, for this is the only force we have felt. This reading of an active subject into things is the easier that one of the first things we know, and know as resisting, is our own body. And the active subject, by which we thus account for the force, unity, and independence of things, is not merely dropped when we have lost all tendency to think it conscious. It continues as the vague notion of a substance in them of which I spoke in the first lecture. VII. 5.

This notion of a substance is converted by science into the notion of a structural unity containing a store of energy. But it is not with this skeleton of science that we have fellow-feeling, but with things as we perceive them. They are things that we perceive, and not the stimuli or world of stimuli whereby we perceive them. They are not the world reduced to a common denominator, deprived of sound, colour, and visible form; they are the world in which we find the fulness of our life. When to our fuller knowledge they lose their spirit with their magic, we continue to see them as if a spirit were there. They still possess their qualities, still unite them, and still exercise their powers; they shrink and stretch themselves out, yield and resist, rise and set, are awkward and graceful.

That is what they do as objects of perception, even if we think it wrong. In trying to correct it we may give

[1] This latter—the experience of being thwarted—is also the occasion for our differentiating what is real from what is not, but merely our thought (x. 3). Three distinctions, all occurring very early in experience, it is useful to state together, because we find sometimes one, sometimes another to be meant by our experience of the difference between subject and object. (*a*) The first is the difference between subject and object in every experience of an object (iii. 1). Here the subject is not made object. In the other two it is made object, but differently. (*b*) One is our experience of the difference between our self and the world. It begins in the experience of resistance; here our effort is set before us as well as the resisting object. (*c*) The other is our experience of the difference between experience and reality; here our self and the world as we think them are distinguished from them as they are. It begins with the thwarting of any expectation or belief. (*a*) is presupposed in (*b*), and both in (*c*).

VII. 5. a fuller life to things by making them members of the single living body of nature; we may see in nature not merely the means whereby we commune with one another, but an expression, or other revelation, of a world-spirit or God. On the other hand, the correction of our naïve view may take the opposite direction—that of materialism—which ends in the view that nothing really exists but in terms of the common denominator. Or the view may be taken that nothing we can know in ourselves or nature can possibly be real; or, again the opposite, that there is nothing real but experience. And the point for us to observe is that none of these views makes a radical correction of our view in perceiving; we may change our mind about them without disturbing it. "Nature has not left this to our choice, and has doubtless esteem'd it an affair of too great importance to be trusted to our uncertain reasonings and speculations."[1]

§ 6. It might therefore seem that there is a conflict between our perceptual, individualising thought of things and our better understanding; it is often called the conflict between sense and reason. But the quarrel is not hard to adjust, if we look at the claims of the two sides, and remove their common misunderstanding.

First, it is not the perceptual construction that is wrong. We are often wrong in our use of it, as when we mistake one person for another, take shadow for substance, think a stick should look the same in water and out of it; and we are none the less wrong when the error is unavoidable, as in many illusions and when we dream. In respect of these errors reason easily convinces us, but by making a fuller appeal to sense. The quarrel of reason is not with the perceptual construction, but with a theory about it, the theory that sensations are a copy, and that things have colour when there is no eye to see it. The theory is originally due, as I have said, to taking the things and qualities we perceive for the stimuli by whose means we perceive them. But this is a theory, and whether we take or leave it makes no difference to our actual perceiving. Animals, children, and the vast majority of mankind do not form it; they do not ask them-

[1] Hume, *Treatise of Human Nature*, bk. i. pt. iv. 2.

selves what a thing is like when no one is perceiving it. The VII. 6.
theory is not an error of sense or perception, but of reflection or reason; and when it cannot account for the truth of our sense-perception, and the reality of the things we perceive, there is nothing in sense and common sense compelling us to keep the theory against a better.

If we turn from sense to reason we find that its quarrel is based on the same confusion. If we know that the train is moving and not the trees outside, that the sun is not rising but the earth turning, that we should see the size of the sun and moon at their rising and setting to be much the same as at the zenith, we are apt to think that sense-perception should give way to reason, and is refractory because it will not. But we think this because we assume the copy-theory, and confound the objects of sense with the stimuli of sensation. On the contrary, the full fact for reason to explain is that we see the trees moving, the sun rising, and the rest. Sometimes by practice we can dissolve an illusion, more often not; but, whether or not, we have simply so much more fact to explain. It is not because we can dissolve an illusion that we know it for an illusion, and we do not think it the less an illusion if it resists our efforts. The only resistance to reason is when reason forgets her proper place of explaining facts mental and physical, and says what they ought to be.

The only resistance to sense-perception is when it is thought to speak of the nature of things as they are not perceived; what is resisted is an erroneous theory accounting for perception, and not perception itself. If reason does not quarrel with our sensation of blue, though things are not blue without an eye to see them, so it does not quarrel with their individuality, though there is none except to an observer. It is not as if reason had one sort of authority and instinct another. The truth in the thought of the individuality of things, like the truth in the sight of their colour, is simply that it works. They are not true because they are instinctive and we cannot help ourselves; they are instinctive because they have been proved so long to be true, in other words, to work. We are afterwards to follow the development of intelligence from sensation to perception, and

VII. 6. thence to reason, and we shall find that it has a single task at all grades, and that, at all of them, the criterion of truth is the system of truth to which it claims to belong (xiv. 5, 6). The development of knowledge is by a tentative seeking of what will work within the system. The seeking is in more and more definite directions the better the knowledge already in hand. It becomes a deliberate hypothesis, instead of a seeking by mere trial and error. If it were within our task to consider the development of knowledge in the race, and not merely in individuals, we should find the same thing: we should see the development from common to special sensation, and from sensation to perception, to be also a groping, and a seizing and fixing of the advantage, or better knowledge, when it came.

§ 7. We read things in our image though we regard them as lifeless and unconscious. For, as merely individual, each possesses and unites its qualities, and exercises its powers in a community of other things. The only way in which we can set this property of theirs directly before us is to live it. As for merely thinking about it, we can do that in a thought which merely means it; but, in order to realise this meaning, we must think it out, and that is to live it, for, of course, our own is the only life that we feel. There is no opposition between the thought of this real nature of things as we experience them, and the thought of nature as the real or independent system by the discovery of which we can calculate and so far control them. Art takes the one fact, science the other, and so their faces are set in totally different directions. If we looked at nature as science aims at finally presenting it, we should never suppose that the divergence of the path of art from that of science must be in play, or a weak preference for the appearance instead of the reality of things; and we should not look on the mere understanding of things as an advance on their æsthetic and sympathetic understanding. They go in different directions, starting with little apparent divergence at that level of understanding where we begin to distinguish the objects of sense and their stimuli. Science develops the notion of them as stimuli, art develops them as objects to experience.

It is the aim of science to discover the systematic character of things, and to do so it breaks up their individuality; they no longer obey and execute the law of their nature; they are examples and parts of a system that may conceivably be stated, though only conceivably, in purely mechanical terms: an infinitely complicated diagram of mutually determining points in ceaseless readjustment, occupying the minutest portions of an infinitely divisible space, but as little in darkness as the light, and so on. But art deals with things as we experience them, as they have value, satisfying not our appetite for knowledge, not our head merely, but our heart. In next lecture we shall see that as science aims at laws or general forms which, in the degree they are understood, give us the organised thought and interest of a multitude of facts, so art aims at individual forms which, in the degree they are lived, give us the organised thought and interest of a wealth of life. VII. 7.

LECTURE VIII

ABSORPTION IN AN OBJECT

VIII. 1. § 1. ABSORPTION in an object consists in attending to it, and so thinking it fully, from interest in the object itself. The last words distinguish the experience from others where we are absorbed, but not absorbed in the object. We have already seen the difference when distinguishing the three forms of interest, and we saw that interest is coincident with attention, and attention with the development of a thought. Let us begin (*a*) with the attention and interest, and then the thought, in the experience of being absorbed in an object. After that I shall take as an example (*b*) the appreciation of æsthetic quality, and then, by way of conclusion (*c*), the scope of our sympathetic and æsthetic understanding.

(*a*) We may be absorbed *with* an object in any one of our three groups of interest, but in only one of them do we say that we are absorbed *in* the object. In absorption in or with, in all great attention, we prevent our thoughts from wandering: we hold the object before us with or without effort, and with less effort the more we are absorbed. We may do it in order to understand the object better, or in order to act in view of it. Our interest is then cognitive, however fascinating the problem, or practical, however exciting the occasion. But when we attend to the object for nothing but an interest in itself, then the more it interests, fascinates, possesses, carries us away—the words are worth observing—the more we are absorbed in it. We may at the same time have a purpose to understand it, and a practical purpose with it, but so far we deal differently with

the object in attending to it, as we shall afterwards have to see. For then we are absorbed not in the object, but in our purpose with it; we take a critical attitude towards the object, or we make it merely a means; its value, the satisfaction we find in it, is not on its own account; we are not absorbed in it, but only absorbed or occupied with it. It is when we have no ulterior consideration or purpose that we can freely indulge in experience of it. And we do so voluntarily or involuntarily, and not only when the experience is pleasant, but when it is unpleasant, as when we give way to a pain, are lost in a horror, or sunk in a grief. VIII. 1.

When absorbed we are said to lose ourselves, meaning that we lose thought of ourselves. There is no more mystery in this than in our ignoring the things about us of which we usually take thought on slight occasions. But confusion is certain, if the self as subject is not distinguished from the self as object of experience. It is always subject, but it is only an object when we set it before us. When we speak of self-forgetting, or losing ourselves in thought, we simply mean that the distinction between our self and other objects is not before us. Neither in such a condition are we likely to distinguish whether a clock has struck three or four, or, if we are deeply absorbed, whether it has struck at all. The reason is the same: we are pursuing matter of more interest (§ 2). The self-forgetting is usually greater when our absorption is in the object than when it is in a purpose to understand it, or to act regarding it. For the sense of something to achieve, the criticising, the choosing, indeed the mere looking forward, all tend to drive us from indulgence to take thought of our going. But to be absorbed in an object is all indulgence; and, when the object is experienced as individual, we live it. So we may lose ourselves in living the joy or sorrow of another, and all art demands it for its appreciation.

The self-losing or self-forgetting is a self-realising; so indeed is every experience, as we saw when considering the work of self with its faculties (v. 2). But an experience may realise little of our self or much; and, if much, we speak of realising our self as identifying our self with the object, or with the purpose that absorbs us. When it is

VIII. I. with a purpose that we identify ourselves, we are said to live for it; when it is with an individual object, we are said to live it, or to live in it, and we speak indifferently of realising it in our thought, and of realising ourselves in our thought of it.[1] The meaning of this will be apparent when we look at our absorption in an object from the other aspect, viz. from the thought in the experience (§ 3).

§ 2. But we have yet to look at the dependence of our interests on their bases (iii. 6), and so on one another.

Our cognitive interest, as we saw, is mainly in objects that have also a practical or an intrinsic interest; our practical and intrinsic interests depend greatly on the knowledge we have gained; and we are about to see how intrinsic interest is a means to knowledge and conduct. Most objects offer us all three, and our total interest in an object at any time may include them all. But when we proceed to develop any interest, and especially to the point of absorption, conflict may arise, and always more or less of repression. For we can take only one direction at a time, intellectual, or practical, or purely intrinsic; and we succeed best when the interest we take is absorbing and exclusive. Even when our interest in thing or problem is in it as a means, we succeed best if we can forget our purpose for the time being because we do not need to think of it. It is a distraction and a sign of weakness when we have to think of the pur-

[1] When we speak of realising our self, we may mean by self one or other of three things. The context is usually enough to show which is meant, but it may also show confusion. And apart from the need to distinguish them, it is a good exercise to do so, in order to be clear about the difference between self and its experience, and between both and the rest of the world.

(1) The first meaning points to the difference between an ideal self and the real self. The latter is the one we actually are—the character in any respect that we actually have achieved; whereas an ideal self is one that we should like to be, and a species of it is the self that we ought to like to be. When the ethical or the educational end is said to be self-realisation, it is meant that the end is to make the ideal self the real, to make it our actual character. (2) The second meaning is that in the text above: it points to the difference between self and experience. Experience is always the work of self, and in it the self is therefore said to be realised, as distinguished from being merely faculty, or power to experience. (3) The third meaning is familiar in non-technical writings: it points to the difference between self with its experience and the rest of the world. So far as the work of a self is merely its own experience, *e.g.* its projects, desires, opinions, it is not a work that others can know. It is no part of the world to them, it is not real to them, till it is expressed in words, or otherwise turned into a work of nature; and then the self is said to be realised.

pose, instead of taking it for granted; and of course it is still in the way so long as we have to try and forget it. When a physician sends a patient to golf, he expects him when playing to forget the reason, and without trying. The reason is only to be a spur if the interest weakens, and to be a defence if it is threatened by the thought of work waiting to be done. It is the same with the pursuit of purely mental interests, and for no mysterious reason about the weakness of our minds; it is the same in the strongest minds as in the weakest. To develop any interest about an object, to dwell on an object for any reason, is to develop our thought of it, and in one direction to the exclusion of others. To take no decided course, to be unable to treat the matter of our thought in one way because we may also treat it in another, or to try and give it two forms at once, is the mark of weakness and not of strength. Hence, while our interest at any time may include all three forms, when we attend it is to develop the base of one of them, and often their bases one after the other. VIII. 2.

But the result of developing a thought in any one interest may bring a fuller base for other interests. We are familiar with this in the development of our intellectual and practical interests. And it is no less true of our æsthetic interest. In reading a story your curiosity about the manner of its ending may prevent you from entering into the minds and scenes that the author sets before you, and you skip the descriptive and the reflective parts that he has laboured. It may be his failure, or it may be yours, that curiosity—a merely cognitive interest—thus takes the place of the æsthetic interest that he also offers. But curiosity may not displace it; it may add to the fulness of the thought which is the base of the æsthetic interest. In reading the soliloquies of Hamlet or Macbeth for the first time, your doubt of the issue adds to your æsthetic interest in their doubts; your intellectual increases your æsthetic interest, and is felt with it. In the second reading, this doubt about the issue is absent, but the æsthetic interest has now a fuller thought for its base by your knowing the end. There is still plenty left, however, to understand and reflect about; and this matter of intellectual interest, once it has

VIII. 2. been grasped, adds itself in turn to the base of your æsthetic interest.

A work of art usually requires some effort for its mere or intellectual grasping, and the pleasure of discovery in it is not adverse to its æsthetic interest. Indeed, the pursuit and discovery of 'new beauties' is sometimes represented as the real source of its interest; but that is wrong, or the language is misleading. No doubt a fresh addition to the base of interest is a special delight, but it is not on the chance of discovering something new that you return to music, picture, or poem. Interest does not depart from them when there is nothing more to discover, as from a detective story or a squeezed orange; they do not grow stale the better you know them. Some things, once they are understood, bear little repetition, some bear much, and, though all at any time may have an over-much and become stale, remember that after an interval, whereas you would only take up most novels again in the hope that you had forgotten them, you go again to an opera in the hope that you remember it.[1]

Practical interest adds in the same way to the ground of æsthetic interest; it is again by developing our thought of the object. When we take to ourselves what we read, when the sight of tragic suffering reveals the meanness of our own annoyance, when in the presence of what is sublime we have a sense of humility, of aspiration, or we fall to resolving, all these turns in the course of our thought are in a practical interest. But some of them give, and all of them leave an addition to our purely intrinsic interest. And this interest is æsthetic when its base is not merely suggested, but expressed in an individual object, usually an object of sight or sound.

§ 3. Let us now examine our thought when we are absorbed in an object. It is not the thought of any merely abstract or general object. Only individual objects and their concerns, not theories, laws, aspects, have a purely

[1] "Neither is there any better test of beauty than its surviving or annihilating the law of change; . . . for there is much that surprises by its brilliancy, or attracts by its singularity, that can hardly but by course of time, though assuredly it *will* by course of time, be winnowed away from the right and real beauty whose retentive power is for ever on the increase, a bread of the soul for which the hunger is continual" (Ruskin, *Modern Painters*, pt. iii. i. 6).

intrinsic interest, unless we personify or otherwise make them individuals on their own account. Nor do we find it even in individual objects, however full our thought of them, if our purpose is still merely to understand. And we may have a very full thought of them in order merely to understand them. An object may be set vividly and fully before us, but if the purpose is to illustrate a point, or to see how the thing fits together, or to deal with it in any way, we are describing the thing or explaining it, we are picking and choosing among its qualities, we are analytic and critical, we are not absorbed in it. Such a thought, especially a course of such thought, is often fuller than when we are absorbed in the object; but the filling is different. A physician follows the symptoms of his patient with fuller thought than an ignorant bystander, who may yet be so absorbed in the object of his sympathy that he not merely sees the symptoms, but repeats in himself the feelings that they seem to betoken. The first time a student sees an operation he feels the knife in his own flesh; later, when he does not, he has a fuller thought, and it may be the base of a deeper interest, but they are a different thought and interest. Though we cannot have a correct thought of another's feeling unless we have once experienced its like, we may have not only a correct but a full thought of it without our having it, living it, being absorbed in it. A critic must be absorbed in a work of art so far as it can absorb him, before he has the proper matter to criticise; but the critical attitude, though it requires a fuller thought of the object, is not a simple addition to his absorption. He cannot at the same moment be fully occupied with both it and his opinions about it; and when he comes to write them, he must remember how he was affected without requiring to be affected again. How this is possible, how far it is necessary to reinstate the old conditions of our experience in order to remember it, is a natural question to which the common answer is given in a general statement called the ideo-motor law.[1] It is not a VIII. 3.

[1] Applied to the present case the common answer is that the critic in remembering gives himself a weakened form of the original experience on which he bases his criticism. But (1) he does not base it on the weak form, but on the original, and if he now and then gives himself the weak form, it is to help him to remember the original experience. And (2) since he knows the weaker form to

VIII. 3. very enlightening statement (xviii. 13), but the fact of the matter is obvious enough even in the examples I have given, and more obvious in matters that are more familiar; for, of course, we need not be hungry, angry, or sleepy, when dealing with the experience of hunger, anger, and falling asleep.

The experience of being absorbed in an object is one that we have through life: it is in the shallow but absorbing interest of tastes and colours to an infant, as well as in the intrinsic interests that need much learning and a wealth of past experience. The lower the level of intelligence, the less definitely our interests in an object are separated from one another; but as the objects that are thought are less abstract, they are the easier to experience completely, and not merely recognise. The higher the level of intelligence, the more often we deal with objects in a merely intellectual or a merely practical interest, but the fuller the flood of experience that we are able to live in them, when we realise our knowledge and are absorbed in them. Compare a child's delight in nature with our own, the music, the pictures, the tales it prefers with those that we prefer. We call works of art superficial that absorb us little, while others we call deep and suggestive. And with respect to the purely intrinsic interest that we take at any level of intelligence, two things are easy to observe. First, an object may have an intrinsic interest for us at one time, while at another we may be satisfied with merely recognising or knowing it; and one fact that we may recognise in the object is that it would have an intrinsic interest for us, if we chose to be absorbed in it. Secondly, the purely intrinsic interest that we take in an object may be slight at one time and absorbing at another.

§ 4. But we must delay over a third point, viz. that our purely intrinsic interest and its base may be intensive or extensive. There is the same difference regarding other interests and their base. We grasp a mass of knowledge in

be defective, and only a sign, he knows the difference between it and the original. In what does his thought of this difference consist? It would be absurd to continue the answer and say that he thinks the difference in a still weaker form of the original.

a single thought, *e.g.* a formula or a theory; or, again, we VIII. 4.
draw out the mass into courses of thought. The single thought may be called the involved or intensive thought of those into which it can be evolved or extended. Its truth has an interest in which are funded the several interests of the particular truths that it unites and can suggest, together with the interest of their mutual connection. As the single truth is not felt as a collection of the particular truths, but as a form in which these are organised for a single grasp, so its interest is neither the sum of theirs nor a mere abstraction. It is our interest in the particular truths as organised in a form. It is the same with our practical thoughts and interests. A piece of conduct is often hateful or delightful not so much for itself as for what it betokens. An unexpected piece of news gives its shock of joy or sorrow before we begin to work out the wealth of its suggestion. And so it is with our purely intrinsic interests and their bases. You have observed how one who is plunged in grief follows memory after memory, but constantly turns to an inexhaustible store in the single thought of his loss, whence his grief breaks out afresh, and again proceeds to relieve and exhaust itself in another memory, or a thought of his lonely future.

Our interests grow together; they affect one another, as we have seen; and we often find them so far unaccountable that though they have been learnt we have forgotten their source, and cannot extend the thoughts which are their base. We feel an argument to be wrong, but cannot put our finger on the error; and we pass judgment on manners, conduct, and character, that we feel to be good or bad, though we cannot give a reason to satisfy even ourselves; it is enough that we take ourselves to be fools or dogs to think or to act otherwise. There is abundant illustration in the common sense we have gathered, and in the customary beliefs and practices that we have adopted without reflection. We shall consider the growth and structure of such thoughts when we take the growth of mere understanding, and especially the growth from implicit to explicit knowledge. And even more than in belief and practice our purely intrinsic interests gather bases for themselves that we cannot extend. A

VIII. 4. fashion that to one generation seems fitting, and ludicrous to another, appears to both to have the quality intrinsically, though it is obviously a matter of custom. Faces, scenes, tones of voice, may have all their charm, or most of it, from our associations with them; they keep it as their own when we have no thought of its origin; and new faces and scenes that happen to be like them take it as well, though we may have no thought of the likeness.

You will find it a good exercise to examine your thoughts of familiar objects like home and country as bases for the varieties of your interest in them, and for the degrees of your interest. Taking their purely intrinsic interest, you will observe how it varies with the scenes and deeds you recall, how you may have a fuller emotion when you dwell on home or country as a whole than when you extend your thought, but how, after the extending, your thought of the whole may be the richer or more vivid. And two things will meet you that need explaining. First, it may seem that you can have the same thought with and without emotion; and, secondly, you will observe how greatly your interest depends on the form that embodies and organises the object.

You may be quite as callous when picturing home and country, when studying plan or map of them, and even when having them before your eyes, as you are in your most casual thought of them. And it is not because, like an old story, they have grown stale. It is because you think them as things to identify and describe, things of which to form correct and full thoughts, things to work or care for, and not simply as things to live. If you try, you will see that you can easily take the thought of your home in a merely cognitive way, and again, that you can fill the thought with affection. At first it seems that you have the same thought cold, as it were, in the one case, warm in the other, and that this difference has no difference of thought for its base. And, if we compare different minds, it seems apparent enough that they may have the same thought of an object and take a very different interest in it. But then the nature of our omission will also be apparent. We are comparing not their whole thought of the object, not the whole object as they

think it, but a certain portion of it. This portion that we mistake for the whole is the thought of an object so far as we take it for real, independent, common to us all. But we never confine our thought to that (iii. 4 γ); the full thought varies with the interest that we happen to have in its real object at the moment. It is the more important to observe this in order to avoid the error that first we have thought of an object, and only then take interest in it. To the same error is due the confusion of the base with the cause of our interest. No experience, we saw, is ever the sole cause of another; and while the thought or base is very often a cause or occasion of interest, it is also true that, conversely, the course of our thought is due to our interest. We are familiar with this when occupied with practical or theoretical problems. But also when our interest is purely intrinsic; whether we see the same sunlit sea to be smiling frankly or in treachery is a matter of our mood. And, finally, since our thought of the same real object varies according to the kind of our interest, it is not surprising that it also varies according to the degree of our interest. VIII. 4.

§ 5. (*b*) We take a special case of these variations when, secondly, we turn to the importance of the form expressing the thought that is the base of a purely intrinsic interest. It has the same importance as laws and definitions have for knowledge. The most prominent part of any familiar notion is the word that holds it for us. Some have believed the word so essential that without it we cannot think of a general object; and some have even believed that we think only the word, as if it were a substitute for its meaning. We shall find both views to be wrong, but they point to the importance of the word in the thought. Now the mere word expresses a merely cognitive thought; but the tone in which it is uttered, the emphasis, dwelling on it, repeating it, these have their meaning too. They imply that the word holds a different or a further meaning for him who used it than it has in a dictionary. And they express or symbolise this part of the base to others. It is his tone, for example, and not what the carter says, that speaks to his horse. So to us 'this dear, dear land,' and 'Babylon is fallen, is fallen.' I remember how an Italian orator would return from the tale

VIII. 5. of his reminiscences, wrath, and hopes, to mean them in a simple 'Italī maī Italī.'

We hear these simple means of expression with an intensive thought that is mainly due to the context, and so far they cannot be said to embody the meaning that we throw into them; for we do not have it in returning to them away from their context. The same is to be said of any fragment of a work of art. But the whole as a work of art needs no context, or none that needs a separate recalling; it is not like a pregnant hint which we bring to birth in reflections and memories; it holds all that it is expected to mean, provided we can absorb ourselves in it. To do so we must no longer have to remind ourselves of anything, when, for example, we look at a historical picture; and we must no longer find difficulty in grasping a whole in its complexity, when, for example, we listen to difficult music. It is when effort has succeeded, and is no longer present, that the work of art can itself express the whole intensive thought. When we find in literature and art what is deep and suggestive, we have not to think about what they suggest, making reflections, absorbing ourselves in memories, reveries, thoughts of love and death; or, if we have to do this at first, we do not require to do so afterwards, and must not. If the work grips us, we do not wander from it, and yet its grip or stirring is all in its suggestiveness. This is how beauty, *e.g.* a grace or a grandeur in nature or art, must appeal to us. The object of sense is the object to which we attend; it, and not a suggestion, the work before us and not our work, is the object in which we have to be absorbed. It may be all sensation, as in listening to music, where the hearing is all a work of what we shall call sensory intelligence. But it is only possible because this lowest form of intelligence is an organ of the highest (ix. 7). Our hearing has to grasp the object as an individual whole in its full complexity; and, if this object on its part is able to grip and absorb us, we do not leave it, in listening, to follow what it suggests. For this reason the work of art is said to embody the thought. The body must hold this soul that it expresses not as in a casket, but as itself the soul made visible and tangible. For the same reason it has also been called a

symbol of the thought, but in a sense the opposite of the usual meaning of symbol, where, like emblem, allegory, and idol, there is pointing beyond itself. A work of art professes to give its all, only if we are absorbed in it alone. This, again, is meant when it is said to present an idea, or to express a nature, to our senses. But it is not well described as a treasury of many pleasures for a competent observer, since it is not a collection, and there is mere squandering in spending the treasure piecemeal. It is no wealth certainly that does not command variety, but the variety can only be felt in its fulness by those for whom it forms a whole or unity, of which it is the complexity. With the time arts, *e.g.* with music, poetry, and drama, this is the case, as well as with the spatial arts, *e.g.* painting, sculpture, and architecture, where the work must affect us most immediately as a whole and self-sufficing.[1] VIII. 5.

To experience it we have to live it. This means that we have to think it as we think a living and a conscious being, but it does not mean that we have to believe, or even assume, that it is living or conscious. The difference will be clear if you distinguish the ways in which we may see the same work of art, say a cathedral.[2] As real, a portion

[1] "We only find our full pleasure in the contemplation of the whole when we apprehend some considerable complexity in the parts; only care to follow out the relations of the parts when we feel that they are fused into a single grand impression. . . . The apprehension of these two elements in the effect of the beautiful object should be a single act. We should feel, so to say, the parts in the whole, the whole in the parts. . . . The judgment of the artistically uneducated attaches itself to the parts, which they will investigate and analyse with tedious ingenuity. . . . No better advice can be given to those who wish to become educated in art than that they should begin by mistrusting all their own judgments when directed towards *the parts* of an artistic unity, and attempt for a while merely to get the utmost satisfaction attainable from the general effect of the whole. . . . 'Harmony' is the element of unity; 'strength' belongs rather to the parts; but neither the one nor the other will do alone. Harmony is an excellence cheaply won when the elements to be arranged in accord have no decided character" (Baldwin Brown, *The Fine Arts*, pp. 240-244).

[2] "The inside of a cathedral *rises* to my view. It rises from the point of view from which I follow its structure. It stretches itself in different directions, and all in every moment anew. It is alive in all its parts in the same sense as the space of the human body. It is neither a physical nor a merely geometrical body, but an æsthetic body. Lastly, it has its limbs. Similarly the space of a church with niches and porches has its limbs in them. It stretches itself and so pours its life into them, just as a man stretches himself in his limbs, and pours his life, that is to say, his will, into them. And, as a man does, it may do so freely, boldly, and very likely in play" (Lipps, *Aesthetik*, i. p. 258).

VIII. 5. of the independent system of things, as offering problems and answering purposes, no one will suppose that it has artistic quality. But also when we judge it to be beautiful, or grand, when we recognise the intention of the builders, and set ourselves to follow out their design in detail, our thoughts are so far not the base of æsthetic interest, but of an intellectual interest in beauty. They presuppose another kind of thought whose course they interrupt. They interrupt our sense of its beauty for the moment to pass judgment on the cathedral as being beautiful, and still further to describe it at greater length, or to analyse it. If by their means we reach a fuller sense, it is because we then return to our first manner, and live the unity of the building in a fuller complexity. When we judge, describe, and analyse it, we treat it as an individual, but, in the experience that we call a sense (ix. 5), we make and find it individual. The object that we thus live is simply the object as we think it; and you will remember that it is a further act, and in a cognitive interest, to make any claim about it, even that it is of such and such a nature. The object as we think it in living it is either, if it is music, changing its aspect every moment, or, if our cathedral, stretching and holding itself; but when we set it before us to claim it for beautiful, to describe, or to analyse it, it no longer lives. For it was our life that it lived according to its nature, and we have ceased to live it, pursuing now another interest. We have now to turn it over in our minds in a reminiscence of its life, or we proceed to dissect it. We think about it as we lived it, but of course we make no claim or assumption that it is now alive, but only that it can take the breath of life and breathe the same spirit again. We can think objects to be individual, and think about them as individuals, without living them, but, as we saw in last lecture, this is only because we have had direct experience of living things analogous to them. When we assign æsthetic quality to objects that are not objects of sense, *e.g.* to beautiful souls, brutal characters, inspiring ideals, it is because they are lived. When we speak of a fine system of cataloguing or of banking, a neat or a lumbering method of proof, a beautiful or an awkward implement, machine, means of any kind, we think of them as embodying

and executing a purpose, and so as persons of a sort. And intentional personifying is laboured and unpleasing because it is only a galvanising to life (vii. 3). VIII. 5.

§ 6. In the rest of this lecture I shall consider æsthetic absorption more fully, though still so generally that we shall not have to distinguish the different arts, nor even their difference from literature. And I shall conclude by pointing to the importance of absorption in things as a means to other interest in them, viz. to knowledge and conduct.

"It is for art to gather into one focus . . . the genial memories of a lifetime, the instinctive memories of a race."[1] Tone and rhythm, colour and form, have a natural beauty or ugliness, are a natural base of emotion. In their native emotional qualities we have instinctive memories of our race; and so, as if the syllables of a natural language, they are used in art for the construction of objects of sound or sight which embody a memory, as it were, of our lifetime. Other sensations take an æsthetic quality when we objectify their content, and find in it qualities that we call crude or delicate, gross, charming, and even beautiful, as we now and then speak of odours. Such qualities of lower sense we do not distinguish till we have felt them in other objects, but they are qualities native to the sensations and not due to association. In respect of them the sensations have affinity with other objects, and so have a natural expressiveness or suggestiveness. But sight and sound have a far greater complexity, admit of an infinite variety of form and combination, and it is their special province to inform us of the multitude of things about us far and near, and to reveal our minds to one another. Their interest is not so intense as that of sensations more immediately connected with our vital functions, but it is the less agitating. Eye and ear are the more contemplative on that account, and also because, unlike the sense of taste, they do not appropriate or destroy their object, and, unlike the sense of smell, they are not easily exhausted. The mere tones of sound and of colour have affective qualities corresponding with our tones of mind. Sounds as well as light and colour are clear or dull, colours as well as sounds are loud or quiet, and (against what we

[1] Ward, art. Psychology in *Encyc. Brit.* xx. p. 70.

VIII. 6. should expect, comparing the vibration frequency of their stimuli, if (xviii. 17) the emotional qualities had a simple physical explanation) we feel the colours at the red end of the spectrum to have the stirring effect of high notes, and deep notes to have the calm of blue. Shapes and curves, as well as rhythms, are naturally gay or austere; and rhythms, like shapes, are smooth or rugged. These affective qualities of sound and sight are not borrowed from the associations in which we happen to have met them. We do not have to learn them, though their expressiveness develops with our experience.

We should not call them æsthetic because they are affective qualities, unless we care to say that a piano has an æsthetic effect on a dog, and a red rag on a bull. Tones of voice, the brilliance of light and colour, the gloom of a gloomy day, have their influence on the mood and conduct of young people, but it is not an æsthetic effect till they are made an object of intrinsic interest. Then the interest can hardly fail to be æsthetic. The object is not merely pleasant or unpleasant, stimulating or depressing, but beautiful or ugly. The voice, the colour, the day is felt as having a nature of its own, which is revealed and embodied in the sensible quality, viz. the timbre, the brilliance, or the gloom. The nature that we thus find in the object is no other than that which we live when absorbed in it, and so it depends on our past experience how much we find in the timbre, the brilliance, and the gloom. They do not need to recall our days of passion, gladness, or misery, for then we should be leaving them for these; but it makes all the difference whether we see them with a mind that has felt much or little. Hence, in expressing the nature of the objects to which they belong, they also express the memories of our lifetime; and especially in works of art and literature, where our memories are gathered and raised to the expression of genius.

§ 7. Since they can express no nature but one that we can live, they express nothing that we do not read into them. But this is an explanation, and it comes to us with the same surprise that we have in finding that the very individuality and powers of things are in them after our image. As there, the explanation does not alter our perceiving. For a

thing to have æsthetic quality it must be felt beautiful or ugly in itself, just as its colour is felt to be in it and not in our eye. Its beauty or ugliness must be felt as expressing its own nature, but its nature as we live and experience it. We expect all the arts to have truth as well as to please, and those artists are right enough who claim to paint only what they see. But their copying is a revealing; it is nature as they see it; and it has taken them to see it, if their work has any distinction. There is no moral obligation that we should be true to real or actual nature, except where that is professed, as in portraiture; but an object of imagination has its own nature as an object to experience, and to this they must be true. We speak of dramatic poetry as holding the mirror up to human nature, though it is all in language that is as unlike our natural talk as it well can be; we expect this truth even in opera. And in music, the freest, most creative, or least imitative of the arts, the greater its complexity, the greater the need of individuality or unity; the parts have to be true to one another and the whole, contributing and conforming to the nature of the whole as a thing to experience. Truth of this kind—æsthetic truth—is required even from the conventions of ornament, from Ariel and Caliban, from lights that never were on sea or land, from the weird and mysterious, and even from the grotesque. VIII. 7.

Owing to this æsthetic obligation a painter usually takes his subjects from nature, and must always conform to their type. When he is said to idealise or beautify, it is meant that he makes crudeness look crude, as well as charm look charming. He elephantises the elephant, he does not give it a grace; and, if he is said to emphasise or select, it is not to express less but more of the essential nature of his subject. He may give satisfaction, not merely admiration, in contemplating things that are crude and terrible, mean and ugly. He might, indeed, despise the things of earth and paint handsome creatures of his own devising. But he does not, for the same reason that he does not select invertebrate creatures, wonderful enough often in design and colour, and prefers to paint the sea rather than the fish in it, and the air than the birds in it. His work depends on our filling it with an intensive thought of the life that he

VIII. 7. expresses in it, and we cannot, if it is utterly unlike what we have known and lived before; his handsome figures would be diagrams. Or if, in order to be absorbed in them, and to fill the emptiness in our thought, we found a likeness, there is the risk that we should then find them grotesque, and even revolting. The face of an angel must be human. In our daily life there is plenty of ugliness that escapes us, and in most things we find little or no æsthetic quality, but the merely abnormal is an ugly that forces itself upon us. Apart from it, an object might be indifferent, and we should not seek to live it but this compels us. An eye in the back of a man's head might be as beautiful as it would be useful, but we should see it not merely as wrong and out of place; it would be a gruesome thing to see.

§ 8. Though we can distinguish in all art and literature between the form and the nature or matter that it embodies and expresses, the difference is made only in explanation or on reflection; they have an interest apart, but they have æsthetic interest only through one another. In the actual enjoyment of it their difference is not felt, unless the form is either inadequate, or too pretentious, for what it expresses. But the failure may not be in the work, but in our power or willingness to enter into it; and our want of will is very greatly due to our want of power. For this interest, like an interest in knowledge, takes learning, and may never reach independence. Then our interest is mainly in the matter of a work, and we supply our own associations, or otherwise embody the matter in a way to suit our comprehension. As children need words with their music, so we supply a definite situation for our own better hearing of its passion, or we listen for its likeness to the crash of a storm, or the swish of wind in the pine-trees. Pictures that tell a story attract us most. Though we enter easily into the minds of the human figures in them, we usually seek a base of more detail than we are given: we are anxious to know what exactly they are thinking, or where they feel the wound. And towards animal subjects we may, instead of living them, take any sort of attitude from the thought of meeting them to admiring their life-likeness. It is still more difficult to fall in completely with a landscape instead of admiring and being reminded.

Literature, the more it has claim to be literature proper, VIII. 8.
demands more than mere understanding, and more time than for that. Delay is obviously necessary if we are to put together mental pictures as the author has had them, but we are notoriously impatient of the halt if there is better business on hand. And not without reason, of course, for unnecessary description is always tedious, and it cannot always be so deep in the spirit of the adventure as that midnight noise of clocks and chimes,

> Like silver hammers falling
> On silver anvils, and the splash and stir
> Of fountains spouted up and showering down
> In meshes of the jasmine and the rose:
> And all about us peal'd the nightingale
> Rapt in her song, and careless of the snare.

And more than for the detail of mental pictures is delay necessary for the full meaning of language that gives not a definite image, nor yet an abstract idea, but a definite impression, such as is demanded by negative and other indefinite objects. Their emotional value has to be found in the suggestiveness of an intensive thought, and it equally eludes us if we merely sample the suggestions, or if we take merely the general meaning or definition of the word. "Here is the secret of some of the cardinal effects of literature; strong epithets like 'lonely,' 'supreme,' 'invisible,' 'eternal,' 'inexorable,' with the substantives that belong to them, borrow their force from the vastness of what they deny. And not these alone, but many other words, less indebted to logic for the magnificence of reach that it can lend, bring before the mind no picture, but a dim emotional framework. Such words as 'ominous,' 'fantastic,' 'attenuated,' 'bewildered,' 'justification,' are atmospheric rather than pictorial; they infect the soul with passion-laden air that rises from humanity. . . . All words, the weak and the strong, the definite and the vague, have their offices to perform in language, but the loftiest purposes of poetry are seldom served by those explicit hard words which, like tiresome explanatory persons, say all that they mean."[1]

Though the perception of æsthetic quality must be

[1] Raleigh, *Style*, p. 19.

VIII. 8. immediate and spontaneous, it is no simple matter. A great part of the progress of art has been a course not of invention, but of discovery—a revealing of what was always present. And the mere presence of works of art, like the presence of natural beauty, appears to have no greater compelling effect on taste than science has on common opinion. There needs a training to appreciate the means or forms of expression, as there needs a training to use them. And the training aims not at knowledge, good criticism, the discovery of principles that are common to one work of art with another; its task is taste or æsthetic understanding, whose objects are individual and felt to be unique. Knowledge is only a means, as it is in the training to any sense or skill. Hence the inadequacy of all analyses or descriptions of any beauty in nature or art, for they only give what is common; hence also the limitations of paraphrase and translation; and hence the infinite number of ways in which the same subject can be treated without the tediousness that we should feel if it were only matter of knowledge or advice.

Hence, too, the divergence, and even opposition, between the appreciation of an expert and that of a layman. What a layman calls ugly, mean, or common, is usually the matter; and he is surprised at its selection for art or literature. He must have heroes and happy endings, and, if the face of the heroine is not all that it ought to be, the author is paying a proper toll to nature, but her figure or her virtues should atone. What an expert, on the other hand, calls ugly or mean is not the matter, not the nature that is expressed, but the form or artistic quality of the work. The æsthetic quality includes both. There is a like divergence in what they find beautiful. The grapes in a picture may cause our mouth to water, and another picture may bring the tears to our eyes; and these effects may not disturb, they may even enhance, the æsthetic effect in us, though, if desire or resolve were also to come, that would distract and be to its detriment. But in a fuller appreciation of the pictures neither set of glands would probably be affected; and by fuller appreciation I mean a fuller sense of beauty, and not merely a more adequate judgment about it, for that an expert may give at a glance. But the grapes have become good to see,

instead of to taste. Recognised as grapes their sweetness VIII. 8.
can hardly disappear from the thought, but it is now embodied in their look, if it is there at all; they no longer look sweet to eat but to see. They have a sweet look, as wool has a soft and white a cold look. In the same way our expert may appreciate better the pathos of the other picture, sympathising more and pitying less than the novice; or, if it expresses anything sublime, feeling the height of it without having to recall his ordinary level.

§ 9. The statement is not unusual that it is the layman and not the expert who hears music with emotion, and, in general, that it is the form and not the content of a work that is the proper object of æsthetic enjoyment. In this the word emotion is confined to its familiar sense of a more or less violent feeling. But if the expert is more absorbed in the music, and it absorbs more of him, he is the more affected of the two by the music itself, though less by reminiscences or reflection. And he prefers the richer and less violent delight to the cruder satisfaction that he has outgrown. But he has not become capable of this purely sensuous satisfaction by merely severing sensation from its associates. The abstraction here, as in all mental growth, is not a subtraction but a differentiation. The sensation is not merely richer, it is now an intensive thought, full of suggestion, if he gives himself to the hearing, and not to criticising, nor to following the suggestions. This is the case though the direct intention of the artist may be a purely sensuous effect, even bitterly devoid of definite ideas.

Nor is it because he takes a critical attitude that the expert is less prone to illusion than the layman. When completely absorbed in an individual object, he lives it not only, first, without illusion, but, secondly, without even the pretence or assumption that it is real.

He does not need to remind himself that it is not real, and that he is himself and not another. Its world exists only in being lived; it is cut off equally from real world and real self; absorbed in it he is taken away from both; he feels that, and is glad of it, without having to remind himself. So it is with us all; we take, we learn to take, the difference for granted. Whenever we wake from our

VIII. 9. absorption as from a dream, it is as from a daydream; we wake with the consciousness of having assumed it for a dream all the time. What exactly we should feel, if it really hypnotised us, it would be hard to say, for in dreams it is hard to distinguish between our feeling and what we believe that we feel. We should identify our self with Laocoon not as an object but as ourself, and we should believe that we had all his pain, for there is nothing that we cannot believe ourselves to suffer in a dream. But no doubt you will agree that in any sort of hypnotic illusion "art ends and madness begins."[1] The important thing is that there is a definite point of view, though it is not in view. On account of it, though the expert's thought of the Laocoon group is fuller—and he would resent Thomson's description of his touched heart engrossing all the view, and leaving unmarked those best proportions of the tortured stone[2]—he is farther from illusion than children and others whose thoughts are empty, and who, like the bird in the story, feel tempted to peck at painted fruit. His tendency is in the opposite direction: he tends to neglect the real aspect of things, being satisfied to feel them to the full, instead of understanding them, or dealing with them. It is not, however, because he confounds the points of view, but because he abides on one for preference. When we come to see the building of our thoughts we shall see how fundamental is the part that we take for granted. And because it may be taken entirely for granted—moulding our thought and ready to be thought, without having to be thought—the view is wrong which supposes that æsthetic contemplation and interest are maintained by a constant passing from absorption and illusion to correction and sanity, and back again. This is as unnecessary as it would be distracting. The sanity is constant in the point of view, which, once it is differentiated and made habitual, permits any degree of absorption in an object as merely an object to be thought and felt.

Besides being a protection, preventing, like the frame of a picture, the intrusion of reality, it admits to a complete

[1] Stumpf, *Zeitsch. f. Psych.* xxi. p. 55.
[2] Thomson, *Liberty*, part iv.

and freer absorption. Living the whole, we can develop and exhaust the value of the parts in the strength, and for the interest, of the whole. But must we not lose the strength of our interest with the loss of illusion? If we take the object for only an object of thought, must not our strivings and yieldings with the object, and especially our feeling with it, be but thoughts? Do we really enter into, and have, the pains or pleasures of such an object, or do we merely imagine that we have them? The question has importance not merely for æsthetic, but for all sympathetic absorption. We claim to enter into and repeat another's feeling if we have once had it ourselves; but is the image a real feeling as we believe, or is it imaginary? VIII. 9.

§ 10. I shall develop the question as an exercise on the words image, imagine, and imaginary, for they are constantly used in the present connection, and they have an ambiguity that is partly cause and partly effect of the difficulty in the question. When we say 'I imagine so and so,' we may mean (α) 'I believe it more or less,' and if the belief is wrong, we call its object imaginary. More usually we make no reference to the claim of a thought to be true, but refer merely to the thought.[1] Sometimes we then use 'I imagine' in (β) the general sense 'I think,' but more strictly it is confined to (γ) thinking certain kinds of thoughts called images. An image is a thought of a particular object in its absence, when the thought not merely means the absent object, but forms its object like it. Technically the word is (γ_1) further limited to physical objects whether they be real, or only imaginary like castles in the air. I can form an image of the tower outside, the clock on it, and the hands going round at any visible speed I choose. I can image the hour striking, and my movements in listening for the strokes. But I cannot form an image of every kind of sensory object; I cannot give myself taste or smell; and so, in this use of the word, I cannot imagine them. Frequently the word image is (γ_2) extended to our thought of any particular object, mental as well as

[1] The adjective for this meaning is 'imaginative.' The thoughts are called imaginative if they seem something of a feat, and the mind is called imaginative that is given to forming them.

VIII. 10. physical, provided, of course, we form the imagined object like the real one, as when we imitate it. Again, we have the same difference to observe in our power of doing this. I can image another's thought, his sense of freedom, his perplexity, or his anger, when I can set up the conditions necessary to my having these experiences. But there are thoughts and feelings that I cannot copy, because I cannot do this. I can no more give myself the pain of another's rheumatism than I can his thought on a subject of which I am ignorant; and I cannot even if I have once had the pain. If I say I can imagine his pain, I mean imagine in the general sense of think. And if I believe that I feel it, I merely imagine in the first sense: my pain is imaginary, I do not have it, but only the erroneous belief.

But we can form a very definite thought of things that we cannot image; we can, for example, form definite expectations of them (xi. 2). In an object as thus thought we may have the same interest, and the same degree of it, as if we could image it, and, indeed, as if it were actually before us. We shrink from a pain, a bitter taste, a feeling of cruelty, that we cannot image, and we delight in the thought of unimaginable bliss. The dislike and delight require for their base an adequate thought of their objects. As the crucial case of such an object, let us take the thought of physical pain. Certainly there would be "no satisfaction in feeling the very thing that Laocoon feels, or the dying gladiator. There is no satisfaction in that, but pain, its opposite; and yet there is the highest satisfaction in the æsthetic imitation of the experience expressed in those works of art."[1] If so, it is because the experience that we rightly or wrongly take to be embodied in the figures is their mental deportment in pain and weakness, and not merely their experience of great pain. But how can we enter into their great yielding or striving unless we also feel the compelling quality of their pain? And it is the same in life, and not only when we are sympathetic, but when we make the thought of pain a source of pleasure, as we do when luxuriating in the memory of a pain that is past, and when we take a malicious glee in the suffering of others. For in this

[1] Witasek, *Aesthetik*, p. 123.

last our delight is proportional not merely to our hate or jealousy, but to the fulness in which we realise the other's pain. In all cases it is never enough that we recognise the pain to be very great; we must realise its greatness by living the conditions producing and attending the pain, as our student does at his first operation. They give him no twinge of the actual pain, nor would they if he saw, or had an illusion, that the patient felt the pain. And of course it is not by a twinge, even if any thought could bring it, that we should realise a greatness of physical suffering; instead of adding to our sympathy or our appreciation, it would very likely bring us back to thought of ourselves. The motor and organic sensations in the student's thought are not themselves painful, but they have become painful to him by association with pain in the past; and this is especially the case with those that occur in the natural expression of the pain. VIII. 10.

In this simple way we can account for the variety of the facts, and relieve our æsthetic and our sympathetic absorption from this last charge of self-deception. In the expectation of an instant pain, and still more in the beliefs of natural and hypnotic dreams, the thought of the pain is markedly painful. And also, as you may observe in children and sensitive people, the mere association, without any belief or even a dawning illusion, makes the thought painful. But we learn to dissociate; we learn to realise, to give ourselves, the greatness and compelling quality of the pain, while the experience may be painful, pleasant, or indifferent. Our student recalling his experience out of curiosity may give himself the same organic sensations as in his former thought, and feel himself wince again, but with perfect indifference, his intellectual interest displacing the other. In sympathy we let the association have its way, and the thought is painful. In æsthetic absorption also it is painful, but we are to see a further qualification in the absorbing thought, whereby the pain becomes a factor enhancing the total satisfaction. In malice we are usually satisfied with realising the greatness of the pain, and then find nothing painful in the thought; but, as in æsthetic contemplation, we may indulge the association, and feel the pain, in order to deepen our delight.

VIII. 10. Eyes are wet in the pit and dry among the experts not so much because the pit is being deceived, but, first, because it selects and confines its thought to a single aspect of the situation, (and for the same reason it is the more easily deceived); and, secondly, as a rule, because it adds pity for the heroine to being in sympathy with her. The pity is a practical, not an æsthetic attitude, and may, as we have seen, be so far adverse to the other. But in the æsthetic, as well as in the practical attitude, it is necessary to be absorbed in her thoughts, and so to have her feeling. This absorption, though complete, is not, however, the whole attitude; and it is, at least, misleading to say (with Lipps) that complete absorption *is* the æsthetic contemplation. The actress herself is completely absorbed, but is not in this attitude, any more than people in real life in whose emotional experience we may absorb ourselves.[1] The expert is dry-eyed even when absorbed, because he not merely lives the thoughts and sufferings that the heroine has, but includes in his thoughts the heroine as suffering them, and this again, not as an object of pity, but as part of the whole scene. He has learnt to live the whole in the part, and to find a richer satisfaction in that than in the cruder indulgence.

The value of such a learning is not merely to put us in proper possession of our inheritance of literature and art, but to deepen the intrinsic interest of nature and the people of our ordinary life. I shall say a word about this, and conclude with another about the bearing of our æsthetic or sympathetic understanding on our other types of interest, viz. our conduct and knowledge.

§ 11. (*c*) If we have often felt in need of the right word merely to describe an object, and have felt our ideas grow clear and steady when we have found it, still more often do we find our emotions inarticulate, and to that degree unsatisfying, when their base is merely the thought at our unaided com-

[1] They would be if they also thought of themselves as embodying their experience, and so lived it as the experience of an object. We may take an æsthetic view of ourselves at any time, say in any plight. The object that then absorbs us is our mental attitude in the plight; part, therefore, is the interest of our plight before we took the æsthetic view of it; but though now made part of the object, this interest remains an interest, and is a factor in the new and æsthetic interest.

mand. Hence it is that we have recourse to the work of others for our emotion, as well as for our knowledge. We go to poem and song for our emotion even about things so dear and familiar as home and country, about which it might seem that we should require no assistance. And "our æsthetic view of nature is as little thinkable without art as our customary thinking without science."[1] To this it was hardly an objection that "there are delights in nature that no artist has yet reproduced, and what he can paint is by no means always new discovery," thousands having been stirred by the mountain peaks before art discovered them.[2] For they took seeing, and they had to be brought from the background, where they were an emblem, to the foreground, where they are the subject and centre of interest. VIII. 11.

As the knowledge we learn from science is not only a possession but an intellectual discipline, and the means of understanding more, so it is with our absorption in the beauty of art. But as we do not study science on the chance of adding to the sum of human knowledge, so we do not practise art, and study works of art, on the chance that we, too, may be poets or painters. Like the laboratory work of a student of science, the practice of art is for discipline, and one result of the discipline is, as Aristotle contended for it in education, to let us enter better into the work of others. If we meant to be poets or something less, we might make a point of practising to express all that appealed to us, and to be a painter one must form the habit of seeing nature as a picture. And this has sometimes been meant by our learning to see things with the eye of a poet, and especially with the eye of a painter. But the search for effect is not contemplation, and we should be likely to see in nature only a work of our imperfect art, if we looked always to see how it would paint. Our appreciation of nature is likely to be better, the more we confine ourselves to the spontaneous enjoyment of which we have learnt to be capable by absorption in the work of others. And by doing so we shall go beyond what art can teach, and find a deeper satisfaction than if we took nature for a

[1] Cohn, *Aesthetik*, p. 114.
[2] Groos, *Der aesthetische Genuss*, pp. 235-236.

VIII. 11. work of art. For a layman it is better (than seeking merely the eye of a painter) to admit to his thought the reality, importance, familiarity, history, any memory, that gives him an intrinsic interest in a thing. It is the want of absorption in things, far more than our absorption in the wrong thing, that makes a colourless life. And it is not enough to have the power of being deeply absorbed; if not made habitual, the power needs an effort, is a bore, and so far a failure. As we learn to take our knowledge and skill more and more for granted, having them for our faculty without having to think them out, so we acquire a faculty of feeling things correctly without giving way and feeling or living them out. Instead of feeling beauty, we merely admire it, whereas, the more absorbed we are, the further we are from passing judgment at all. If it is no true sympathy to profess to another that we have felt like him in the past, so it is but a looking in on the garden of beauty if we admire and are reminded, instead of entering and living in it with our early abandon.[1] It is not a child's experience in which we can lose ourselves, for it takes more to absorb us as we grow to more. Nothing can keep for our years the simple heaven of our infancy, nothing prevent "the bitter decline of that glorious feeling." Mystery yields to knowledge, and glamour to custom, and, if the world is to retain its interest for us as a world to live, and not merely to know and use, we must find its purely intrinsic interest to be capable of growing in variety and depth, like its theoretical and practical interest. Of course, it depends on ourselves, on our absorbing ourselves. That may seem to be simple and usual enough, and to need no learning. But it is so far from that, that an acute, if

[1] "The original unity of all experience is revived in every sinking into the beautiful. He whose capacity for disinterested naive yielding to the contents of ideas is choked by incessant reflection on external and internal, object and subject, has but slight susceptibility for æsthetic impressions" (Külpe, *Vierteljahrsch. f. wiss. Philosophie*, vol. xxiii. p. 159). "It is as if a beautiful garden lies before me. I can look at it from the entrance, let the pleasant feeling rise from my memory how cool and refreshing the air must be in those shady walks, and then step out again into the heat and dust of the road. But I can also shut the gate behind me, and walk through the garden in all the intricacy of its devious paths, and it is only then that the full spell of its beauty rises upon me" (Groos, *Einleitung in die Aesthetik*, p. 199).

extravagant, writer calls it genius. "Genius is the faculty VIII. 11
of continuing in the state of pure perception, of losing oneself in perception. . . . It is the power of leaving one's own interests, wishes, aims, entirely out of sight, thus of entirely renouncing one's own personality for a time. . . . The ordinary man does not linger long over the mere perception, does not fix his attention long on one object, but, in all that is presented to him, hastily seeks merely the concept under which it is to be brought, as the lazy man seeks a chair, and then it interests him no further. That is why he is so soon done with everything, with works of art, objects of natural beauty, and indeed everywhere with the truly significant contemplation of all the scenes of life. . . . While to the ordinary man his faculty of knowledge is a lamp to lighten his path, to the man of genius it is the sun which reveals the world."[1]

In substituting a mere understanding for this æsthetic and sympathetic understanding, we commit a variety of errors. In the first place, we judge by standards of taste and conduct which may be perfectly valid standards, but, if we have not learnt the spirit from which their value is derived, we use them in the letter, and are bound to the form of stupidity called intellectualism. I shall speak of it later (xvi.). In the second place, our standards may be defective, and this is especially the case when we are hardly aware of them; hence the arrogance and intolerance of class towards class, of age and youth towards one another, of different temperaments, manners, points of view. But thirdly, and at the root of all, is the proneness to judge instead of to enjoy. I have spoken of it with respect to æsthetic appreciation, but it is equally apparent, and a far greater loss, in our attitude towards one another. The minds of people are presumably the objects of most intrinsic interest in our environment, but instead of realising it in the only possible way by living them, we take the satisfaction of appraising them, if we are not quite indifferent, or we look for the appraising of ourselves in them. In family life,

[1] Schopenhauer, *The World as Will and Idea*, i. 240-3. The same identifying of the power of absorption in things with genius is familiar in the writings of Carlyle, but see p. 352.

VIII. 11. in friendship, wherever the interest is indeed realised, there is no thought or fear of this bench-and-bar attitude, and yet there is nowhere a better understanding, and, on the occasions that require it, nowhere a better appraising.

We proceed now with the general growth of the mind, following the growth of intelligence, the power to form thoughts. Though our thoughts of a thing differ according to our interest in it, they are formed in the same general way. Hence, in speaking of the bases of our æsthetic and other intrinsic interest, I have said little about their structure and growth; and it is only from their growth, you remember, that their structure can be understood. Also I have only spoken of our thought in the enjoyment of literature and art, and not of the thought in their creation. It, too, we shall see to be of the same general nature, and to bear the same development, as other thinking. But in considering the growth of intelligence we are concerned mainly with the growth in knowledge and conduct; and I have taken apart the development in intrinsic interest partly to relieve the general account, as well as that it may not be forgotten. For every advance in knowledge and conduct not merely strengthens their own interest, making this more independent; it also, as we have seen, advances the purely intrinsic of things—the interest of social intercourse, for example, and of beauty. Except, then, for what we saw in last lecture about the instinctive beginnings of intelligence, we may consider that we start again from the point we had reached in lecture v., with which I concluded the first division of the lectures.

PART III.—GROWTH OF INTELLIGENCE

LECTURE IX

SENSORY INTELLIGENCE

§ 1. AT the end of lecture v. we saw how interest depends on instinct, the same situation being differently appreciated by different creatures according to their constitution, and without reference to a previous experience. "*A priori* there is no reason to suppose that *any* sensation might not in *some* animal cause *any* emotion and *any* impulse."[1] The stimulus may come from without, like an appetising smell, or it may come from within, like hunger after a long fast. It may be as slight and momentary an interest as a dog has in snapping at an irritating fly, or it may be intense and prolonged, like the scent of carrion which he tracks to roll and revel on. But whether short or long, it begins without being sought, and it proceeds to satisfy and exhaust itself without thought of the process or of the end which is achieved. Many of you must have observed the arrangements of trap-door spiders in their defence against the wasps, which, though not carnivorous, hunt for them, disable, collect, and leave them as the proper food for their offspring yet unborn. In both spider and wasp long and complex courses of action are directed, so far as either is aware, by sensations without meaning or suggestion of purpose. As the lurking spider peeps stealthily out in search of its food, it indulges no picture of flies or a future satisfaction; and the wasp, for all its excitement, has no vicarious happiness in the IX. 1.

[1] James, *Principles of Psychology*, ii. 387.

IX. 1. thought of a happy offspring. The lurking has in itself the satisfaction of a fearful joy, and very likely the door is raised so narrowly from no expectation of an enemy, but just because the spider is possessed of a taste for that arrangement. Such unreasoning likes and dislikes seem strange to us, but they are really far more frequent in our own life than we think. Sometimes they have been learnt, but they are also purely instinctive, as in the affective quality of tones and colours, or mainly instinctive, as in our delight in crushing or stamping on things that we think loathsome.

But I also said that experience, and according to its interest, is the growing point of instinct. The course of instinctive action is a course of sensation necessary to directing the action. This is apparent when a difficulty presents itself, and especially when the animal pursues an elusive prey. And this again is so usual that, instead of saying the instinct is being thwarted, we may say that it is the power of pursuing an infinite variety of course, directed throughout by present sensation. The directive sensations need no selecting, no borrowing of interest from an end in conscious view; they are as integral a part of the instinctive mechanism as the factors that are not felt. Some parts of its action need no feeling and get none, others need little and get little. There is an economy of feeling in favour of the directive factors, and the more the course of action is being thwarted and needs direction, the greater we find the interest in them to be, whether it is a pleasant or a painful one. But the conscious factors produce more than this present direction of the impulse. The experience becomes one of seeking, the sensations turn to thoughts, and their interest to emotions.

In following the course of development from this point we shall follow that of thought, and indeed of the object as it is thought, beginning with the merely sensory object and proceeding to such abstract objects as are occupying us at present. This is our guiding line, but only a guiding line. It does not exclude anything; for thoughts and courses of thought must be formed in some interest, and may be formed in any, and achieve any kind of satisfaction. Still, as I said, we shall have mainly in view our 'mere' intelligence,

and so our cognitive and practical, and not our intrinsic IX 1
interest in things. And there is another point to observe. In taking for our guiding line the development of things as we think them, it is not meant that we must concern ourselves greatly with things as they are; but it does mean that we are not to consider the development of reason, will, and other faculties, as if in any kind of world. Finally, there are two forms of mental growth which are not to stand in our way.

The first is the growth in habit and memory, of which I have spoken already (iv. 2); we need only remind ourselves that this is fundamental. Everybody knows that the oftener a new power is practised the better it is retained, and the greater the facility in using it. And especially we saw that past association gives a new way of getting old thought. But what we are to be concerned with is the power of making new thought and other experience by reason of the old.

The other form of mental growth with which we shall not concern ourselves is that which is independent of the development of thought. There is the development of new tastes like those for olives and tobacco. But especially there is the arrival of new powers and interests with our merely physical growth. It is sometimes called the natural, sometimes the spontaneous, growth of the mind, meaning its growth apart from experience, when, for example, we are asleep. And there is a corresponding decay. We shall take this growth and decay when we deal with its relation to the growth of the mind by means of experience (xvii.).

§ 2. The experience of every creature begins with those instinctive courses of pleasant and painful sensations of which I have spoken. From this common starting-point every creature makes some advance if, as we assumed, its experience must be of use. But it never has more knowledge of nature than is afforded by the number and acuteness of its senses. Its whole progress in knowledge is the organising of the data thus brought to it, and consists in giving them meaning. The more it gives, the better that grasp on the situation which we call knowing it. The scope

IX. 2. of its intelligence is found in answer to the questions, What things it thinks, and How far it thinks them.

(*a*) To the former there is this general answer, that it has no thought but for things that are of use to it, things that will satisfy its appetites. And, so far, the mutual dependence of instinct and intelligence is obvious. For, on the one hand, the animal has no intelligence but in the service of instinct, in the carrying out of impulse, in the satisfaction of appetite; and, on the other hand, with growth in knowledge the native instincts grow in an outer and an inner direction (vi. 2), finding new occasions, and meeting old and new with more cunning and skill.

Hence we may say that intelligence is the means by which instinct develops at its conscious points. We find no intelligence where it is not wanted, little where little is wanted, and where, to our thinking, instincts appear most marvellous, being already equal to the situation, there we find intelligence least of all.

(*β*) But the other question is more searching: How far does an animal think the things that are useful to it? It thinks them far short of their usefulness, for always, after a point, it exhibits a stupidity that is invincible, when better knowledge would still be to its advantage. This point marks the limit of its intelligence. The limit varies in different species, and in members of the same species, with identical opportunities of learning. It is usually ascribed to an inability or a poor ability to compare, reason, have ideas of relations, or any abstract ideas. But why the inability, and especially if it is so far a matter of degree that we overcome it without a miracle? Our intelligence passes from level to level; at every stage our young are relatively stupid compared with their later attainment, and they are often absolutely stupid to some piece of thinking or appreciation which one may expect from them, but may try in vain to make them experience. It is a familiar question in teaching animal, child, or adult: What can be done to a stupid thought to make it more intelligent? In practice the answer is difficult, for the change must be of the pupil's own making, stupid though he be. Sometimes the stupidity is lifted at once, or it may take years, or the time has not come to make a beginning,

or it may never come. The question is thus a general and a special one. The general question is: How does a mind that can advance learn to advance by means of experience? This is the question to which our account will give answer as we proceed. It is to be taken and answered quite apart from the question about the times and rates of learning, *i.e.* the degrees of stupidity. This, the special question, we shall look at afterwards (xvii.). IX. 2.

§ 3. Hence in considering the intelligence of animals, our concern is not the traditional one of marking a line between it and our own. What we should like is to examine the continuous growth of the early and simple forms of intelligence, and the degrees of retardation and arrest. The most significant fact is, no doubt, the absolute arrest of the best animal intelligence; but we too have to make progress from the simplest beginnings, and every animal way of learning remains ours to the end, even after we have found better ways. Nor shall we follow the notion that the steps of the common ladder of intelligence may be seen separate and clear in the various heights to which different creatures can attain. The heights are hard to mark, because it is not easy to isolate intelligence from other gifts, and especially in creatures whose sense-organs are different from ours. It is not so much that at birth many instincts are still developing, and others have yet to arrive without any learning, but that intelligence is never a thing apart. Every intelligent action had an instinctive origin, and the same action requires different degrees of intelligence from different animals, and none at all from others. A special discounting has to be made in dealing with narratives where the previous history of the individual animal is unknown, for an apparent result of thinking may be more or less directly due to a previous lucky hit. Even the rapidly growing record of experiments that have sought to isolate intelligence, and measure stupidity, has to be read with caution. For, while the record is clear and significant about differences between individuals of the same species, it is not easy to compare different species with one another, or with ourselves, until we allow for their different interests, the difference of acuteness in their senses, the different senses on which they rely, and the difference in

IX. 3 their organs for manipulating things. Finally, it is by no means to be presumed that the intelligence of different species accords with their natural kinship, and it does not follow that, the higher placed an animal on the tree of life, the more knowledge it must have, and the more wisdom to keep its estate. The hunted may have more wisdom than the hunter; and we may easily suppose that this has saved and strengthened an otherwise feeble folk unable to master its growing difficulties by other means, *e.g.* by greater strength, by a better range and delicacy of sensation, by an earlier ripening, or by a greater variety of purely instinctive response. Even the rule that, the older the species, the greater its guidance by instinct, and the less by intelligence, appears to have very signal exceptions. Anyhow, no one at present would confidently arrange the different species of animals on a ladder of intelligence, far less try to make a tree of it. I have mentioned the difficulty about the lowest degrees, where indeed it is greatest; and, though there is general agreement about those at the top, it is still possible for an enthusiast, if also an apologist, to put ants on the highest rung above any monkey.[1] Consequently I shall confine myself to the growth of intelligence without seeking to define the degrees to which different species may attain.

§ 4. The degrees of intelligence are marked by its comprehensiveness, or, as is frequently said, by its economy. But the economy is not a niggardliness. When we compare our own equipment with that of animals, it may seem that nature might have been kinder to us. We might have had instincts that should require the learning of knowledge as little as the innate geometry of the bees, and the learning of morality as little as their spirit of self-sacrifice. And, even if the knowledge of principles is better than instinct, it may seem that our intelligence might have been given a better start in instinct. For an infant can do exceedingly little to help itself but cry. It has possibly had to begin to learn even before birth; certain co-ordinations of movement and a dim sense of space that it shows from birth may, as one puts it, betray such an intelligence as would develop in a

[1] Wasmann, *Seelenleben der Ameisen* (1900), pp. 136-138.

somnambulist kind of experience.[1] It may therefore seem IX. 4.
that the niggardly spirit of nature has furnished us with our long nursing and learning period in order to relieve herself of greater trouble. But there is more to consider. When a chick without any experience proceeds to peck at small objects with fair exactness, and the right measure of strength for the distance, we may say that it is born with a sense for its food and a sense of space, but we are apt to add a knowledge to the senses that is not there. The chick pecks at things on sight, finding the same attractiveness in, I suppose, their distinct outline and size, that is more usually felt for brightness and colour. The attraction brings it so far to its food, and at the same time presents a narrow world for intelligence to master, viz. to complete the right selection of what is to be pecked, and to complete the skill in doing it. Similarly, as regards its inherited sense of space, the chick no more feels a measurement of distance and direction at the start, than it must first have knowledge of its beak before opening it to fit the size of the several objects. The instinct brings the chick through the requisite movements, and so provides motor and visual data, from which the perception of space begins to be formed. But if it were brought all the way, and the instinct were already adequate to every occasion, there would be neither need nor data for intelligence, and the chick would not reach the knowledge of space and food which it now easily achieves. Conscious distinctions would be useless, and every want of distinction is an extinction of consciousness (i. 4). Always we find that nature is a niggard of inherited finality in faculties, in proportion as it is lavish of a fuller life for them. The wider the sphere of activity, the more need that we should form our own thoughts, and walk in understanding of the system of things. And there is another point of view: the value of life is not in living but in experience, and our instincts have no value but in their use for a conscious satisfaction. Hence intelligence is not merely necessary, but desirable, for a life that is infinitely more interesting, as well as more complex, than anything that an animal can accomplish. It is an advantage that we should be guided by knowledge wherever

[1] Kussmaul, *Seelenleben des Neugeborenen Menschen*, p. 54.

IX. 4. the tyranny of a sensuous interest would be detrimental to the interests of a fuller life, and wherever a stereotyped form of skill would interfere with the infinite variety of dexterities and inventions, which only a knowledge of means and purposes lets us learn and make. But perhaps it is absurd even to appear to apologise for intelligence, no matter what the burden of learning. It is not a mere niggardly arrangement that nature should give us the pains of learning instead of lessons learnt.

But though not niggardly, the whole arrangement is so far for economy that from this point of view we measure the degrees of understanding, and see the motive of its growth; we see that every thought economises the thoughts that it involves. The advantage is found in the simplest reading of one sensation from another, as when an animal has learnt from sound or sight to anticipate an experience for which it might be useless or fatal to wait. Our own common-sense notions anticipate on a larger scale. The value of a scientific theory is that it can prophesy, or, if there is nothing to prophesy, that it turns a chaos of detail into the manageable grasp of a systematic connection. Even our bare calculations of probability are made on the faith that nothing is confusing and incalculable in itself, but only to our ignorance. All our knowledge, and all our efforts to know, are founded on the one article of faith, whether we are aware of it or not, that no truth is isolate and independent, but is of necessity true; that every truth belongs to a system which guarantees it, and which it guarantees. There is, in fact, no other guarantee of truth. The grasp of a part is, to some degree, therefore, a grasp of the whole to which it reflects the claims to belong. This is the case not merely in more distinguished parts of knowledge as, for their exactness or comprehensiveness, we call scientific; it is realised by the animal that grasps any little connection of detail, and expects it to hold good again, as well as by the metaphysician who seeks to lay his hand on the system of things as a whole. Not only scientific truth, but every *ratio cognoscendi*, down to the barest expectation of a coming sensation, is so far a knowledge of the world, and makes it a less chaotic and incalculable place to live in. Think how we hold the infinite

variety of things and events by a definite number and system of names. Every word, not merely every class-name, denotes a group of some kind, every sentence a connection. Every mathematical table, every equation, principle, and rule, is but to give us an easier, and at the same time a more comprehensive grasp of the system of things in which we live. The line we are to follow is the growth of our power to grasp and use those more and more difficult objects. IX. 4.

We shall find it best to distinguish three levels or grades of intelligence, which we may name the sensory, the perceptual, and the conceptual. The second rises from the first, and the third from the second; but the lower grades are not left behind. On the contrary, they take at the same time an importance of their own, and a development in their own kind. To-day I shall deal with sensory intelligence.

§ 5. In learning to walk, swim, or ride, we have usually an example to imitate, or an idea or two to guide us, but they carry us but a little way. To follow them we have to make numerous adjustments of which we have no idea; we have to feel our way, some finding it easily, others through many mishaps. We come to take and keep the proper adjustments better and better, and in the end we arrive at a feeling of balance so simple that we call it a sense. Indeed we are only aware of having had any feeling for our guidance when the usual course of sensation is interrupted, as when we try to walk straight with our eyes closed, or when the plank by which we are crossing a stream seems to shoot away from our feet. The best teacher of swimming cannot select all that his pupils have to do, and they cease from spluttering, and strike the right course in a gradual revelation of success, rather than by any calculation. If you have never thought about it, you can probably as little tell a beginner how to steer a bicycle when he feels it begin to heel over, as you can instruct him what sensations he must select to keep his balance by. More than likely, if you advise, your advice will be wrong. You keep your own balance, and steer to purpose, without knowing how, and yet you have learnt to pick out the proper means and give value to the proper sensations. You do not distinguish

IX. 5. them from the rest, or know what part they play, but you know if you do not have the sensations, and you expect some sort of disaster if they do not come. It is a knowledge, therefore, that involves the lowest degree of recognition and expectation. With practice your action becomes less tumultuous, until it is merely awkward, and, finally, this also goes, and the further education of the sense is spoken of not in a negative way, but as an increase in its delicacy.

We speak of a *sense* of balance because, whether or not it has had to be learnt, the co-operating factors are not thought apart, and consequently the feeling has no sign of manufacture. Similarly, at higher levels we speak of a sense of proportion, of style, of honour, of the ludicrous, and we even speak of a mathematical, a literary, a scientific sense. In this general use the word is applied wherever we have an experience without a re-climbing of the ladder by which the power of having it has been attained. The growth of the higher forms we are able to mark, but in the more elemental forms it is often hard to say what growth there has been, if any at all. Not that the doubt is a pity; the point is that intelligence does not enter abruptly into mental life; one has to learn a sense that is inborn in another. In this general meaning the word may be applied to any organ of experience inherited or acquired. But for that reason we do not need it, and so it is better for us, while remembering the general meaning, to keep to the original one, which includes the general meaning, but specifies it by limiting the organs to the physical organs of sense. The experience that we have by them is called sensation.[1] The special sensations are those whose end-organs are stimulated from without the body, the organic and motor sensations those whose end-organs are stimulated from within the body, *e.g.* the sense of balance. Regarded as an act of knowledge a sensation is the experience of an object, *e.g.* blue, melody, effort, balance, nausea, called the sensory object.

It is the office of sensory intelligence to develop the thought of this kind of object. The total sensory object is analysed, first, according as the different organs of sense

[1] See note on the definition of sensation at the end of the lecture.

act independently ; thus colour, sound, taste, and the rest IX. 5.
are shaken apart. Secondly, different sensations from the same sense-organ are distinguished. The former is often called a difference of modality, *e.g.* between blue and loud ; the latter a difference of quality, *e.g.* between blue and green ; but we may speak of both differences as a difference of quality. Thirdly, the different aspects of a sensation are distinguished, *e.g.* the shape, tint, and intensity of a colour ; and again by varying independently. Finally, with these analyses there goes a better synthesis : new wholes of sensation are developed, *e.g.* the sense of balance, of space, of time, of rhythm, of melody.

To understand the differentiating and organising of sensory objects as the first grade of intelligence, let us ask three questions. We shall also ask them about the two higher grades and their objects, when we come to them. They are (A) How is sensory intelligence connected with the still lower grade, viz. with instinct? (B) How is it affected when allied with higher grades of intelligence? and (C) How does it proceed, and what are its limits, without such alliance?

§ 6. (A) Consider again the learning to balance oneself. Some animals take and keep their balance with great ease, because they are very sensitive to changes of position, and because the right adjustments come instinctively from the directing sensations, and not after a variety of tumultuous effort. Others at birth have a poorer gift, but their learning, too, is no more than an unreasoning preference for the proper adjustments, after these have already taken place. The sprawling and awkward movements are not, of course, entirely casual and wide of the purpose ; they are approximations, and so far instinctive; but the instinct is more indefinite than in animals that have less to learn. The skill is learnt by a completing and pointing of the imperfect instinct. I shall give other examples when considering our second question ; but it is the fact of this pointing or making definite that I would now ask you to observe from our simple example, and because the aim in all learning, and the progress of intelligence, is, like this, always towards a greater definiteness.

IX. 6. For you observe that this simplest and earliest act of intelligence is upon the vague synthesis already given in every mass of sensation; and it consists in achieving a better synthesis. Later acts of the same kind upon it have the advantage of the earlier, and are able to carry the pointing still further. Always they consist in bettering a synthesis already in hand, and because there is something unsatisfactory about it (iv. 4). If I turn my head to get a better look at a thing, if I take it in my hand, if I sniff at an odour, or pay attention in any way, it is always, of course, because I am dissatisfied with my present experience. An animal in pain bestirs itself with the same reason, and if it does not also bestir itself for the sake of knowledge, it is because it feels no need for better than it has. Every inquiry we make, all our seeking, is a token of dissatisfaction, without which there is no seeking. We have illustration everywhere: on the one hand, in the fixity of custom among primitive communities, in the easy assurance of superstition, in the arrogance of common sense, in our general mental sloth and willingness to rest; and, on the other hand, in the shock of novelty, in the rousing force of circumstances, in the unsettling effect of unexpected problems, and in the general fact that as knowledge, taste, or conduct develops, there comes a more exacting demand on the solutions or syntheses that will give satisfaction.

In the lowest forms of mental living, as in the search for a better sense of balance, there is at first nothing but the clamour for relief from a physical unpleasantness. A bare spontaneous restlessness brings the analyses and the tentative syntheses, wherein the means of satisfying the clamour have to be found. Here the search and the selection are purely instinctive and sensory; the intelligent aspect of the process is entirely in the marking of the favoured movements and the sensations from them, so that they become habitual, and afford an economy of the original trouble and risk. For the satisfying course must be marked in order to become habitual, and the marking performs the same function as does remarking in higher forms of intelligence. So far as practice makes perfect as well as easy, it involves this primitive process of intelligence.

§ 7. (B) The effect of a higher intelligence upon this lowest form is to supply a spur that would otherwise be wanting. The variety of uses to which most of us put our sense of balance is no less striking than the delicacy that some attain by special practice; and we are induced to learn both variety and delicacy, not for their own sake, but for ends that we have in view. Consider the precision which an instrument like the hand can attain as the organ of, say, a juggler's or a musician's purpose. Or consider the adjustments that control our voice, how closely a child learns the intonation of the people about it, and how a singer brings her voice to something of the same delicacy as her ear. IX. 7.

And yet the conscious purpose in every case only applies the spur. It prevents satisfaction in an inferior result, and it urges to a greater discrimination; but we might all be great singers if that were enough, and skill of any kind would come according to our diligence. Take a simple case where there is nothing to learn but greater precision, say the learning to strike a billiard ball with the right strength for given distances. If the learner can always strike his ball in the same spot, he has only to give himself the right motor sensations. For this two things are required: he must learn to distinguish degrees of intensity in those sensations that previously he did not distinguish, and he must learn to innervate his arm for the various degrees. Practice brings both, but what is the final limit? It is not that he can no longer give himself a motor sensation that he knows to be the right one when he has it; the limit is in knowing the right one—in distinguishing between sensations of neighbouring intensity. The most expert player can only tell how far his ball will move within a fraction of the actual distance, indeed within a fairly constant fraction of the various distances. Thus the lowest form of intelligence is not superseded by higher forms with which it may be allied, but, on the contrary, its use is emphasised. There is example in the learning, and in the limits to the learning, of all technical skill.

The skill in all our senses has a similar dependence on the emergence of differences in sensation. What has been said of the senses of balance and effort applies equally to the training of the ear of a musician, the eye of a painter,

IX. 7. and the palate of an epicure; and even organic sensations have their experts in hypochondriacs. In all cases it is not the attentive seeking that creates the variety of sensation, but the seeking sets up the conditions by which differences may come, and strike when they do come. Think of a tea-taster or a wine-taster over a fine distinction. And without this special seeking, and with no sense of effort, we all achieve much in the same way. Think how an unfamiliar word on a page of print stands out and strikes your eye, and how you are arrested by some little change in the appearance of a friend, though you may be unable to say wherein it lies. A better than sensory intelligence is necessary for such work, but it has to rely on the acuteness and facility of merely sensory intelligence.

And it is not only striking points of which you are aware, but those to which you do not, and often cannot attend. Sometimes these can be distinguished on reflection, as when the tea-taster describes his sensations, or you analyse the total impression of your friend. But in other cases it is impossible to spell out the differences. You only know that you have felt them all, and have made a difference, because practice gives precision to the faculty, and does not merely increase its facility. Such is that elementary but fundamental power of measuring space and time which all the higher animals must exercise as well as we.

We saw it in regard to space when dealing with the test of the presence of experience. In such an example as that of lifting our finger to our ear we are guided by a course of sensation in which it is only a recent discovery that the sensations from the joints involved play the most essential part. But we may pass to the still more rudimentary lesson of learning to see and feel space at all. Here a complex of sensation is necessary far beyond anything one is likely to suspect; and yet we feel and use it without knowing its composition, just as a child gives meanings to words that it cannot spell, and would give no better meaning if it could spell them. The most rudimentary and essential part of the lesson is to learn the map of our own body as an extended surface. The normal infant learns it by help of its eyes, but also without that, as a blind child must; and we

may look at this, the simpler lesson, though not an easier one. The learning presupposes two gifts in mere sensation from our skin, as well as an inherited motor nervous system for reflex and instinctive action. One gift is the mere sensation of extent, which varies, though only in the main, with the extent of skin that is covered by objects in contact with it. This is called the extensity of the sensation. It is perhaps more prominent as a property of visual sensations, where we use it more; and we also feel something like it in other sensations: in the difference, for example, between dull and sharp pains, between heavy and acrid odours, and between deep and high, and again between rich and thin notes. The second gift is called the local quality of skin sensations. It is the property whereby we refer them to the points from which they come. We do not have to learn to refer them from our brain to our skin, nor even whereabouts to refer them on it. All purely reflex action excited from the skin has reference to the point of stimulation, and differs slightly according to the point (xviii. 5). This suggests that the local quality of a cutaneous sensation is due to its motor connection, since no other has the same. A motor sensation may result from the reflex movement, or from a corresponding movement that has been excited from the instinctive or sensory level of the nervous system; when the sensation is again excited from the spot on the skin, it may now excite an image of the previous motor sensation; and this may be the source of its local quality. It is at least as likely, however, that the local quality is due to the afferent part of the mechanism, as it probably is in the corresponding signature of the eye; but there is involved the whole question of the manner in which a sensory surface is projected on the cerebral cortex (xviii. 3). In any case the local qualities are a gift, and as they do not tell us of one another, it is a matter of learning to read them as local signs. We have to learn the position of the points, each marked by its own quality, with reference to one another. We have to map out the extensity of the whole sensation by separating it into parts, distinguishing, and thereby also connecting them, into a more complex object. Thus the mere sensation of extensity becomes the sense of extension. All

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IX. 7. movements over the area of the skin serve to analyse it into its distinguishable points, and at the same time to associate them, so that they mean their position with reference to one another. It is the same learning that is continued by the blind, and by ourselves, when we improve our sense of contact in the service of our skill. But we take so little notice of the means we use—the movements and the local qualities—that we do not know how our power increases, and it comes as a surprise to be told, for example, that our skin is as much as two or three hundred times more sensitive to local differences, if it moves over the points of contact, than if it feels them at rest.

There is a more striking example in our sight of space and its development. We use a variety of signs, some visual, some visible. The visible signs are properties of the objects that are seen ; they are those that a painter learns to know and use. An observer of his picture takes their meaning without knowing them, and can feel error in the perspective, or the light and shade, when he cannot point it out. But I refer to the visual signs, for they are a prior lesson. They are due not to the stimulus but to the eye itself ; they are the optical and motor sensations which we learn to be the signs of position and distance in all directions. If it is hard to say what gives to every distinguishable point on the skin its local quality, it is harder in the case of the retina, which gives no sense of contact. When a stimulus affects the eye except at the spot of clearest vision, the eyeball is turned so as to bring the stimulus to the spot ; and we may suppose that those complex and very fine movements are all reported as motor sensations, especially from the eye-socket. But though the movements are necessary in order to turn the extensity of the field of vision into our sense of extension or space, the motor sensations must be far too crude to represent the extremely small retinal distances which give us sensation of a distance, and not of a single spot. From experiments of Helmholtz and others it was calculated that the keenness of vision at the centre is three or four thousand times better than the best by contact ; and a change in the experiment[1] has recently multiplied this by seven or eight.

[1] Stratton, *Psychological Review*, vii. p. 429.

There is a corresponding example in our sight of depth in binocular vision. Here also, apart from visible signs, we give a spatial meaning to minute differences of sensation, using them for signs of distance without being able to say what they are. It is, of course, no mysterious view of an angle at the point of regard by which we judge. The motor sensations of the convergence of the eyes on the point, together with motor images of the convergence and divergence that would be necessary in order to bring the other points in the field to the centre of vision, have been thought signature enough; but experiment has proved that we judge distance without these, and in the absence too of visible signs. The experiments have also shown that both eyes are necessary, and so the inference is that the signature is connected with the correspondence and disparateness of the retinal points affected in the two eyes. But there is no mysterious comparing of the pictures from the two retinæ; for we cannot distinguish between a sensation coming from a point in the right eye and that coming from the corresponding point in the left. We have to suppose a difference of sensation according as the single picture which we have by our two eyes is derived from corresponding, or from disparate points, and according to the kind and amount of disparateness. This difference of sensation is a natural language like the local qualities in sensation from our skin; and, like them, it takes meaning as the result of our movements. IX. 7.

Even more striking is the sense of time; for, whereas in regard to space we know that we are relying somehow on our eyes, we do not know on what organs we rely to estimate the lapse of time. It is a sense that accompanies every experience of ours, and it acts sometimes well, sometimes ill, according partly to the length of the period, partly to the way in which the period is occupied, and partly to practice. Much experiment has been made during the past forty years to discover the signs that we use in estimating short present intervals, and it has brought the conviction that they are not of one kind, but of many, for error can be introduced through a variety of factors, and there is much idiosyncrasy. Several experimenters think they have found that we have a favourite unit, usually between seven and

IX. 7. eight-tenths of a second, for at it, and at multiples of it (and perhaps of half of it), our estimates were found to be most exact; and away from it there were fairly constant errors of over- and under-estimation. But we do not know that we are using this unit, if we are, nor of what sensation it is the unit. Whatever we use has no constant length, for our estimate varies according to the special sensations that fill the interval (or, if the interval is apparently empty, according to the sensations that mark its beginning and end), according also to the degree of variety, contrast, emphasis, attention, and the absence or presence of rhythms and other causes of expectation. Our heart-beat is possibly a sign for the shorter intervals, our respiration as well for longer ones. There are other organic rhythms which we cannot isolate so well; and from experimental data the general statement has been made that "every impression of external or internal sense, which lasts a certain time, changes within this time, though the object (or the stimulus) remains quite the same."[1] To such means of measurement it may be added that all experience proceeds in pulsations of about a tenth of a second. The rate is not quite the same for different sensations, but it may none the less have an influence on the calculation. We measure long intervals in other subjective ways, but all presuppose this estimation of the passing present. It is a task that all the higher animals doubtless perform. We perform it, and can improve on our performance, by giving a temporal meaning to factors of sensation which we do not need to isolate and observe, and, indeed, cannot.

What is the immediate neural correlate of our sense of time is a useful question that will occupy us when dealing with the physical explanation of experience (xviii.). In view of its difficulty I should add that we do not need to wait for an answer to it, nor for an answer to the question about the correlate of our sense of space, in order to discover the sensations or factors of sensation that we use in measuring time and space, and that we learn to use better with practice.

§ 8. (C) These examples introduce our third and last question about sensory intelligence, viz. its development when the spur of a higher intelligence is absent. The course

[1] Finzi, *Die normalen Schwankungen der Seelenthätigkeiten*, p. 129.

of sensation has then to rely on itself for its development. IX. 8.
It has to find the spur in its own interest. This may be called the spur of the whole on the parts[1]; and there is no sensation that is entirely isolated and beyond the influence of the group and the course of sensation of which it is part. The three developments of sensation may all take place with no other inducement, though not, of course, to the same extent. For two of them, viz. the differentiation of sensations and the differentiation of aspects, there is obviously occasion enough. And so there is, though not so obviously, for the formation of new or more definite whole objects of sensation. Senses like those for balance, for space, and for time, all improve without the thought of those objects as any but sensory objects. In the sense of balance, *e.g.* of orientation or bodily attitude, the lowest of conscious creatures are likely to have a complex whole of feeling which perfects itself as a whole. But the remarkable thing is this development of sensory wholes within our own experience through merely sensory interests and connections. In learning skill there are always parts where to try is a better way of learning than to think how. Even, to revert to our recent example, when we measure short lapses of time, we only put ourselves out if we make and think of rhythms to measure by. And there is no better illustration than the converse case where we lose a rhythm so far as we have to attend to the length of the intervals, and to the stresses into which it may be analysed. The rhythm must be its own guide, selecting its own factors; it must not be guided by separate ideas, or by rules and considerations, for these are only in the way, even when they have been necessary as a scaffolding. And it is without any active searching, or putting together, that we detect the same melody in all variations of instrument, of loudness, speed, and complication. At the first hearing of anything complex, as at the first look of a picture, we may not take it in at all, then we catch a glimpse without taking it all in, till, with repetition and without thinking, everything takes its place, and the parts that were distracting at first are pooled in the common whole and interest. The differences are not lost in

[1] See also the last part of the note on the definition of sensation.

IX. 8. that way. On the contrary, they are selected and made definite; every note is not merely a part, but is heard as a part, of the whole.

§ 9. To prevent confusion, and to see that there holds at this level what we shall find at higher levels, it is well to remark two things about the unit, the simple object, sometimes called the element, of sensation. A sensation can be resolved into constituents—a chord, for example, into notes, and these into simple tones—which we cannot resolve further into separate elements. Every such unit is a simple sensation analysable, indeed, into aspects; but these are as inseparable as height from a house, and are not felt apart. First, then, it is not with such units that our sensations begin. We do not have them given us, and then proceed to build the more complex objects out of them. We have to make the bricks as well as the building. As we do not learn the alphabet before we learn to speak, so we do not begin our knowledge of nature with what we afterwards know to be the simplest objects in our experience of it. Our progress is from synthesis—from the confusion, for example, in our earliest hearing—to a better synthesis, by means of the analysis that comes with more experience. True, there is no simpler feeling by any sense than the first that it gives; for there is no distinction of factors in it, nor feeling of confusion. But the unit, the simple object, that results from analysis, *e.g.* a simple tone, is another matter (p. 30). It requires the same intelligence to determine it as do the complex units, *e.g.* the notes and chords, of which it is a part. We speak before we spell.

Secondly, the unit bears the marks of its manufacture, and these not merely distinguish it, but make it distinct. Its definiteness or uniqueness is not in the fact of its difference from others, but in the difference being felt and known as part of it. A simple tone is felt as definite the more it has been distinguished from others by reason of the aspects that it has in common with them, *e.g.* pitch, loudness, duration, or emotional quality. This work of knowing an object is done at the sensory level without thought of aspects in the abstract. The sensory object that is made definite and complex by the separation of its aspects remains altogether

an object of sense. At higher levels it becomes part of a more complex object: it is further identified and placed with respect to the rest of the world. The more fully it can be identified or placed, the better it is known; and at no level would it be known at all if it were simply unique, and like nothing else. IX. 9.

Not only does this rudimentary work of intelligence remain with us and grow in importance, but all our knowledge must begin with it and develop from it. Very likely there are creatures that can go no further, and some of them may be compensated by additional or more delicate gifts of sense. The passage to the second or perceptual level is, however, so very gradual that the distinction is merely a convenient one; and it is impossible to divide animals that form the thought of things, and so are said to perceive, from those, if there are any, that know only sensory objects. The transition to perceiving things I shall take in next lecture.

NOTE

The Definition of Sensation

No term has been given a greater variety of meaning than sensation, and not merely in popular, but in technical use. It has been defined from four points of view. Some of them are centres of controversy, but the main cause of confusion is the occupation of more than one in the same definition. From the point of view of function a sensation is defined as the simplest act of the mind, or as the product of a sense-organ; from the introspective point of view it is defined as an element of experience; from the logical point of view it is the simplest form of thought; and from the physical and metaphysical points of view it is our first knowledge of what is real. The last two are mentioned only to be excluded from the general definition.

Of the other two definitions the main thing is to see that they are from two points of view which do not conflict, but must not be confounded. The first is the view of physiology and 'functional psychology'; it was explained in the second lecture. The other point of view is that from which sensation is defined as an element of experience. It is the point of view of introspection. It is frequently called the point of view of 'structural psychology,' but this, it is essential to observe, deals with the structure not of the mind, or of the brain, but of experience.

While it is legitimate to define sensation from both points of view, it is unfortunate that the same word should have different meanings, especially since the two do not coincide, and more especially since the structural definition is not fixed, but includes many varieties. The *Dictionary of Philosophy and Psychology* (Macmillan and Co.), which aims at official definitions, takes the functional point of view. It gives "that mode of consciousness which can only be accounted for by the present operation of an external stimulus upon the nervous system, or some equivalent condition." The word "external" must mean external to the nervous system so as to include organic sensations. The words "or some equivalent condition" are added in order to include "sense-illusions, delirium, etc.," but they change the point of view in the rest of the definition, and there is no good reason why illusions, dreams, and the rest should not be grouped with other ideas, and be described, if necessary, as ideas having sensory elements—the plan recommended elsewhere in the *Dictionary*. Omitting the four words, then, we have the most familiar use of the term, and the one in the text.

To be clear about the definition it is only necessary to specify the applications that it excludes. First, a sensation is an experience, and there is excluded every physiological process as such, whether felt or unfelt. Secondly, a sensation is the experience yielded by organs of sense, there being always peripheral nerves, whether they require end-organs or not for their appropriate stimulation. There are thus excluded the interest of the sensation—its pleasantness and painfulness—and also our attention to it, except so far as by attention is meant sensations of strain. Thirdly, a sensation is the experience that comes from the peripheral stimulation of its organ; and so there is excluded the idea, image, or suggestion of a sensation, even when so vivid that the subject fails to distinguish it from a sensation.

The point of view sometimes called structural, sometimes psychological, but best introspective, was taken by investigators like Helmholtz and Wundt, who sought the elements of experience; and it is now very common. Wundt's definition is the type of all definitions in this direction. Sensations are "those constituents of our thoughts which cannot be analysed into simpler elements." The notion of an element was and is expressly allied with that of the chemical atom, the element of experience being unanalysable, and even described as unchangeable, though it cannot be isolated, and length of life is no part of it. The alliance usually went beyond definition to the explanation of experience as if it were a chemical material (ii. 2). And the question about the elements of experience was very frequently confounded with the far older question about the beginning and the growth of experience. These

confusions were not, indeed, introduced by the question about elements. They were present before, together with that familiar picture of experience as a network of atoms, each with the single but very singular power—compared by Hume with gravitation—of throwing lines to any and every sensation with which it happens to be felt about the same time. For when such a map of the mind satisfies, it is hardly worth while to distinguish the question of elements from the question of origin and growth. "The division of thoughts into sensations can be no sort of substitute for understanding genetic relations; but psychology has often read its analytic task as if this gave the individual development, and has sought to make its method equivalent in some sort to the embryological investigation of the anatomist, without really studying, as he does, the stages of development themselves" (Münsterberg *Grundzüge der Psychologie*, p. 313).

We saw in the second lecture that a histology of experience is necessary for the indirect or physical explanation of experience; and in lecture xvii. we shall see where and why it is also demanded by the direct explanation. But it can be carried out without a theory about the units as elements, and about higher experiences as complications or as fusions of them, or as adding new elements. There is no general agreement regarding the definition of an element, and there is much less in applying the definition. One psychologist numbers elementary sensations, or qualities of sensation, at less than a hundred all told, while another puts them at forty or fifty thousand. Some put the elements of feeling with sensations, and of those who do not, some think there are only two, viz. pleasantness and unpleasantness, while others make them more than the number of sensations, and pretty well infinite. As to our experience of relations, it is sometimes counted for a single element, sometimes for none, and sometimes for an indefinite number. Hence, instead of entering into these differences, I shall only indicate how the questions raised by the definition of sensation as an element are connected with what I have said about the units of sensation at the end of the present lecture. Our experience begins in a mass of sensations, before they are felt as separate; we have them separate as wholes, before we separate their aspects; we distinguish simultaneous wholes like tastes, noises, harmonies, and even groups like melodies, that are not simultaneous but are spread out in time, before we distinguish their parts; we know the greater before their smaller parts; and, last of all, and only by special search, do we distinguish the units that are called elements. There are two effects of analysis upon what is thus analysed, one an effect on the whole, the other an effect on the parts. The effect on the parts is to make them definite and to give occasion for the emergence of sensations, *e.g.* flavours, that were not only not

distinguished, but were not even felt. Hence all the definiteness, and often the existence, of sensations are products of learning. The effect on any whole of sensation is to alter it as well. It may be enriched, the growing complexity of the parts accentuating, not destroying, the unity. But instead of this it may, as a whole or unity, be destroyed, as when we lose a harmony by feeling for its tones, and forget our skill by thinking of our movements in the moment of action.

The questions that arise, then, are these. As regards the feeling of a whole—and not merely of sensory wholes, but the sense of difference, of resemblance, of contradiction, of reasonableness, of beauty, of freedom to choose, of all passions and emotions—there is the question how these are, or include, feelings that are not felt in the parts taken severally. And as regards the parts there is a series of questions. First there is the question whether all the ultimate or analysable parts are to be called sensations, or whether only one set of them, to the exclusion, for example, of pleasantness and unpleasantness; and, if there are two or more sets of element, how they happen to be mutually dependent. Again, seeing that every sensation, however elemental, has aspects that are felt, and so is a whole consisting of them, the question has been raised whether these, though abstractions, are not the elements. Thirdly, sensation is divisible into act and into object or content. This is a division of which one recent writer makes so much as to think that the æsthetic pleasures and pains in mere sensation have the content for their base, whereas all its other pleasures and pains have the act (Witasek, *Aesthetik*, p. 192 ff.). Finally, it is sought to carry the psychical, like the physical, analysis beyond the point where the atom is unchangeable. The physiological basis of any simplest sensation being very complex, there have long been speculations about a division of the felt element into a complexity of psychical elements that are unfelt; and, once on this broad way, it is easy to go any distance unchallenged, till every physical unit concerned has been given its own bit of mind. Of such excursions in pursuit of mental elements there is one by a writer of note (Ehrenfels) that is worth mentioning, not so much because it goes furthest in the extravagance, but because it is directly based on the nature of sensory and other mental wholes. He carries the notion that a whole, *e.g.* a melody, has a characteristic feeling as a whole, down through partial wholes, *e.g.* notes, to the simple quality of a sensation; and he supposes that this, *e.g.* a tone, is in turn the feeling of a whole, having for its basis and factors a number of primitive qualities (*Urqualitäten*), from whose fusion it somehow results. And then, he thinks, there is no stopping until we believe that the entire body of our knowledge is derivable from combinations of a single *Urelement*, which could account for the co-

ordinating impulse in knowledge, and "offer the possibility of embracing the whole known world in a single mathematical formula" (*Vierteljahrsschrift f. wiss. Philosophie*, xiv. p. 292). This, of course, is only a copy of the ideal of a mechanical explanation of nature, and the impossibility of it emphasises the error of taking the element of experience as if it were physical. But, apart from that, it emphasises, like the other, the common error of mistaking an explanation for an explaining away. If, in view of the mechanical ideal of a physical explanation, no one would say that nature consists of nothing but elements of the common denominator in great bulk and complexity, so no one is likely to say that an experience is really something simpler than itself, and all our lives merely a re-grouping of the same elements. The grouping is everything, and there is nothing to account for it in the units or elements of experience; on the contrary, we have seen that they do not come first, and that their very definiteness is due to the grouping. And we shall see the same at the higher levels of intelligence (*cf.* xii. 1, xiii. 2, xv. 7).

LECTURE X

PERCEPTUAL INTELLIGENCE (i.)

x. 1. § 1. SEEING that we rise to the thought of a thing so very early in our lives, and many animals arrive even sooner than we, our division of intelligence into three grades would be absurd if it were meant for a practical division of your history or mine into its main epochs. For the epochs are counted, the first in hours after birth, the next in months, and the third in all the years that follow. Such a difference in their duration is just what we should expect on the theory that the life-history of an individual recapitulates that of his remote ancestry. This theory, called the law of biogenesis, is not only used in embryology, of which it is the fundamental notion, but in dealing with the growth of the mind ; and we shall have to consider it in this application (xvii.). Observe, however, that in embryology it refers mainly to stages in bodily growth which are passed through and either left behind, or modified to a different, often a very different, structure. But you will remember that our concern with the lowest grade of intelligence is not that, having passed through it, we leave it behind or greatly modify it, but, on the contrary, that its function persists, and is most clearly discernible in connection with higher functions of which it becomes an organ. The threefold division, then, does not imply that the end of a period puts an end to the kind of intelligence that characterises it. In dealing with merely sensory intelligence we saw how, by its union with higher forms, it is not transformed, but is given an infinitely greater wealth of occasion than it can have in the service of a few instinctive needs.

I have spoken of grades, levels, and even a ladder of intelligence, in order to mark the distinctive character of its higher achievements. But the words must not mean that there are gaps in the course. For the course is continuous from lower to higher grades for those who make it. The growth has its times and seasons, it is true (xvii. 2, 6), but it is a growth. On the one hand, therefore, we have to observe that at the higher level there is a new line of advance; and, on the other hand, we have to expect no violent transition. We shall see this in passing from perception to conception, as well as now in passing from sensory to perceptual intelligence. x. 1.

We saw how sensory intelligence develops from instinctive courses of sensation. An instinctive action being a reaction on an internal or an external stimulus, its course on any occasion opens with organic or with special sensations, and continues with sensation of the reacting movements, and with the new organic and special sensations due to the changes resulting from the movements. The instinct is perfected, in the first place, by the differentiating of this serial mass of sensation: the stimulus is taken more readily, and the consequent movements gain in precision. But there is more. Wherever there is certainly feeling, it must be revealed in a power to anticipate. We no longer act on bare sensation, but on sensation with a meaning. The meaning consists in some anticipation of sensations to come, though it may be as vague as in the most indefinite fear.

It is by an extension of this process that an animal comes to anticipate the various qualities of a thing from a look, a smell, or some other feel of it. The act of intelligence may then be perceptual, or it may remain merely sensory. The diabolical insistence with which a fly will return to your face on a hot day may demand no more thought of you, and of your distance away, than it has in the degrees of the simple sensation by which you fatally attract it. If its way is guided by sight as well, so that the sensations mean one another, its intelligence is very likely of the second or perceptual order; and still more likely if it has use of a third sense to inform it of your presence. But

x. 1. it is not the mere number of senses that guarantees the thought which we call perceiving a thing. In this thought we turn a sensation not merely into an object but into a quality of a thing. At first a thing may be thought simply as a group, and a quality as one of its members.[1] Least in advance of a merely sensory thought is one in which a sensory whole is felt to have parts, *e.g.* the taste, smell, coolness, and softness of an orange, or the expanse and colour of the sky. This is an advance to the thought of a mutual belonging. The usual case, however, is when not the whole object is present in sensation, but only one or two of its qualities, the others being meant by them. This whole is individuated, or given a subject or self, in the manner that we saw (vii.); and at first there may be no more thought of the absent qualities of a thing than an expectation of something or other from the same source as the present sensation.

Thus the growth from the primitive form of intelligence is not to a mere accumulation of meaning or expectation from a given sensation. It is that too, viz. an increase and a greater variety in the meaning. But it is mainly an organisation of this mass of meaning into the thought of things, their qualities, and connections. In this form the mass is easily carried; the same thing is known from any one of a multitude of aspects; and great differences are known from little differences in sensation. The motive to progress is still the practical advantage, for, with every fresh cue that it learns to take, an animal appreciates a situation better. Not every creature that perceives can take every cue. Some are relatively stupid, taking long to learn, some absolutely so, failing altogether. The difficulty in teaching them is usually to make them seize an aspect which has no interest of its own (xii. 10). A simple cue like a vivid colour, an odour, or anything threatening, is easily taken, because it has a spontaneous or instinctive interest; but unemotional sounds and sights must borrow interest from the interests with which they are connected. To domesticated animals,

[1] It is usual to limit the name thing to a group having spatial quality, and, indeed, to define it as the spatial unity of the qualities; but the spatial quality is learnt in the same way as the rest (§ 6).

for example, certain lessons are easy, the cue being taken at once; they soon learn the meaning of a hand held out with an offering, an arm uplifted to strike, the sound of a familiar voice or footstep. But there are all degrees of hardness up to such uninteresting and artificial signs as printed words, coloured cards, and unobtrusive gestures. These only the more intelligent can be taught to notice, and by means of rewards or punishments following closely or repeatedly upon them. The higher the mind of an animal in the scale of intelligence, the more it is able to take interest in what originally has none. Besides the fixed capital of its instinctive interests it has a stock of floating capital ready for a variety of investment according to the circumstances of its individual life. The variety is far from being absolute, of course; compared with our own it is very limited, including no interest that is not immediately connected with fixed interests and instinctive activities. But for the same reason the capital does not lie idle, but is invested in spontaneous exercise or frolic when the business of life is not at hand. And play, as we saw, is akin to that business, and a preparation for it. Whether in leisure and play, or in more serious living, an animal learns to guide its life by taking interest in sensations, and in aspects and groups of sensations, on account of their meaning, though they have nothing else to commend them, being neither attractive, startling, nor repellent. X. 1.

If there is thus an instinctive basis for the powers of different creatures that learn to perceive, still more is it required for the lesson that all of them learn. All sensations come to mean a quality, a thing, a relative position, an effect. They have so far a common meaning, and have it every time; and we shall see the great importance of this when we come to the structure of our thoughts in perceiving.

To understand the upper limit of perceptual intelligence we have to distinguish it from conceptual, or thinking. We shall do so when we take the transition from perception, but at present we may be merely negative, and regard the line of distinction as drawn where it is most convenient. It is most convenient to exclude from mere perceiving the power of using language, and the power of forming ideas of things

x. 1. in their absence. We shall afterwards ask how these powers bear on perception, and, incidentally, whether animals have them. But whether animals have them or not makes no difference; we want to find what knowledge there may be without them.

The qualities of which I have spoken are those that things have in relation to our senses; but they have others as well in virtue of their relations to one another. It is usual and convenient to call the one set a thing's qualities, the other its relations, and both may be called its attributes.

§ 2. In next lecture I shall deal with the power to perceive from the same three points of view as we took in regarding the lower level of intelligence. To-day we are mainly to be occupied with a question that concerns all grades of intelligence, it being best raised at this point where we begin to speak of knowing things. I mean the question of the truth of our thoughts. A sensory, a perceptual, and a conceptual thought all claim to be true of the one real world in which we live, and to economise trouble and risk by prophecy about it. We may at present ignore their playful or merely imaginative use, and say that they are all a handling of one and the same real object, and that the degrees of intelligence in them are the degrees of their grasp or comprehension of it. It is this function of intelligence in general, and of perceiving in particular, that we are about to consider. Leaving the process of perceiving and its development till next lecture, we shall deal now with what it accomplishes. It accomplishes knowledge.

What knowledge have we by perceiving? I shall begin by breaking the question in two, and shall state the parts in a form that is likely to suggest itself to you. (*a*) By what means does the mind leap from a knowledge of sensations which are within it, to a knowledge of the qualities of things which are outside of it? And (*β*), assuming the leap to be made, so that a given sensation presents, or stands for, one quality of a thing, how does the same sensation stand for the other attributes of the thing as well? Though these questions are not hard to answer, they will delay us, because common sense gives them a wrong answer in

accordance with a way of thinking, which we must observe and surrender, if our ideas are to be clear. x. 2.

(*a*) The form in which I have stated the first part of the question suggests that, in passing from a sensory to a perceptual act of intelligence, the mind has to make a mystical leap out of itself, passing from a knowledge of feelings which are within it and belong to it, to a knowledge of things which are outside and do not belong to it. But the suggestion is in error. We do not discover a thing to be real by any mystical sense, but in the same way that we judge it to possess any other property, or to come up to any other standard. Every thought, even if only sensory, may have a real object; and, if the thought claims to be true, there are factors in the object as we think it that in our opinion warrant the claim. With more knowledge, but only with more knowledge, our opinion may change, and we give up the claim, taking the thought now for a mere thought and not a piece of knowledge (iii. 2).

The notion that our sensory knowledge begins with what is in our own mind or head, and grows to a perceptual knowledge of what is outside of us, is due to our taking for literal the familiar metaphors in which the mind is said to copy or photograph things, or to reflect them, or to be impressed with their image.

(*β*) The same erroneous suggestion is made in the second part of the question. Assuming, it is said, that a sensation can stand for one quality of a thing, how can it also stand for others? Really a sensation cannot mean one quality without meaning more, because to mean quality is to mean a group. But the suggestion in the question is that the sensation is the vivid impress of one quality, and that it excites more ghostly copies of the others.

The crude result of this way of thinking is the assumption that perceiving consists in forming an image or model of a material object out of a different kind of material, viz. experience. The crudeness may be reduced by a series of refinements. We may begin by omitting the exclusive reference to sight that there is in the notion of an image or model. The perception is then thought to consist of impressions of one or two qualities, together with some revival of

x. 2. our previous impressions of other qualities. The refining is continued if, next, the metaphor in the notion of an impression is recognised, and it is no longer thought that sensations are copies. The perception then becomes a complex of vivid sensations from our organs of sense, together with some revival of past sensations. Finally, it is seen that the revival is not a resurrection, but the occurrence of new sensations like the old. Thus purged of metaphor, the perception is taken to consist of the one or two vivid sensations having a peripheral stimulus, and of the mass of ghostly sensations or ideas excited by these.

All this refining is a real correction, but the gap is left which the metaphor was meant to fill, and which it does fill to the satisfaction of common sense, because it is sufficient for all our ordinary wants. For there is now no connection left between thought and thing, whereby the thought may claim to be a thought of the real thing. Yet it is this part of the thought alone which makes it a piece of knowledge, and either true or false. The metaphor says that one ingredient in perception is a feeling that sensations are like the qualities; and it makes the correctness of the thought depend on the correctness of this feeling. The feeling, if it were there, would be absurd; but what have we to put in its place whereby a thought is a true or false thought? There is now in the thought only a complex of vivid and ghostly sensations, and we still have to find room for the belief which we call the sense of reality.

It is a belief that is present in our dreams, where it is always wrong, as well as in our waking life, where it is usually right. It is not due to the mere number of elements of the complex, nor to a feeling of their likeness to anything, nor even to the vividness of the strong ones. For the vividness may be resisted, even at the perceptual level of intelligence; an image in a mirror, for example, is as vivid as ever after we have learned to discount it. Nor, finally, does the belief lie in the strength of association among the sensations, whereby one inevitably brings the others to mind; for, in the first place, that happens when there is no belief, as in humming an air, or in repeating anything familiar, however nonsensical; and especially, in

the second place, because our belief is not in the connection of our sensations with one another, but in their connection with reality. X. 2.

The proper answer to this question about belief, or the sense of reality, is not far to seek, and indeed we have had it in considering the origin of perception. But it often happens that the entrance of a truth does not expel the error, so that the truth cannot come to its own. We can hold very inconsistent opinions without being aware of it. When the wrong opinion is merely a piece of information whose rejection does little to disturb the rest of our knowledge, the bare entrance of the truth is enough to expel it; but when the error is in a way of thinking, its effects may remain and make trouble, after it appears to have gone. When we ask how our sensations can be true of things, it is natural to treat the question as if we were asking how a picture is like the thing it represents. And so reasonable does the question seem that, when we cannot answer it, we think it beyond the measure of our minds, instead of rejecting the assumption in it. The consequence is that when we pass to the second part of the question, and ask how a sensation represents the other attributes of a thing, we answer by supposing the percept to be simply a complex of as many sensations as possible, adding to the vivid sensations the faint ones of memory, which, in time past, have also been vivid. When I offer a dog a bone, he is supposed to have in mind not merely the look and the smell of it, but some sensation of its hardness, of the marrow in it, of his own teeth, the crunching, and the old delight. Well, he may, especially if I hold it long enough, but probably most of these achievements are beyond him. Anyhow he does not need them, in order to believe that it is a real bone. His seeing is believing, without its ever having to suggest the sight of by-gone bones, or to make comparison with them. We shall see this more fully in the next two lectures; at present I am only pointing out that the explanation is so common and persuasive because no other course is open to this way of thinking. Though the explanation is quite against the facts, for we are not aware of recalling the past nor of comparing, it is thought that we

x. 2. must do so unconsciously, or so very rapidly that we do not notice.

In other words, were it not for the way of thinking, we should not suppose that the past had been revived and compared with the present at all. The past no doubt is everything; but we should be in a poor case if we had to feel over again our past experience in order to use it. The mind makes a far greater economy than that, and has a far greater efficiency than that would allow.

§ 3. I pointed out that perception begins when the object in a sensation is felt as a quality, and that when it is felt as a quality the thought includes a warrant, meaning, or expectation that other sensations may be had of other qualities. In this there is a summary answer to our question about the sense of reality; but I may now extend it, that we may see how all intelligence, from the poorest to the best, is a handling of one and the same task, and results in various kinds or degrees of truth about one and the same world.

The sense of reality may be said to begin when expectations begin to be thwarted; for we should have no feeling of being in the right if we never had the chance of feeling in the wrong. But, finding ourselves wrong, we are not thrown back from a knowledge of what is real to a knowledge of what is only in our heads; on the contrary, we have a better knowledge of what is real. As our knowledge of the world progresses we have constantly to correct our views of it, but always because it is the same world, and we know more about it. The object in merely sensory knowledge is a real object, though it may not be felt to be real in the absence of all suspicion of unreality. At the perceptual level our thought is of the same world as at the merely sensory level, but the objects that it forms are far more complex, and give a greater wealth of expectation. Expanding and correcting our expectations, we arrive at such a view of things as even the lowest of mankind attain. Invisible things like the wind, and intangible things like flame, lose their mystery; things beyond our testing, like moon and stars, are made analogous to familiar fires; the secret powers of things are assigned to invisible spirits like our own, and our own and

all spirits are given shape and substance like the liveliest things of sight. The common-sense view with which we are familiar expands and corrects this childish knowledge, and science expands and corrects common-sense. We learn better the conditions on which we have the variety of experience, can anticipate events long before they arrive, and prophesy backward to what nature must have been. Peaceful though the revolution is, still it is a revolution in our notion of things as regards their relations both to one another and to our senses. They lose their independence in both respects. They are found to have no attributes—no qualities any more than relations—but in the presence of one another, that is to say, as members in a physical system. Their relations to us, whereby we perceive them as groups of qualities, are also found capable of a physical explanation, as relations, namely, to end-organs and other apparatus of sense. Then the ideal appears of reading all the conditions of experience as physical conditions, and all the physical conditions, all nature, as a mechanical system. And as we saw, this explains nothing away, and does not touch the value of the world (ii. 3). We deal with the social, æsthetic, and other conditions of experience, as so many worlds within the single universe; and these worlds embrace a variety of smaller worlds, each with its own conditions of life for those within its pale. Finally, there is the ambition of some to form a notion of the universe as a whole. x. 3.

In speaking of the apparent conflict between sense and reason (vii. 6) we saw that these developments do not deny, while they define, the modest forms of truth in which children, and even animals with senses very different from ours, learn to read the one world in which we all live. In all valid notions about the mind, about the values of things, about the worlds within worlds, about even the universe itself, there can only be a fuller handling of the conditions of experience, and a placing and defining of the physical, and the other conditions in relation to one another. It is in this further expanding and defining that the revolution is carried on. And how far it must be carried you may imagine, when you think that only the total system can be quite independent, in the sense that a child thinks every body living or lifeless

x. 3. to be. But it is still a peaceful revolution, and the old partial knowledge holds good so far as it goes. All who seriously attempt a notion of the total system, which alone is real in the sense of being absolutely independent, proceed on the same principle, and even with the same purpose, as those who have succeeded in the revelation of nature. As these infer nothing about nature that is not directly or indirectly required to account for our experience of sensory objects, so those others profess no right to make an inference about anything that is not required to complete the accounting of our whole experience. In a later lecture we shall see how the growth of our knowledge affords a more and more adequate criterion of what is true and false (xiv.). But there is true knowledge of the one real world at every level of thought. No doubt at the sensory level the world is a queer and fragmentary one. It would be a mistaken one as well, if infant or animal could take it for more than it is. But it would be no more mistaken than our own perceptual world of things, when we take it for more than it is. We take it for more when we forget that it is the world as we perceive it, and suppose, for example, that a thing keeps its look when no one is looking. But we saw (vii.) this to be a theory and no part of our perceptual knowledge.

§ 4. That the text may not be quite lost in the context let me repeat a little. All grades of intelligence are occupied about a single system of reality, of which they seek true thoughts; and they may attain true thoughts of the parts with which they are competent to deal. In thus expanding the question about what we know in perceiving, we had, you remember, two purposes. One was to remove the confusion of our familiar but metaphorical way of explaining how thoughts are true; the other was to show how all grades of intelligence have not only a common process or method, but exercise it about a common real object. There is no difficulty in seeing that from infancy to speculative age we are dealing with the same system of things, that in its own kind and degree the meanest creature knows the same world as we, since we all inhabit the same, and that no living being can know more than the conditions on which it finds its experience to depend. But, instead of applying this, we

take to metaphor when, turning from things, we examine our thought, and ask how it can be true of them. We are satisfied to think that it must copy them, and we take it for literal that things impress themselves on the mind, that our eyes are the windows of our soul, and such like. It is a view, as Hume said, that will not stand a moment's consideration. But it is not left in a moment, partly because it works well in everyday matters, and feels as if bred in the bone, but also because it is not seen how else things can be real, and thoughts can be true. There is even a notion that, but for a useful fiction, we should say that we can know only our ideas, and that not things are hard, sweet, forty feet high, but ideas, or the soul when it feels them. And such an alternative would be the fire and not the frying-pan in the dilemma, for neither truth nor reality would any longer be in sight. But the whole dilemma is due to the metaphor and disappears with it. x. 4.

In the perceptual beliefs of children and animals, who can have no theory about them, there is nothing more mysterious to be found than certain expectations. If the expectations are disappointed, the beliefs are thought to have been false; if they are realised, the beliefs are found to be true; if they are not tested, they may be either; and if they are held in suspense, there is doubt. If there is no expectation there is no belief, no sense or knowledge of reality at all. The explanation holds equally of our belief in qualities that give us present sensations, and in those that do not; for merely to identify a present quality is to give it an independence, and so to make it a source of expectation. The same explanation will be found to account for our beliefs and their truth at higher grades of intelligence, and when we deal not only with nature, but with the other realities of which I spoke, and even with matters of sheer imagination. We shall have to ask what thought we form of the things that we expect at different grades, but for the present there is simply the point that all knowledge makes prophecy.

The prophecy is always about this or that within a system of things that is at once independent of the prophecy, and the criterion of its truth. Even the simple act of sensory intelligence anticipates in recognising, and sometimes proves

x. 4. to be wrong. Perception is only more complex. Your knowledge of the pen in your hand is a volume of prophecy about its qualities of which you have present sensation, about its powers of which you make present use, and about its past, and all that it can do or become. The ultimate criteria of your beliefs about it are not to be found in the strength of your convictions, but in the actual fulfilment of your prophecies. The simplest beliefs that the pen will continue to write, that the shaft is of wood or metal, that it is larger than another, that you are not dreaming about it, and any still simpler beliefs, are all so many prophecies of what will happen on certain conditions, which you do not mention, but would at once introduce for the test if you had any doubt. Before I spoke of the pen, you were perceiving and using it without thinking anything about it. The little prophecy involved in your perceiving was enough to direct your use of it; your success was the fulfilment of the prophecy, and you had no need for further knowledge; as the ink failed you took a little more notice; and an accident would have brought the prophecy to judgment.

The sense of reality does not feel like an expectation; there is no feeling of expectation in it till it is challenged, and then it is resolved into definite expectations about the object. The sense of reality is a resultant, an intensive thought (viii. 4); and, as always, it is neither felt as a sum of the experiences into which it can be extended, nor is it compounded of them in a quasi-chemical way. It is nothing against the explanation that the sense is as inevitable as sensation, and persists though we may know it to be illusory. On the contrary, there is corroboration; for it is still extended into expectations, though these are known to be false.

§ 5. We pass now from perception as knowledge to consider its particular kind of knowledge. We are to consider the nature of the objects that may be thought in perceiving things, qualities, and relations. This will give us the necessary material for studying, in the two next lectures, the process of perceiving and the growing power to perceive.

We saw that the perception of a thing begins when a sensory object is thought as a quality, and, most simply, as a member of a group. The group is the thing, the members

are its qualities, and the thought is the sensation of one or more of them, and the expectation of others on certain conditions. Here we have three points deserving of remark: (*a*) what constitutes a group, (*β*) how those 'certain conditions' are thought, and (*γ*) how qualities are thought in being expected. x. 5.

(*a*) What may be included in the group that we call a thing is altogether a matter of convenience. We may take this room as a thing, or the door, or even the keyhole, and to a fly on the door the unit group, if it has one, is doubtless very different. We have no difficulty in taking groups beyond our power of perception, and regarding them as things on the model of those that we see, *e.g.* molecules, atoms, and electrons. Size and shape of some kind, and the other qualities that are felt by sight and touch, are nearly always members in our groups. Especially we expect things to be visible to some kind of eye, and we have the greatest difficulty in realising how things must appear to one who has never seen. We also feel strange with groups that have no tangible qualities, and we hardly call a group a thing at all if it is not assigned a position in space. The lower animals must, in many cases, select groups that are very different from ours, their sight being often of much less importance to them than hearing, and especially than their sense of smell, or what we take to be smell.

(*β*) The perception of the qualities that are not directly felt is the expectation of feeling them directly on certain conditions; and those that are directly felt are similarly thought as being felt on conditions. The conditions, in both cases, are the employment of the proper senses. But, of course, animals can have no idea of what a condition means, and they have not even to think of sense-organs and limbs in order to use them. Nor are we in a worse position. If I want to see the inside of a box, I open it and look without having to examine the grounds of my hope, and the means of realising it. Though simple enough, this is important. It illustrates the general rule that we do not discriminate where we have no need; and in perceiving there is no need to think of the means and the way of using them, nor to know the grounds of our expectation. As, when you resolve to

x. 5. walk, you do not need to choose the foot to begin on, so a child does not select its mouth in order to taste, nor choose between hand and foot, nor between right and left, when it seizes. The situation has not to be analysed and worked over in thought before being met; it is met by a more or less instinctive action. If the action fails, and there comes a feeling of disappointment, the seeking proceeds in a change of action, and the successful course becomes habitual, without any consideration. The sensation thus receives a practical analysis and a practical solution. But also it becomes better known; expectation follows the line of success; and we shall see that the belief or expectation has a system of its own (xii. 5).

(γ) What now is expected? Must the absent qualities be pictured or otherwise foretasted? And when, in perceiving a present quality, one expects the sensation to continue, what is in one's thought?

Observe, in the first place, that we think only of those qualities that have some present interest for us. In looking at the box before me I need not think of its inside, or any other side but that presented to me. From the most casual to the most anxious observation there is every variety in the way of thinking a thing; and the casual thought may be the most intelligent, because it is able to take for granted what the others are trying painfully to include. But neither in this compact form, nor in the loose and fragmentary form, do we at the moment think our whole knowledge of the thing. In the second place, with respect to those absent qualities that are thought and expected, how do we think them? When the dog in our example sees the bone, does his expectation involve a foretaste of what is to come? I think not, for reasons that will have better room in next lecture. And, in the third place, I need hardly add that our elementary belief in the reality of any present quality of a thing is simply our expectation of its continuing on the present conditions. Applying these three considerations to your perception of the pen in your hand, and taking them in the reverse order, we have, first, that the colour, hardness, and roundness are read as its qualities, because they belong to one another and continue to be felt on the given conditions;

second, that any other qualities of which you happen to be aware are also those from which you have expectations, *e.g.* that there is ink enough in it; and, third, that the great bulk of your knowledge of the pen is not in your thought at all, and yet that it is not all as if forgotten. Much of it is in that perilous and important state which we call taken for granted (xii. 5). x. 5.

§ 6. Finally, of the perception of relations among things. There are numberless stories of how animals can tell number and time, and have a marvellous knowledge of space and causal connection. And, after allowing for exaggeration, there remains an intelligence that seems at first sight to be far beyond a mere perceiving. A very modest knowledge of space, time, number, and cause may seem to require abstract ideas, a grasp of laws, and a process of reasoning, which it only needs language to reveal. But laws and general objects are never known as abstract at the start. Our very early use of language encourages us to handle them as abstractions, with the result that we overlook the power of merely perceiving them, and fail to see its importance.

I have distinguished the relations among things from the qualities of things, but there is no mystery or fresh difficulty about our way of knowing them. Indeed our knowledge of them develops in the course of the same learning. Space is known, for example, in the size of the visible and tangible qualities, number in the division of their parts, cause in our handling of a thing, and time in its change or persistence. A thing, to be known at all, must be distinguished from its setting, and in this we have knowledge of its relations. And when things are known in a group, when, for example, a thing is broken in pieces or thought piece by piece, the relations of the parts to one another are thought as qualities of the group. We do not begin with a knowledge of things and afterwards learn their connections, any more than we begin with the several qualities and afterwards discover their connections, or than we add the aspects of a quality together in order to know it and them. We begin with a total object in which the connections are not yet felt, and analysis reveals them in dividing it. The revelation, of course, is only to minds that can make the analysis, and in accordance

x. 6. with the degree to which they can carry it. When an infant stares at four lights in a row, and then sees them blown out one by one, it may have no thought of time, number, position, or cause, though these are all before its eyes. With a little experience, and without effort or purpose, it comes to take some interest in these aspects, but we can easily suppose all degrees of stupidity in animals and imbeciles, down to their inability ever to observe anything in such a situation beyond the brightness of the lights.

§ 7. I conclude this lecture by taking the perception of space, number, time, and cause, in order to illustrate the nature of our thought of relations in merely perceiving them.

(*a*) Nearly every animal that moves and feels at all must have some notion of space; and since it is the same space that is known to an insect and to a geometer, one can well suppose how many grades of knowledge there may be about it, and especially how, the lower the grade, the less there seems in it to understand. The lower the grade, the less we find space made a separate object of thought. Only at a theorising grade of thinking is it extricated from things and made the void in which they move. Arrived at such a notion we at first feel confident that this is a notion of pure or empty space, clear of things, and that nothing is left in it. There *is* something left, but the point is this common conviction that there is none. For, if we think it empty at that grade of thought, one can understand how, at lower grades, space may be thought and dealt with successfully in a still less pure or abstract form. The space that we commonly take for empty is really filled with light and darkness, whereas a blind man who has never seen cannot fill it even with darkness. Proceeding to empty it of all filling, his as well, we come to the notion of space as bare extension or room. But though we call this the pure or proper notion of space, or the notion of space proper, we do not need to think of it as so abstract an object in order, *e.g.*, to read geometry. We continue to think about it by means of examples, and in them, of course, it is always filled with something.

The purposes of a merely perceptual intelligence are served by a knowledge of space in which the abstract notion has never been constructed; and all such need to be con-

structured. One thing is seen to be bigger than another, or farther away; there are very exact calculations of spaces to be leaped and shapes to be formed; and there is so remarkable a memory for direction as we find in insects and birds. Form and size, distance and direction are recognised by no more marvellous a feat than we find in the distinguishing of the other sensory attributes of a thing that vary independently. For, just as the qualities that come by different senses are distinguished, so are those that come by the same sense, *e.g.* the loudness and the pitch of a sound, the extent and the tone of a colour. The extent is so important an attribute, especially as regards the distance and direction of things from oneself, that prominence is given to this aspect with little or no learning. We rely mainly on our sight, some animals on smell, others on hearing, and many, including ourselves, a little on all three. x. 7.

We speak not merely of seeing, hearing, and smelling distance and direction, but of measuring them by these means; and measuring suggests a process of comparison, and the conscious use of a standard. A perceptual measurement, however, is quite immediate; and to hesitate in making it is no proof of comparing and deliberating. When the chick or the child in our old illustration measures by sight the effort it must make to pick a thing up, it does not rehearse the effort before making it, and it learns an increasing exactness of reach without rule or unit. It simply forms different expectations of reaching things by different efforts, according to the differences that it is able to feel in the look of them. So by mere practice you learn to tell, some yards in advance, whether, without altering your step, your foot will fall on a puddle or pass over it; and yet you have probably a poor notion of the length of your step, except in stepping.

(*β*) As distances are perceived without measuring by a standard, so number is perceived without counting, which is essentially the same thing as measuring, and needs a conscious purpose. The perception of number develops from the mere thought of a group, and especially when the things in the group are like one another. The stories about animals counting refer to groups of eggs, footsteps, cater-

x. 7. pillars, sportsmen. When these groups are large and formless, the thought is merely of their size, but when they are small and definite, the units are distinguished as giving a shape to the whole. But this is not yet counting. There are no good data among the animal stories from which to illustrate, as they are not nearly critical enough; still it is well enough attested that, the more eggs a bird has in her nest, the more may be taken without her missing them, and especially if they are taken one at a time. The inference is not that the bird counts to two or three, and fails to reach four, but that the smaller the group the more simple the shape of it, and the more easily the animal is disappointed to find it other than she expected. And she may be no more able to think or imagine what she expected than we, when we enter a familiar room and find it somehow altered, we do not know how or where. The same is easily observed in young children; and indeed it is remarkable that so long a time passes, after they know the names of numbers and their use, before they actually use them for any counting above one. And one is at first used more as a demonstrative pronoun than as a numeral, and is distinguished not from two but from the rest. The mere number of things has little interest, and to primitive minds there is not that need for exactness and calculation which we feel to be so fundamental. The rioting in large numbers that is so puzzling in historical records is probably, like the marvels in them, and like the lies of little children, more a vice of intelligence than the moral vice that it would altogether be in us. The native tribes of Australia have so poor a vocabulary for numbers that they use compounds after the number three, and after five they do not specify at all; whereas our language does not begin with compounds till after ten, nor indeed till thirteen. "At Alice Springs they usually count, sometimes using their fingers in doing so, up to five, but frequently anything beyond four is indicated by the word *oknira*, meaning much or great."[1] And yet these people have a far keener perception for many things than you or I, and it has all been learnt, for their senses are not better. If they were not so observant in their own way, they might have found more

[1] Spencer and Gillen, *Native Tribes of Central Australia*, p. 25.

need for counting, and, in fact, their children learn it very well in schools, considering the disadvantage. But it is the beginning of a new direction in learning, for it requires an intentional analysis, and is so far a substitute for the perceptual way of distinguishing differences of quantity. When the analysis of a quantity appears to be given, when the group is presented as a series in time, so that the purely numerical aspect might seem to be forced on attention, a new difficulty presents itself. For a series cannot be summed without being grouped, each new element having to be counted to a group already made; otherwise there is merely a monotonous another and another. Such a summing is obviously impossible without intention and a system of signs. X. 7.

It is not otherwise with the perception of a successive series of sounds or other events during any present moment. The series may differ from another in nothing but the number of its members, and yet the difference is felt without counting. Like the simultaneous group it is distinguished more easily according as the members are few and the series has definite form. In this way some animals may be taught to recognise different series of sounds that differ only in number. But they need not count. The totals are distinguished without analysing them into their units. Their quantity is felt as a quality, the numbers being no more abstracted than are the varieties of pitch, stress, and interval, each of which may also be the only thing to distinguish different series from one another.

(γ) The perception of time is of a like description. It consists in the estimation of a present interval, without abstracting from what fills it, and without the conscious use of a unit. Let me remark shortly on these three points.

First, the notion of a present interval may seem to contradict itself. And so it does, if we speak of time in the abstract, where the present is a point without parts, having position but no magnitude, without beginning and without end. But every smallest piece of actual time has some length, and so the present is felt as a duration, if it is felt as time at all.[1]

[1] "The practically cognised present is no knife-edge, but a saddle-back, with a certain breadth of its own on which we sit perched, and from which we look in

x. 7. Secondly, we measure it in perception by its conscious filling; we perceive it as the duration of our present experience, and measure it by the changes therein. To feel change is to feel time, and probably every creature that feels at all is able to feel change. (Not, however, because its feeling changes; for we can easily suppose a change of feeling without feeling of the change; such, indeed, we have when so absorbed in a task that at the end we have a poor idea of the time it has taken. A purely panoramic mind, however, where events succeeded one another with no feeling of their succession, would seem to be useless.) And the succession is never of empty moments. The view of time as a stream or a tide bearing events on its billows, with hollow intervals that bear none, is, of course, a figure. We no more perceive empty time than we perceive empty space. As space is nothing but extension or room, and is only

two directions into time" (James, *Principles of Psychology*, i. p. 609). The length of the present depends on what present we mean, and on how it is filled. For now, like here, may reach as far as we choose, or no distance at all. We may distinguish a sensory, a perceptual, and a conceptual present. The first is usually called the psychical or specious present. Its length varies, like our exactness in measuring it (ix. 7), according to our degree of attention, and according to the matter that is occupying us. There is a clearest part in it, which may be called the specific present (xviii. 7), usually half a second or a little more. It is the period which we can most exactly repeat, immediately after it has passed. The length of the sensory or specious present on any occasion it is not so easy to determine. "The time it takes the clock to strike two or three we hear; the time it takes to strike eleven or twelve we have to reconstruct in thought" (Ebbinghaus, *Grundzüge d. Psych.* i. p. 462). But, of periods between, it is not so easy to say how much is sensory, and how much needs recalling. As frequently happens in perception, though a theoretical line can be defined between what is sensation and what is meaning, it cannot easily be drawn, because of the mutual dependence of the two; and here it cannot easily be drawn between the time that is matter of sense, and the time that is only represented or meant. The test of repeating a period has often been used to measure the length of the sensory or specious present, but it must more nearly measure a period that we may call perceptual. Beyond three or four seconds it becomes increasingly hard to reproduce a period exactly without reflection. From this we pass to periods that are still so far perceptual that they have not to be measured by recalling what has passed out of our mind. They are spanned as a single scheme whose more distant parts are neither a mere blur nor entirely symbolic, but retain their relations like the distant parts of a present landscape. "In a certain sense it may be only the two last measures in a piece of music that are present for me, the third last sinking to the past, and yet in another sense the whole symphony may be the present object which I apperceive and handle as a whole" (Münsterberg, *Grundzüge d. Psych.* i. p. 236). Finally, the length of the conceptual present has no connection with the time that we take to think it; it may be a present moment, or a present year; or it may be the abstract 'knife-edge' present.

perceived in something roomy or extended, like light, darkness, or solid things, so time is nothing but duration, and is only perceived as a property of what endures; there is no duration where there is nothing that endures. We seemed to perceive empty space, and we may seem to perceive empty time; but the time is filled with organic and motor sensations, which we cannot shut out, and which, indeed, we intensify, and even create, in the very effort to empty a time of its sensory filling. They are obtrusive only in exceptional cases such as this, and as in a breathless state of expectation. And when in languor we fall to marking time, or to counting the moments as they pass, it is not the bare moments that are found unpleasant and that we count, but the dreary stretch of mere living, which the thought of a more exciting time pushes into prominence. x. 7.

Thirdly, the duration is not abstracted in order to be measured, and so there is no thought of a unit, and no comparison by means of it. We saw this in last lecture regarding our estimate of present intervals up to a few seconds. For our point, you remember, was the use, and the improvement through use, of sensations which we cannot distinguish apart. And of all our subjective means for estimating the lapse of time it is also to be said that we can use and improve them far more easily than we can tell what they are. If I ask you to say how long my lecture has lasted, you will give wonderfully correct answers without waiting to count. If you have been more interested than usual, your estimate will fall short; it will err the other way if you have already been wondering, and have not, of course, relieved the tedium by consulting the better timekeeper in your pocket. And your estimate will be more correct the more you are wont to spend your time in listening to lectures. Somehow, you hardly know how, you are able to qualify the present moment as the end of a period of more or less definite length. But this is not an act that is possible to a merely perceptual intelligence. And probably no more to any animal than to an infant; for they live in the present with an eye to the immediate future, and an occasional regret for what has just gone. Preyer did not hear his child ask when, till the end of its third year, and

x. 7. no animal has anything like a child's intelligence at that age. In the stories of their long memories animals need no notion of abstract time, and the stories of their knowing an hour in the day, or a day in the week, imply nothing but a recurrence of the occasion which gives the same suggestion as before. To a child of three the day before yesterday is not merely ten times farther off than to a man of thirty, it lies undefined with the weeks and months ago. Similarly of the stories of animal forethought; the perceptual interest is all in the instant future, in the future that is part of the present, and not as if cut off, but as the outcome of the present situation. Where there is no expectation there is no thought of time, and the period is confined to that of the current interest and activity. Even in our own case it may be said that "the future does not come towards us, it is that towards which we go."[1] But the essential difference is that, in acting on an explicit plan, we also scheme the time required for its execution, whereas, in mere perceiving, the time must remain a blur, like the horizon to our eyes.

(δ) Lastly, of the causal relation among things. There is some perception of it from the first, for we may say with Horwicz that our "earliest knowledge is that certain movements satisfy certain needs."[2] The development of all intelligence at the merely perceptual grade is concerned with a knowledge of the powers of things, and so I shall reserve what I have to say about the perception of this relation till next lecture. Here it is enough to say that as difference in space, number, and time are perceived without thought of a unit, so we shall find that cause and effect are perceived without thought of a reason. "We find neither in animals nor in quite young children the question why."[3] Preyer records in the diary of his child's development, "On the ten hundred and twenty-eighth day 'Why' was first used in a question. I was watching with the closest attention for the first appearance of the word. The sentence ran, 'Why go home? I do not want to go home.' When a wheel creaked on the carriage the child asked, 'What does that?'"[4] And

[1] Guyau, *La Genèse de Temps*, p. 33.
[2] *Psychologische Analysen*, ii. p. 82.
[3] Horwicz, *ibid.* p. 83.
[4] *Development of the Intellect*, p. 183.

yet this child could speak perfectly well long before, and had sought for causes and found them as early as the third month of its life.[1] x. 7.

[1] "When, on the eighty-first day, at a distance of about one metre from my child, I rubbed with my finger a tall drinking-glass, and produced high tones new to the infant, he immediately turned his head, but did not hit the direction with his gaze, sought for it, and, when it was found, held it fast" (Preyer, *The Senses and the Will*, p. 47).

LECTURE XI

PERCEPTUAL INTELLIGENCE (ii.)

XI. 1. § 1. IN last lecture we saw the transition from sensory to perceptual intelligence, and then we considered the nature of truth or knowledge in a thought, and the kind of it that we have by perceiving. I propose now to deal with the power to perceive, as we did with the lower grade, by taking it, first, apart from any higher form of intelligence, and, secondly, in connection with higher forms.

The first will occupy the present lecture and the next. There are three points to consider about any grade of intelligence as a power to know: (1) the kind of problems that it raises; (2) the kind of ground that it takes in solving them; (3) the kind of solution. Under the last we shall consider the structure of thought in perceiving, and the growth of the structure. The first and second points are preliminary to the third, but important also for themselves.

§ 2. (1) The problems are raised by sensations; they are as definite as the sensory objects that raise them can be thought; and we saw how the definiteness of sensory objects depends on the spur of their having a meaning. The sensations that raise the problems may be organic, as in hunger or cold, or they may be special sensations or their aspects, like odours and visible shapes. A cognitive interest is yet far from independent of its practical origin. But besides the primary appetites like those for food and comfort, others develop in connection with the special and the motor senses; for these have an interest of their own, and are no more the mere instruments of the primary demands for satisfaction. Their interest is physical, it is a satisfaction of sense, but their

mere exercise becomes a delight. This is seen in all play, XI. 2.
in the eagerness for exercise, in the liking for society, and in a taste for sight and sound that, on account of its independence, may be called æsthetic. Here, then, though it is not so intense, there is the same spontaneous impulse as in a hunger-driven search for food, and there is an increasing variety in the problems, though they have still to be raised by present sensation.

In the examples to which I have hitherto referred, the problem is answered so immediately that no interval is felt between the raising and the solution, and only the onlooker sees that there has been a problem at all. But there are two cases, one under each of the two groups of sensation, where the interval is well marked. (*a*) When the problem is raised by organic sensations like hunger or sickness, and no relief is at hand, the solution may take a long time ; and (*b*) there is also an appreciable interval between problem and final solution, when special sensations give rise to curiosity.

(*a*) With organic sensations there are movements for relief or satisfaction, and the result of experience is that when hunger, let us say, recurs, it suggests a more and more definite problem. How is this problem felt? By our definition of perception it is not felt as an image ; the search is neither inaugurated nor directed by an idea of the end, and there is no pondering of the means. There is simply action in definite expectation, such as a workman usually has when he quits work at the sound of the bell, and betakes him by the old road to his meal, without any forecast or foretaste of it. And you have seen dogs, horses, and cattle go leisurely home, taking interest in things on the way, losing and recovering their purpose with as little thought of it as an errand boy. At first hunger drives an animal to search with no more thought of the purpose than when it drives an infant to cry. Experience makes the hunger institute a more definite search, but, at the perceptual grade, without picture, foretaste, or other forecast of the object. This may seem to you a distinction of no importance, but that is because in our own case, *e.g.* in that of the errand boy, or of the workman going to his meal, the forecast could be made and told, if necessary. It is a different matter, however, if

XI. 2. the forecast cannot be made. It is then like our hunting for a name that we have forgotten, but on whose scent we can feel hot or cold ; the only difference is that we hunt among memories, and the animal hunts among things. Like us, he hunts in the likely courses ; he does not have to try everything to find what he wants. He knows what he wants well enough to be open to every hint of it, and to reject the rest without consideration. But he only knows quite what he wants when he finds it. It is a condition with which we are familiar at the highest level of intelligence, when in search of the right word, for example ; and at the perceptual level, as when we are too preoccupied to think what we are about, and when we are sped by violent passions like rage or terror. And observe that, at the perceptual level of seeking, there is not merely the absence of a picture of the end, but the absence, too, of any feeling of vagueness or fogginess in the thought of what we do seek at this level. For that would involve a better intelligence, and be a spur to the raising of a more definite problem prior to the practical solution. The result of a merely perceptual experience is to turn the craving and its problem into a more articulate demand, and to furnish a more direct course to its satisfaction, though there is still no picture of the end nor pondering of the means. We shall see the structure of the thought in next lecture.

(*b*) And it is not only practical problems that are thus raised without mental pictures or internal speech, but problems that are supported by no interest but their own. This interest in knowledge begins an independent life in the form of curiosity. It still requires an ulterior purpose to stimulate and support it; but it is more and more an appetite for knowledge, though it may not be for knowledge' sake. In this respect it is to be compared with the curiosity of the newspaper reader, the tourist, and the scandalmonger. And indeed, as we saw, there is nowhere an appetite for knowledge, merely because it is knowledge of some kind ; the curiosity called scientific is not for any sort of knowledge ; and a purely theoretical interest is not purely intrinsic. The appetite for knowledge is never a separate affair, though, in giving it a separate name like curiosity, we tend to think it a thing

apart, as we do all our faculties that happen to have a name. XI. 2.

It lies with education to cultivate the right kind of curiosity, but there is never a leap. The cravings for food, warmth, safety, and maternal joy cannot be met unless they are put far enough in the background to admit of some cognitive interest in the means of their satisfaction. This least independent form of curiosity we see when a dog investigates a heap of odorous refuse, and when a horse glowers fearfully at an open drain when driven past it. It is a higher form when the dog keeps sniffing at a hole of likely size and shape, where no rat nor living thing has been, and when the horse spends an idle day with his head well out of the stable, just to see what may be doing in the yard. Of this sort is the attraction of novelty, as when an emu comes up at the waving of a flag, and weird cries bring wild-fowl to be shot. Here there may seem a leap from the search to satisfy hunger and the other organic appetites, but the senses are organs, too, with appetites of their own for exercise and enjoyment, when their taskmasters, the organic needs, are quiescent. And this play of theirs makes them at the same time a moving guard at the outposts of life, calling attention at once to novelty and movement.

An animal may become as curious, as full of question, as a monkey, without rising above the perceptual grade of intelligence. When we speak of a high degree of curiosity we may mean three things. First, there is the intensity of it, which may be so great that the impulse is indulged like a fearful joy, as in Darwin's example of monkeys taking momentary peeps at a snake lying in a bag that he had placed in their cage. Secondly, there is the breadth and variety of it, and here, too, monkeys are at the height, for there seems to be nothing to which they are quite indifferent. But, thirdly, the depth of it is quite another thing; for a creature may be exceedingly inquisitive and insistent, and yet be shallow, because all the knowledge it seeks is the sight or other sense of a new thing, or new views of the same thing. Its expectations are, doubtless, a seeking of causes and effects; and this is the main search in higher forms of interest; but so, too, is it in the lowest, as when

XI. 2. any creature turns instinctively upon what hurts it, or moves out of the way.

The problem that is raised by a perceptual intelligence, whether it be for the satisfaction of an organic appetite or of an appetite for knowledge, is one that is solved not by thinking about it, but by doing. It is broken into a series of simpler problems by actual movements, which, before learning, are purely instinctive and blind, but, if indefinite or awkward, are improved and fixed as habits in the manner that we saw when dealing with sensory intelligence. Having learnt the use of its organs of sense and movement, an animal possesses the means of analysing all its problems. They bring it sensation after sensation in a course like that where the solution has been found before. Those from without become sensory objects with a meaning, and the course is to or from them according as they fit the end that is sought. The single end or problem is thus specified into a series of particular problems; and it secures the economy that everything has not to be examined. But for the further economy of mapping out the course beforehand there must be independence of sensation and movement. And this involves a better intelligence than we have defined as perceptual.

Because of this limit to the problems which a purely perceptual intelligence can raise, we shall find that only a certain kind of conduct can be expected. It is called impulsive, being not instinctive on the one hand, nor deliberative on the other.

§ 3. (2) We turn from the problem to the ground on whose warrant it is solved. The solution is the meaning we have learnt to give to sensations, and they are the only ground of which we are aware in mere perceiving. By means of them we identify the things and attributes that we perceive; and they are therefore called the ground of this knowledge. They do not merely suggest their meaning; they do not bring it as the first words of a verse bring the rest. For, in the first place, they do not enter followed by their meaning; they enter arm in arm with it, or rather clad in it, for they would not appear, or they would appear differently, without it. And, secondly, they do not merely introduce it; they introduce it as a claim of which they are

the warrant; they are thought as grounds. For both or either of these two reasons we say that the thought of the ground is implicit, meaning by implicit that the ground is thought but not thought about; it is not made the object of attention (iv. 4). XI. 3.

It is for the former reason that the ground in perceiving is usually said to be implicit—for the reason, namely, that the sensation, or an aspect of it, is felt, but not distinguished from the meaning. No doubt in a course of perceiving, *e.g.* in a hunt for anything, the thought of one thing comes first, suggests the looking for another, and may be the ground for expecting it. But in the several single acts themselves the sensation and its meaning are not felt to enter in procession; they become definite together, and are not thought apart. The object that we think in perceiving is a thing with its attributes, and, in explaining how we form this thought, we analyse the object in it into sensation and meaning; but there is no such analysis in the thought itself. For this reason the ground is often said to be implicit, the sensation being so often interwoven with its meaning.

But the other reason is more fundamental: the sensation is not only not distinguished from the meaning; it is not distinguished as the ground of the meaning, and yet it is felt as the ground. The point is now not the complication of sensation and meaning, but the nature of their connection. And the connection is not merely the causal and mutual one, whereby the meaning is due to the sensation, and the sensation is made definite by having a meaning. For it is only when we think the cause as a because, a reason, law, or ground, that we express the connection between the two. In mere perceiving we do not rise to a reason, to the thought of a law; we do not, for example, recall the past and think that, because things were so before, they will or may be so again. Yet in mere perceiving we take the cue like a reason, for we believe on the strength of it; it is not merely a cause, but a ground. A belief is a thought; as a thought, it is produced like any other; and in that respect its cause is not a ground. The thought is a belief when it claims to be true, and this claim begins to be made and felt whenever there is expectation. It is the cause of the claim as a claim

XI. 3. that is called the warrant or ground. And the claim would not be felt unless its cause were felt not merely as so much matter of thought, nor merely as suggesting, but as warranting. In perceiving, as well as in merely sensory intelligence, a sensation takes this property of warranting, and so it is felt as a ground. In next lecture we shall see how the property grows definite in the system or logic of perceptual belief. But it is only at a higher level of intelligence that the warrant is examined, and turned into a reason. Then the implicit ground is made explicit, and the belief that is based on it is called an inference.

Implicit grounds of belief occur at all grades of intelligence. At the lowest grade we identify sensations and aspects of them without thought of their appearance in the past. At the perceptual grade we similarly know things and their attributes without distinguishing the points by which we have learnt to identify them. There are cases, as in our subjective estimates of time and space, where we never learn to know by what we measure. Other cases are hard, though they seem easy. Consider our learning to draw in true perspective. We are only trying to draw what we see, but the trouble is that the meaning will always intrude, and prevent us from drawing only the cue. Do not suppose, however, that if we recovered our infant eyes, we should more easily make the drawing. A painter does not draw things as he saw them when an infant; he has not learnt to fall back from a perceptual to a more rudimentary seeing. Nor does he even remain on the perceptual grade; on the contrary, he has taken the additional step of thinking about the cue which, in mere perceiving, we feel and use, but fail to make explicit. Can you say how you distinguish the multitude of voices that you recognise, how tones of grief from those of anger, joy, sarcasm, and indifference, and how you read these emotions in any eye? It is not so hard to tell how we know the direction of a sound, and whether it is from near or far, and how of ships at sea we feel one to be nearer than another; but even these are problems that we solve in practice without thought of the explanation, and the explanation, when we learn it, strikes us as a novelty. Finally, at the higher levels of intelligence we have all sorts of beliefs

for which we cannot give a reason. The suspicions and the hopes that we call groundless are so in the sense only that the ground cannot be given, or that it is a bad one, for always there is one. We may dislike Dr. Fell with reason, though we cannot give it; even a judge was advised to decide without stating his grounds; a woman may always make the same claim for her intuitions; in all the arts taste goes before analysis; and a man of genius may leave it to others to discover how reasonable he has been. XI. 3.

§ 4. The systematic character of the grounds that are taken in perceiving is seen in the conclusions that are due to them. I shall leave this third point—the structure of our thoughts in perceiving—till next lecture, and shall occupy the rest of this lecture with the meaning of certain words that I have just been using. It is necessary to do this on account of the meanings, but for two reasons it is also advisable on account of the words. First, the words that we use to describe the lower grades of intelligence are those that we also use about the higher. For this reason there are certain confusions to avoid. To a superficial view of mental faculties it seems enough either to suppose that at the lower grades there are the same faculties in a less degree as at higher grades, or to raise the question whether they differ in kind as well as in degree. Also the thoughts of a lower grade are taken for vague forms of the same thoughts at a higher grade, without considering in what the vagueness consists. And there is even the carelessness of supposing that thoughts about what is vague, obscure, doubtful, must themselves be vague, obscure, and ambiguous. This notion that the thought of a vague object must be a vague thought is due, of course, to the error of taking a thought for a copy. The second reason for taking heed to the terms is in describing the same objects of thought at different grades. The real objects of conceptual thought are very frequently the real objects of perceptual and lower thoughts, *e.g.* colour, shape, speed, cause. But it is the real objects that are the same, not these as they are thought at different grades. The words implicit and explicit refer to this difference, but no word has been given more confusion of meaning than implicit when used of a thought. It is the notion of an

XI. 4. implicit thought with which we are mainly to be occupied; but I shall begin with the word inference.

I said that we use it of a belief whose ground is explicit. This is the specific use whereby the word is confined to the conceptual grade of intelligence, and there to beliefs whose ground is not taken for granted. But it is one of those words whose general meaning is so important that they are frequently used for it, the context preventing confusion. In its general meaning to infer is as wide as to believe or identify, since all identifying is on some ground. But we use it more frequently the more the process of identifying is felt—in other words, the more explicit the ground. We hardly ever use it of sensory intelligence, viz. in identifying merely sensory objects or their aspects; we use it a little more frequently of perceiving things and their qualities; much more frequently of perceiving the relations among things; but mostly it is used when, in order to identify, we have to manipulate our thoughts in the manner that we are to see under the head of conceiving. And because this is still so comprehensive a field, it is usual to confine the word to beliefs whose ground is expressed, or at least explicitly thought. Logic, for example, excludes mere naming or classifying, and also the making of judgments or statements, because their ground is taken for granted. Frequently a logician is found to narrow the word still more by excluding 'immediate inferences.' Finally, even the syllogism, though an inference with an explicit ground, has sometimes been excluded; till at last the word inference is used only for a process of thought whose aim is to discover grounds.

The most convenient definition takes this narrowing series about the middle, and confines it to identifying on explicit grounds. It excludes mere conception and judgment, as well as the identifying that marks the lower levels of intelligence. And it coincides with the commonest use of the words thinking and reasoning, and the invariable use of the word argument. But the important thing is to see that there is the series. For then there can be no confusion in speaking also of sensory inference and perceptual inference; and they are seen to be actual, and not merely virtual inferences. There is experience of belief or expectation, vary-

ing from certainty to mere conjecture. This shows that the thought includes thought of a ground; and since the ground is not distinguished as a ground, the inference, like the ground, is called implicit. XI. 4.

§ 5. Let us look now at the notion of an implicit thought. To understand the confusion attaching to the word we have to distinguish the different aspects in which a thought may be regarded. Every thought is a fact, and has a function. As a fact it, first, is a piece of experience that can be analysed and described; and, secondly, it has causal relations. As a function it, thirdly, is the performance of a task, the task of knowing; and, fourthly, it may claim to be true, no matter how or by whom it has been made. The words implicit and explicit have been used of a thought in all four respects. But we shall see that it is meaningless in the first sense, and erroneous in the second. The third sense is an appropriate one; it is the use in psychology. The fourth sense is also appropriate; it is the use in logic, and is not easily confounded with the third. We have to look at the four meanings, not because the word implicit happens to be used for them, but for their own sake. I shall begin with the true notions, and then take the errors and their consequences.

§ 6. (*a*) The thought of an object is implicit so far as the object is not distinguished and made an object on its own account, but is merely a factor in the total object as it is thought. Various aspects of a sensory object, *e.g.* the form, size, tint, and saturation of a colour, are thought implicitly, before we learn to think them explicitly, or, as we say, to think about them. After having so learnt, we may still, and we usually do, think them without making them objects on their own account; we think them, but do not think about them, and so again we think them implicitly. There are all degrees of implicitness and explicitness, and so far as we can turn our attention to an object of whatever sort, so far we can at will form an implicit, or we can form an explicit thought of it. But we cannot of every object. In mere perceiving there are many thoughts like that of a ground which, though felt and effective, must remain implicit. They are sifted out from one another, as we saw

XI. 6. the aspects of a sensation to be, and the qualities and relations of a thing; but they are thus only an increase in the complexity of the thing or group of things. In perceiving there is no thought about an abstract object as abstract; to say the same thing in words that are more familiar but not so clear, there is no abstract thought in perceiving. A child in trundling his hoop has an explicit or an implicit thought of it at will; and the explicit thought includes implicit thoughts of the circle, of velocity, and acceleration; but it is with difficulty that the child is gradually brought to an explicit thought of these. Observe I do not say to an adequate or to a complete thought of them. That is the aim, but we are speaking of the means, to wit, the need of attending to them as general or abstract objects, that is to say, as objects on their own account. An explicit thought may be a very poor one, but in the case of such objects it is the way to a better.

In applying the definition of implicit and explicit to different thoughts the only difficulty we can meet is to say whether the real object that is meant in an implicit thought is the same as the real object that is meant in an explicit thought. Usually there is no trouble, but sometimes it may seem to be in our own option to say whether the real object is the same, whether a black fellow, for example, has an implicit thought of God, when it is quite as much a thought of the devil. There is really no difficulty, however, for it is an implicit thought of both. The object as he thinks it, contains different parts from which, by thinking about them, the thought of different and opposite real objects may develop. And it is not an explicit thought of them, because they are not yet distinguished from one another; and they may never be, without an external inducement, without, for example, the coming of a missionary. The child with his hoop has implicit thoughts of a variety of abstract objects, that he has afterwards to be brought to think explicitly; and a wise teacher, like a wise missionary, will make the most of them. If it seems to remain a difficulty whether the child really has implicit thoughts of those abstract objects, it is merely the question whether he has thought of them at all. For answer we have only to infer from the

general criterion of the presence of consciousness; he has them, for he uses them, learning his game by means of them, and not otherwise. XI. 6.

While the difference is clear between an implicit and an explicit thought, it may not seem to be important, and especially since it is the difference between inattention and attention. For attention does not seem so radical as understanding; your child, for example, it may be said, does not attend to those abstractions about his hoop, for the reason that he does not understand. But if we take explicit and implicit thought for the same as attention and inattention to an object, we must make attention coincident with interest,—in this case coincident with understanding (iv. 4); we must not confine it to the police work of arresting an object of thought and preventing interference. The police work is merely the beginning, the calling to attention, and the rest of the action is the response to the call. The rest of the action continues to be a handling of the object; we set it in various lights, we look at it from different points of view, we investigate it, we turn it over in our minds. And these are so many metaphorical ways of saying we think about it, or seek to determine it. Understanding does not begin where attending ends, like a judge following up the work of a policeman. They name two aspects of the same act of thought, and of the same function of the act, viz. knowing. They distinguish the thought, the one as an act, the other as an actual knowing, the one as the function realising, the other as the function that is being realised. We hold and manipulate an object by the very thinking about it, not merely in order to think about it. And the same dealing with the object, or thinking about it, we call understanding it, when we ignore the act as a dealing, an attending, and regard it as an achieving. It is true that the child can only attend to the aspects of his hoop so far as he can grasp or understand them; but it is also true that he can only grasp or understand them so far as he can attend to them.

Therefore when we distinguish thoughts as explicit and implicit, according as their objects are attended to or not, we are making a more fundamental distinction than would

XI. 6. appear, if it were thought that any one can attend to anything. But of course this is no more possible in an intellectual than we found it in an æsthetic interest. Its importance to us in considering the growth of intelligence is that implicit precede explicit thoughts of the same real objects. And so there comes the question how we are able to think about and understand objects that were once beyond us. It is because the thought of them depends on a systematic mass of thought, which it takes more or less for granted. The trouble with the child who has a merely practical or perceptual knowledge of velocity, friction, acceleration, centre of gravity, is not that these objects are mixed up in his thought, and so complicated with one another, and with others, that he cannot unweave, and have them in the abstract. That is only the surface of the trouble. The real cause is not the degree of complication, but the inability to specify, qualify, and develop any of them. There is no such difficulty in dealing with the hoop itself.

Besides implicit thoughts which we cannot yet make into explicit thoughts of the same objects, there are the implicit thoughts which we can make explicit at will. We form them when we do not need to rethink our knowledge in order to use it. We are then said to take our knowledge for granted. Of the great bulk of what we take for granted in a thought we have no present thought; we do not have it as an implicit thought, we have no thought of it at all. But in other thoughts where we take things less for granted, we have an implicit thought of them. In next lecture I shall speak of how it feels to take for granted; it is a case of the general fact of economising in consciousness. But there is no reason for confounding the two aspects of a thought, both very important, viz. the notion of implicitness as we are defining it, and the notion of taking for granted. In what is thought implicitly there may be nothing taken for granted, for a creature may know nothing more; and, on the other hand, what is taken for granted may not at the moment be thought at all. At the same time we must be clear about the difference between them, because very often the cases of the one are cases of the other, and because

the opposite of the two always coincide; for an explicit thought of an object is the opposite both of an implicit thought of it, and of a thought that takes it for granted. XI. 6.

In everyday speech the difference between the implicit thought of an object and one that takes it for granted is marked by the difference between 'I think it implicitly' and 'I know it implicitly.' By the latter is meant I take it for granted; and, in saying that, I am not supposed to say whether I am aware of making the assumption at the moment. If I *am* aware, I also think it implicitly; if not, I do not think it at all. It is better for us to keep the word implicit to one of the two uses, namely, 'I think implicitly,' because the two notions must not be confounded, and because there is still another way in which the word may quite properly be applied to a thought. This is its use in logic.

Before turning to it let me emphasise the importance of observing these distinctions. A beginner is not likely to appreciate their importance, still less to exercise himself upon them, because he does not see their bearing on the sweeping statements or laws, which he rightly enough regards as the proper reward of his pains. And, indeed, he can without trouble know a heap of laws about the mind, in the way that a child learns the laws of his hoop in a kindergarten. But if the laws are to be known usefully, it is just as necessary to make and practise these distinctions, as it is in dealing with the mechanical conceptions implicit in his thought of the hoop; for they too are unsought by the beginner, and appear to him trivial, or at least unpractical. We shall find that the work of conceptual intelligence, and a great part of the work of a teacher, is first to turn implicit into explicit thoughts, and then to turn these into a taking for granted. On account of their importance, therefore, it is well to practise on examples as in mechanics. Here is an instance of the kind of practice that one may take on any thought. When our child lifts his hoop, he has usually an explicit thought of it, unless he is preoccupied; in either case he has certain inevitable thoughts of it by way of sensation; he may have none of acceleration, if he is preoccupied, say, with the thought of escaping; but unless he lifts his

XI. 6. hoop in a fit of absent-mindedness, his thought takes acceleration for granted. When he begins to trundle it and regulate its speed, he thinks of the acceleration, but always implicitly, sometimes more implicitly, sometimes less, according as his interest changes. He cannot achieve an explicit thought of it until he can attend to it *qua* acceleration, and that is only when in time to come he distinguishes it from neighbouring thoughts like those of velocity, impact, and friction, as we do in a definition. But, knowing the definition, and so having an explicit thought of acceleration, he still has nearly all to learn. First, he may yet be unable to distinguish acceleration in many cases of it, and so he has only an implicit thought of it in them, or none at all. And, secondly, while clearly distinguishing it from all other abstract objects, his thought of it, though quite explicit, may be more or less adequate or inadequate. When a certain professor of physics sought to determine the maximum flight that a golf-ball can be driven, he had an explicit thought of its acceleration; and when his son, after making a longer drive, was talking about the point with his father, he also had an explicit thought of it, but probably not so complete, nor even so adequate to the case, because it did not take so much for granted.

And before we turn to the logical and the other aspects of a thought, another remark, though it is obvious enough, may be in place. For it may seem to you that there is something not quite honest in selecting aspects or points of view, and that a truth that holds only of an aspect cannot be an absolute truth, nor very important. On the contrary, all truths are of such a kind. Usually it is unnecessary to specify the aspects or points of view, because there is no chance of confusion; but truths are none the less absolute that they have a limited application. Think how you would describe a pair of boots, and you will see. You only specify the aspects to which you refer, when they are not clearly understood, and when their omission would bring confusion and error, as when you do not say good or cheap merely, but good for rough country, or cheap at the money. If you say brown or sewn, you do not mean everywhere, but you do not say where. Whatever, then, we

say of any object, we say of it in certain respects; and when the object is a thought, the respects are apt to be confounded; that is all. When we speak of two thoughts as explicit and implicit, or as vague and definite, or as clear and distinct, or as adequate and inadequate, we are no more referring to them as events having causal connections, nor as complexes of experience, than when we speak of them as true or false. We are comparing the two as thoughts of the same object; if not, those distinctions are meaningless. And it depends on the object we choose whether we call a thought by any of those words. In a mist our sensations of things are indistinct, but they are distinct enough of the mist; a painter looking at the scene with an eye to a picture has explicit thought of the indistinct things, and only an implicit thought, if any, of his own damp skin; we in thinking about his thoughts have an explicit thought of them; our explicit thoughts of them are more true and more adequate in some of us than in others; and all of us, from frequent experience, can form a more adequate thought of his implicit thought of the dampness, than we can of his explicit thought of the picture. As I said, you cannot take too much exercise in these distinctions till they are familiar. XI. 6.

§ 7. (*b*) The other aspect of a thought with respect to its function is the one taken in logic, viz. its validity as a belief. Every belief involves others, and so is said to imply them, or to contain them implicitly. It does not matter whether one is aware of them or not, nor whether one takes them for granted or not. Simply one thought cannot be true alone; others are logically contained in it. This is obvious in regard to higher or conceptual beliefs, but it may not be so obvious in the more elementary forms of knowing. As an example let us compare the implicit ground that is felt in perceiving, with what is logically implicit in perceiving.

Logic deals with thought so far as it is true or false, and hence it deals with even the lowest forms of belief or expectation. But it can deal with them only by making articulate the assertions they involve. And so, in claiming to be true, perception is said to be an implicit assertion, statement, or judgment. It implies all that any statement

XI. 7. must in claiming to be true at all, and it is sometimes even said to imply all that makes it true in particular. This claim to be true at all, involves a distinction of thought and thing, a view of the thing as having an intelligible nature of its own, and a claim that the thought conforms to it. But when the logician says that these are implicit or implied in perceiving, he does not mean that there is any notion of them, or that they have once been felt but are now taken for granted. They are conditions on which a thought is true; they are not conditions or causes which make it the actual thought that it is. It makes no difference to the validity of its claim whether they happen to be felt, any more than claims in a law court are decided by an examination of the claimants on their knowledge of the law. The logician speaks from the judge's mind in the case; we are speaking from the claimant's, who, in merely perceiving, is as yet a poor inarticulate fellow. He feels that he has reason for his claim, though, if he could state it, it would certainly not represent the real strength of his case, as it appears to the judge. But he cannot even state the ground he does feel when he is certain of it, nor can he state what is wanting when he is in doubt, and for this reason we have called the ground implicit in his thought. Hence it is easy to distinguish this use of the word implicit from the logician's. If it were well that the word should have only one use as applied to a thought, the logician has the best right to it, for the word 'implied' is seldom used in any other. There need, however, be no confusion. And since implicit is so frequently used about what is actually thought, and not only about its validity, there is an advantage in giving it a definite meaning in this, as well as in the logical reference.

The three familiar and legitimate uses of explicit and implicit that we have now considered all refer to a thought in respect of its function of knowing. It is not to be expected that their difference should be clearly marked in everyday speech where we depend on the context to show what we mean; and yet it is very well suggested in three familiar expressions, I think something implicitly, I know it implicitly, and I implicitly commit myself to it. For I may know it implicitly whether I think it or not, and I may

implicitly commit myself to a statement whether I know it or not. The third, the logical, use will not concern us; and instead of the second, viz. I know implicitly, we are to say I take for granted. XI. 7.

§ 8. (*c*) But we have now to look at a thought not in respect to its function, but as a fact. Like a truth, a fact is never alone. As every belief involves others that are logically connected with it, so every fact, including every belief when it takes place in any mind, involves other events, those, namely, of which it is a cause. If we say that it implicitly contains them, we mean that it does so potentially; in other words, that when it happens, they happen or tend to happen. It is only with reference to this its causal function that we might use the word of a thought as a fact or event. Not that it is a good use, considering the burdens of the word already; but I mention it that there may be no mistake about other two-senses, in which implicit is frequently used of a thought as a fact. For they are not the mere ill-use of a word, but mark a confusion and an error, which we must see to avoid. The confusion is in speaking of a thought as implicit, when we refer to it as a state of mind, an occurrence in a mental history. And there is error as well, when we carry this confusion from the event to its cause. Let us see first the confusion, and then the error.

An experience is what it is felt to be; it is not partly this and partly something that is not quite a feeling; for what could that be but the absurdity of an unfelt feeling? In trying to recall a name we often say that we know and yet do not know it, or that we know it implicitly. We have a certain hold, knowing a little of it, or of what will lead to it, and we may think that, if we keep our hold, the rest will come. The confusion is in supposing that here there is something ambiguous, neither quite a feeling nor quite a blank. But the sense of the coming of an experience is itself as real an experience as the experience itself is, when it comes. Every complex of feeling is always, as a matter of fact, altogether there; its vague parts are as actual, explicit, and definite facts of experience, as the clearest and most satisfying. Vague and clear refer to the function and not to the fact.

XI. 8. Though the confusion is apparent, and easily expelled in the abstract, its influence may abide; for it has some place in all our metaphors about mental action. We suppose that a teacher gives ideas to his pupils, which they either grasp or fail to grasp according to their capacity; whereas in fact the ideas are not there till they are grasped. When I just fail to recall a name, we speak as if it were hovering in or about my mind, and eluding me as I pursue, approach, and make ready to snatch it. Or, using a different metaphor, we suppose our consciousness to be a sort of searchlight revealing thoughts already existing, and lighting up the store-house of memory and the other dark recesses of the mind. Or, again, an idea is said to dawn on the mind, or to be at first misty and intangible, and to be clearly revealed when feeling is focussed upon it. The confusion is due to taking these metaphors for literal, and thinking that an idea is itself a kind of something like its object, remaining the same in the dark, the dawn, and the full light of consciousness, or when folded and unfolded.

§ 9. (*d*) The confusion passes into error when we turn this way of describing a thought into a serious explanation of its origin. For it is not only thoughts that we regard as existing in the same form, whether they are felt or not; we also regard in this way the processes by which they are brought about. We speak of comparing, judging, and inferring as unconscious, subconscious, half-conscious, and fully conscious, or as implicit and explicit. Really the notion of unconscious comparison is as much a contradiction as unconscious idea and unfelt feeling. But just as oranges are thought to possess colour and taste when no one is by, so mental processes of which we have no feeling are thought to be the same as those that we do feel. As the eye is not thought essential to colour, nor palate to taste, so it is thought that we compare without being aware of doing so. Hence all that language about animal and infant minds, which makes them carry out more or less unconsciously the same processes which we achieve clearly and of set purpose. And in this way mere perceiving is made to include all the processes of conceiving, except that in it they are more or less unfelt.

We saw that perceiving is believing, that it therefore

involves the thought of a ground, and that, the ground being felt as a ground, but not distinguished, there is only an implicit thought of it. The error is in supposing that, in order to this implicit thought, there occur in unconscious form the same processes that produce explicit thoughts. We become aware of the ground, it is said, by an implicit act of comparison. Thus, when I recognise the portrait of one I have met, I am said to have compared it with my memories of him, just as I might compare it with him in his presence. I am very likely unable to give the points by which I recognise the likeness; but they are the grounds on which I do recognise it. Or I may be able to state a few of them, but there are always many others which I cannot state, but which I should miss if they were absent, or given differently from my expectations. What I expect I cannot say, but I should know if it were not realised. Now, it is perhaps natural to imagine that, if explicit grounds are found by explicit comparison, these implicit grounds are found by implicit comparison, however unconscious and instantaneous. But there is really nothing to say for such a view. My one purpose in comparing things, or principles, or ideas of any kind, is to make explicit what I have been thinking implicitly. And there are two reasons against the theory that the implicit thought is itself due to comparison, to an unconscious comparison. XI. 9.

First, comparing is a meaningless notion, unless it includes the holding apart of the things or ideas that it purposes to bring together in a new thought. Therefore, according to the theory, what an infant or an animal must do at their first perceiving is this: they must, without being aware of it, bring up a past sensation in idea and compare it with the new one, and that before they are able to compare what lies before their eyes. And if the theory is given up in such a case, there is no reason for requiring it to account for perception at all, or for higher forms of thinking where the ground is thought implicitly. It makes the error of supposing that consciousness can be added to a mental process or taken from it, and the process remain the same; and it corresponds to the error of supposing that an acorn is an oak in miniature.

XI.-9. And, secondly, there is this fatal objection: the so-called implicit or unconscious comparison would have to presuppose the result which it is thought to produce. For consider our example again. How do I at once recognise the portrait? By unconsciously recalling on the instant, it is said, an image of the original, and comparing the two. But how can the original be suggested to me? How do I happen to hit on it at this present convenient moment? No doubt by reason of its similarity with the portrait which I see. But not by my feeling of the similarity, for this can only follow after the suggestion has already been made. Nor, for the same reason, is it by a sense of familiarity with the face. For observe how I may seek to improve this bare feeling, so that it may rise to be one of similarity. I may first proceed in a purely perceptual way by taking a better look at the picture in the hope of a more definite suggestion. This failing, I may parade in my mind the likeliest people and compare them with it; but note that I have already suggestion enough not to parade the unlikely. Or, still failing, I may lastly, and with less hope, dissect the portrait into its prominent features, in order that these, as explicit grounds, may bring the suggestion which the mass of implicit grounds has been unable to bring. And then I give it up, saying that perhaps the suggestion will come if I occupy myself with something else; and if it now come, as it may, five minutes, or an hour, or days afterwards, and even without a hint that I can trace, it is not to be supposed that I have been hunting unawares in the interval, comparing and rejecting, till at last I have found what I wanted.

Things are similar to one another because they have points in common notwithstanding their differences. We perceive a thing by reason of its similarity to others that we have known before, identifying it by certain points which it has in common with them, and which it offers in sensation. It does not matter whether we feel their similarity or not; for the feeling, whether clear or vague, can only follow, when the deed is already done, the identification already made. As a rule we do not have the feeling, and have no use for it; and, when it is present, there is still only a perceiving, so long as it does not induce us to ask what the identical points are, or which of them have been the ground in our

belief. In all perceiving, even our own, where the presence of a higher intelligence makes us at the same time to perceive better, the ground consists of sensory factors which are taken and used implicitly. They are taken without thought of the past which has been their warrant, and they are given a universal application without being formulated. They are given the same universal value that is given to explicit grounds like definitions, laws, and standards of measurement ; and they are applied in a variety of circumstances without the need to compare, ponder, argue, reflect, or sift the truth by any explicit handling of its factors. Every perception is based on analogy, and the only reason against calling it an inference by analogy, or an argument, is that its ground is not made clear. The conclusion is liable to error like any other, and when that occurs, the ground has to be modified. We are about to see that the growth of the power to perceive is a growth in the power to take grounds that are more and more complex and adequate, and yet that are taken implicitly. XI. 9.

§ 10. (3) Having considered the nature of the problems in perceiving, and of the grounds that are taken in solving them, it remains for us, in the third place, to consider the solution. We dealt with it in last lecture when we considered what knowledge of things, their qualities, and relations we have by perceiving. We are now to see the structure and growth of the thoughts containing that knowledge.

It may have struck you as strange that thoughts like those of reality, thing, quality, and cause should be present in our perceptions from infancy, and yet that they should need some discovering. For how can there be anything in my thoughts of which I am not perfectly aware? The answer, I hope, will now come readily to your mind. Though I may have thought of those matters all my life, I may never have separated them out, seized, attended to them apart from the particular cases which embody them ; and I may be unable to do so without a good deal of assistance. I may know very well what I mean by a 'thing' without being able to define it ; and animals, of course, can define none of those objects, though they think them all in the course of their perceiving.

XI. 10. It is always the particular case that I perceive. But I perceive it as a case, for I can perceive nothing that is quite singular. Hence my thought of it will be found to have a structure. Towards the end of last lecture we saw from typical examples how all perceptions have a simple, common character. We found them all to consist of present sensations, together with expectation of further sensation on the faith of these. We have now to examine their structure to see how they are put together, and how the power of building them improves without the help of ideas from higher forms of intelligence.

LECTURE XII

PERCEPTUAL INTELLIGENCE (iii.)

§ 1. WE are constantly passing from a poor or vague to a good or definite perception of things. We do so every time that we fix our eyes on an object, watch it come, or approach it to get a better view of it. All our sense-organs have means whereby a fuller sensation is secured, and so a better perception. As we fix our eyes, so we fix our ears, sniff with our nose, roll a morsel on the tongue, and grasp things, all to get fuller sensations. The adjustments need not be voluntary, and they may be so instinctive as to defy us to prevent them. Of this there is a notable example in the rapid jerking movements of our eyes when we look at things out of a railway carriage; our eyes follow them as if for a better look, and then recover again, but we are so little aware of their own rapid movement (though of headache in the long-run), that it needed experiment to discover that we make, and cannot help making them. Between this involuntary and such voluntary accommodation as setting our ears to catch a sound, there are all degrees of dependence on our past experience. You know how misprints catch your eye, and how picture-puzzles may resolve themselves at a stroke, your roving eye unexpectedly lighting and remaining. In perceiving, we do not first fix on an aspect, then make it a ground, and so find its meaning. The meaning comes with the sensation, and is necessary to make it definite. "A man of a morning may look out of the window of a strange house, and for full five minutes have, to his astonishment, before his eyes a vast chaos of stones stretching over a great plain to the very verge of the horizon, which incom- XII. 1.

XII. 1. prehensible knowledge-wonder will spring together at last into the very limited garden wall he recollects to have seen the day before."[1] Here sensation and meaning grow definite together; the further effect, the recollection, is not a perception nor necessary to it. Of course, too, the sensation may define itself not by an act of ours, but by movement in the object, as when the ancient mariner first saw a something in the sky, a speck, a mist, till it took a certain shape, then the shape of a sail, a ship, and gradually revealed its horror.

We shall work best with an example which combines both ways of securing better sensations, viz. by the adjustment of our sense-organs, whether spontaneous or intentional, and by the changes that are due to the object itself. Your attention is arrested, let us say, by an object on the horizon. At first it is only to you a case of something or other with certain spatial relations; soon it is a case of an approaching object, then of a man on horseback, then you distinguish trotting or cantering, the horse begins to take colour, then a more specific colour, the man becomes a trooper, and so on, till at last the object becomes as definite a case as your thought of this man and his horse can make it. Your perception has not merely altered; it has become more and more definite. And, in the final form, it may be said to involve the series of more indefinite perceptions which have introduced it, and somehow to take them for granted. For this it does not need that the series should pass through your mind. If you suddenly come on the final scene—the trooper on his arrival—your perception would be immediate, and yet have pretty well the same definite character as if you had seen its gradual development. And I am assuming, of course, that your thoughts remain at the perceptual level, and that you do not, for example, hold converse with yourself about the scene. We can suppose the man's dog to be the observer, and its perception, though emphasising different factors, would have so far the same characters as yours. At a glance you both command a whole body of acquired knowledge.

To-day we are to consider the structure and growth of

[1] J. H. Stirling, *Text-book to Kant*, p. 55.

this body of knowledge, and the power of the thought which it gives. And, first, there are certain things to remark about the structure of all thoughts, whereby the more highly developed structures are distinguished from those that are less developed. XII. 1.

§ 2. It is sometimes said that knowledge develops by becoming more and more general, but this is half a truth that leads easily to error. It leads easily to the error of supposing that, the more general the thought of an object or an attribute, the greater the grasp of it; as if an answer were more satisfactory the more it answered any other question; and as if it were a greater thing for an animal to achieve any thought of cause, time, and space, than to know a specific cause or a particular length of time or space. The real progress of its knowledge, and all its efforts in learning, are towards a better knowledge of individual things and their attributes. Our own procedure, too, is really in the same direction, even when we labour with abstractions like laws and definitions, or space in itself, or time in itself.

The greater the complexity of a thought, the better must be its organisation. When our thoughts on any subject are vague, it is either because we feel no need for better, or because we try, and fail, and have to remain in a state of perplexity. The very trying puts a greater wealth before us; but it is only when we succeed that we achieve that singleness, and at the same time fulness of thought, that we call grasp or comprehension, and that makes it an intensive thought (viii.). In our example of the approaching trooper, the more the object reveals itself, the less you are *perplexed* about what in the world it may be, and the fuller or more *complex* becomes your thought of it. The same is illustrated by every growth of a perception by any of the means for securing fuller sensation. And we shall find it in every higher act of intelligence, where the grasp is more comprehensive than in perceiving. You know what it is to grope as in the dark among your thoughts, understanding the bits you handle, but not their bearing on the whole, until a hint begins to flood the course with light, and at last you see them to make one.

There may be failure either in the singleness or in the

XII. 2. fulness of the grasp. There is either a merely empirical knowledge, a knowledge of detail, or there is a knowledge of mere law, rule, or principle. The questions that can be answered by a merely empirical knowledge must be particular; and they must be general, and not particular, if there is only a general knowledge wherewith to answer them. And the same person's grasp may exhibit the double weakness. There is no complete grasp, no organised thought of any subject, until particular questions are solved on principle, and until the answers about principle involve a knowledge of its various applications.

It is not only one's knowledge of a whole subject that is well or ill organised; nor is it only a course of thinking, *e.g.* the conduct of an argument or the execution of a plan. For single momentary thoughts have their own organisation, both when alone and when members in a course of thinking. When an astronomer happens to glance at a sky which to another is a mere wilderness of stars, when an engineer sees a new design, and, in general, when an expert takes thought of anything in his province, he may bring pretty well the whole weight of his knowledge to bear on the single point in a single moment. And he uses his knowledge without having to ponder it, or attend to it by a process of reflection; he attends only to the point before him. The thought that he makes is organised according to the kind of expert that he is, according to the degree of his expertness, and according to his interest in the given situation. Think how the same landscape strikes a geologist, a painter, a soldier, and a farmer. And, as regards the degree of expertness, there is no better example of its influence in the organisation of momentary thoughts than you will find in the history of your own dealing with problems, from the time, say, when you met a simple mathematical problem with a pair of compasses or a handful of Euclid's theorems, till the time when you see at a glance the solution of all such by a dozen different methods. You have acquired and use a mathematical faculty, and, like the acquired senses of which I spoke, it gives you immediate grasp of a complex situation as if it were simple. Your perplexity is less, and you can attend to just the right point, not because your thought

is less complex, but because it is better organised. For XII. 2.
though the organisation means a certain fortunate loss—the loss of awkward suggestions—your thought at the moment is really fuller, and the course of your thinking has really a fuller, and not merely an easier flow.

To confine our attention is not to limit our thought, but to organise it better. There is a metaphor in our familiar language about attending that often obscures this. We speak of the total perceptual object from which we select our points of interest as if it were a field before our eyes. There is reason, it is true, for the language, and especially in our own case, for we have a far greater variety of simultaneous sensation by our eyes than by all our other senses together. But two errors are suggested. First, the very ease with which you and I read the visual field at any moment into a multitude of separate things, suggests that we have a multitude of thoughts, one for each, instead of a single thought with many members, where every change affects the rest. And, secondly, the error is emphasised when we speak of attention as something or other that wanders, moves, waves, fluctuates from object to object; and again when we speak of it as arrested, fixed, focussed, concentrated. Both sets of words abstract from a fundamental character in the act, those of movement accentuating the mere difference of the objects, those of focussing their mere sameness. But consider what we call the moving and the resting of attention. When we perceive one thing after another, our thoughts are not so entirely sporadic that their objects are not felt to be parts of the same total object; and every fresh thought to be a further grasp of it. Even at the lowest grade of intelligence, where the mere difference in the objects of thought is pronounced, there is not merely a succession of views. We make the opposite abstraction, emphasising the mere sameness of the object of thought at the highest grades of attention. But the man who can attend long and exclusively to the same thing, the man of most concentration, is not one who keeps his thought unchanged; his thought of the same thing is never the same thought from one moment to another, but, as before, is a development of it, and a better grasp of the total

XII. 2. object. It is not as when we stare long at a thing without attending to it, our mind far away, or sunk in a stupor from monotony.

So in perceiving, when we pass from thing to thing, or quality to quality, our thoughts are not merely different, and when we attend to the same one, they are not merely stationary. In both we are developing our knowledge of a situation at points where we are not satisfied with our thought of it, including the points where the situation is itself being altered. Our interest in the points always depends on their connection with a whole of which we have thought at the time; we do not cut them off to let them grow. When we attend, it is to complete a thought, the great body of which depends on a taking for granted; and we seek a further specification of it at points where we are not satisfied with it.

§ 3. Thus we have two central questions, or one rather. Under it, I shall take the rest of what I have to say about the structure and the growth of our thought in perceiving. What is the function of the taking for granted that gives body to our thought? And when are we satisfied with a thought, and do not seek to carry it further? We shall find that the second question is part of the first.

Let me repeat the formal definition of taking for granted as we saw it in our last lecture. A fact, whether a particular fact or a law, is taken for granted if, having previously formed an explicit thought of it, we now use the knowledge that we gained without having to form the thought again. The definition excludes the logical, critical, or onlooker's application of the word, as when we say that a bird, in building her nest, takes for granted the future eggs, and even the law of gravitation. And it distinguishes the notion from that of an implicit thought, as we saw in last lecture. Both, we saw, have reference to the act of attending. A thought is explicit or implicit according as its object is the object of attention or not; and in order to attend, much is taken for granted to which we do not attend. If we have any thought of what we take for granted, it is an implicit thought of it; but we may not think it at all. When we speak of more or less taking something for granted

we mean that we have formed some thought of it, but not to the explicit extent that we have done before. And when we speak of taking it entirely for granted, we mean that we do not take thought of it at all. In lifting a piece of chalk in order to write on the board behind me, I should probably take what I know of the board more or less for granted; but if much absorbed in the thing to be illustrated, I should take it entirely for granted, possibly with some feeling of it as behind me, but possibly with none at all. Finally, I do not take all my knowledge of it for granted, but that part only of my knowledge which I use. XII. 3.

The formal definition being clear, it is easy to see its application to perception. It refers not to the sensation, but to the mass of meaning, and to that part of the mass which enables us to attend to the points that we do. Before taking its function, however, which is our proper business with it, let us ask about the experience of taking for granted; and, first, about the line between sensation and meaning.

Sometimes the meaning sits loose to the sensation, and then their difference is clear; but sometimes it sits so close that it may even remain against our better judgment. So it does in all the normal irresistible illusions. And we have seen how all sensations are made definite by the meaning they get in the course of experience; and so far, therefore, they are learnt. Indeed, there are cases where a sensation may be changed at will by giving it a different meaning. You may have seen example in geometrical diagrams of stairs and boxes, and of crosses lying in different planes. And the old controversy about the difference in the apparent size of sun or moon at zenith and horizon has been made the centre of a mass of illustration to support the view that, even in so amazing a case, the difference of sensation is due to the difference of meaning. If you hold a threepenny piece at arm's length, it will cover the largest moon on the horizon quite as easily as the moon at the zenith. The same extent of retina is affected, giving the same 'mere' sensation, so that the difference is the result of learning. This can also be seen very easily from the after-sensation, usually called the after-image. "Produce an after-image of the sun and look at your finger-tip: it will be smaller than your

XII. 3. nail. Project it on the table, and it will be as big as a strawberry; on the wall, as large as a plate; on yonder mountain, bigger than a house." [1]

Therefore it would be difficult to distinguish between what has, and what has not been learnt, and between movements of attention so far as they are due to purely instinctive preference, and so far as they are due to fatigue. The difficulty does not concern us, except to see that it is not a pity, but a proof that the organic structure of our thoughts involves even their sensory parts, that is to say, the parts that are most inevitable and unalterable. The physiologist may, and often does, go further, saying that an absolute line is not to be drawn between the functions of the peripheral and the central parts of the apparatus of sense. Anyhow, the line we have drawn between sensation and meaning is not between what has and what has not been learnt. We call a sensation still a sensation after we have learnt to feel its complexity of aspect, though this may require the highest intelligence; and we take as its perceptual meaning the expectations of other sensations of which I have spoken. The meaning is no less a meaning, the expectation none the less only an expectation, when it is inevitable and as lively and irresistible as the sensations of which it is the promise.

How does it feel to take for granted? In speaking both of meaning, and of taking for granted, we refer not to our experience of a thought but to its function; we are concerned with what the thought does, and not with how it feels. To mean is to have in our thought a substitute for sensation into which we can convert the substitute at need; and to take for granted is to have a substitute for the meaning into which we can convert the substitute at need. Now, as regards meaning, we did raise the question how it feels, in order that we might not suppose it to be merely a set of mild sensations. We saw that it is an expectation, which includes motor and organic feelings of readiness for this or that sensation, rather than a foretaste of it. When the meaning comes to be taken for granted, it is, of course, still less of a foretaste, for it may not be thought at all, but only used. Every good teacher makes it his first step in a new

[1] James, *Principles of Psychology*, ii. p. 231.

lesson to prepare the pupils for the new material by bringing the old to mind, and by raising expectation at the points where development is to take place. A great deal he does not ask them to recall; it is always taken for granted, being always in use. Other parts need this freshness, or they would not come into use. But in thus bringing the old to mind, his purpose is not that it shall continue to be thought about, or even thought at all, when he proceeds to what is new. He does not want an explicit, nor even an implicit, thought of the old; he wants it to be taken for granted. How does it feel in performing this function? That depends on how it succeeds. The more easily it works the less it needs to be felt at all, until, like the familiar parts that one does not dream of recalling, it is as hidden but effective as are the foundations of a house. Because the house would be different without them, and without other supports that are not so far out of sight, we say that they are all parts of it, determining the parts that are seen. And in this sense (but only in this sense) we can say that what is taken for granted is part of the actual present thought, though the thought would be very different if the assumptions had to be thought in order to be effective. XII. 3.

§ 4. But the question for us is not whether or how what is taken for granted feels in a thought, but what its function is there. How does it give structure to single thoughts? How does it direct the course of thinking? And how does it decide what shall satisfy us and what not? Let me introduce this triple function as found in perceiving by examining our example. I shall then take the three separately.

When the trooper is perceived in the distance, the spot that represents him on our field of vision means only, let us say, something or other; the thought consists of those general expectations which form our earliest thoughts of thing, quality, and the properties of space. For a moment we may think of this if, for example, we are amazed that anything at all should appear at the place. It is a knowledge, however, that we immediately take for granted, having no interest in merely something or other, or in things as things. We proceed to seize on defining points like the

XII. 4. road on which the object appears, or its distance. In this new thought there is not merely an addition to the old, nor, on the other hand, do we merely drop the aspects to which we are no longer attending. On the one hand, we cannot have the new thought if the distinctions in the old are forgotten; nor, on the other hand, can we have it unless we cease to make them the object of our attention. As the spot grows larger and changes its relations to the rest of the field, we perceive the object as approaching, and go on perceiving it so. This is a thought that requires a continuous alteration of the whole field of vision in a perfectly definite order. We have not to think about the alterations in our sensations—not even about the increasing size of the spot; and so, though they are the ground of our belief, they are an implicit ground. But they are not taken for granted, and we must continue to feel them even when our thought passes to a new development, where their meaning—the approach—comes to be taken more or less for granted. We are at once recalled to this meaning, however, if the expected alteration in our field of vision happens to cease or grow erratic. Not that we can by any means tell all the changes that we require there, in order still to believe in the approach, but we miss them if they fail to come (ii. 4).

Then, when the approaching figure defines itself into man on horseback, we take for granted what is expected from any man and any horse, and seek still further to specify them as this man on this horse. How far we go depends on whether the supply of sensation continues to alter, and on the holding of our interest. The further we go, the more points we find to develop; and the fuller and yet less perplexing becomes our single thought, because we are able to take more and more for granted.

So, too, when the supply of sensation is not merely taken as it comes, but has to be created, as when a monkey grips a thing, examines, smells, bites, rolls, beats, and tries to break it. Its thought begins with a general identification of the thing from the first look of it, and the manipulation brings point after point into prominence, whereby the thought becomes fuller and expectation better defined. The final thought does not repeat the course of experience; and

neither does the first look of a similar thing in the future. XII. 4.
But at the end of the course, as at the end of a story, and at any part of it, the point of interest at the moment is qualified by what has gone before. The next time such a thing is seen a twofold economy begins: the manipulation with a view to fuller sensation is replaced by meaning, and the wealth of meaning is so invested that the whole thing comes to be known in a single momentary thought.

If, as I said, we had come on our trooper after his arrival, we should have had an immediate perception not essentially different from that which has grown during his approach. When his dog hears his voice and rushes to meet him, it expects to find him as thing, living, man, and master; and at the mere hearing of his voice, and before it has sight or scent of him. It seems a sudden enough thought. Even if the dog had time to develop it, being chained, let us say, we are assuming that he could not tell himself what he expects by mental speech or picture, as we should begin to do if we were thwarted, though otherwise no more than he. Yet the expectation, though not, on the one hand, a rehearsal of what will satisfy it, is not, on the other hand, a mere excitement, but is specific enough to be unlike the expectation of anything else.

If, on reaching his master, he is met with anger instead of the usual caress, he is disappointed, but the body of his thought remains firm. There is more surprise if he finds a stranger instead, but he can get over it. There is still more if, on reaching the spot where the voice is loudest, he finds only the horn of a phonograph. And finally, if he sees his master, but finds, on leaping on him, that he is an insubstantial ghost, his whole thought falls into confusion.

My reason for speaking of such a case is not that we know the structure of a dog's thoughts better than of our own, for we can only infer it from his action read in the light of our own; but that we are reminded to exclude the use of language and of reflection, for we at once resort to both when anything unexpected occurs to us at the level of perception. If, like the dog, we suddenly heard the voice of a friend, we should probably take all for granted in a thought, 'Ah, there's Jones'; and even so much of a label gives us a

XII. 4. better command of our knowledge. But with this caution we can directly apply what I have said to the structure of our own thoughts at this level of intelligence.

Every perception of ours has a mass of meaning or expectation, consisting of the small part about which we think, and the large part which we take more or less for granted, because it is more or less common to every perception. What is most common we take most for granted: the expectations, namely, that are denoted by thing, quality, cause, and so forth. These are always present, and, if they proved false, we should be bankrupt of all further certainty, and not know what to expect. Other beliefs are specific forms of these, the more common being those that are taken more for granted.

It might therefore seem that our earliest beliefs are those that are most general, and that the logical hierarchy among them is thus the chronological one. But that would be to forget the instinctive origin of perception, and the fact that the most fundamental beliefs are by no means the most invincible to change. Illusions may be more invincible than the most necessary truths. There are examples in a well-constructed stage-scene, in stereoscopic and mirror illusions, and wherever an erroneous belief helps to form a sensation, and then begs the question by resting on its own handiwork. Where learning has been so easy and instinctive as in the reading of visual signs, the belief is hardest to undo; and many beliefs that are logically sounder are far less able to maintain themselves. For it needs a higher form of intelligence than the perceptual to resist even so unhinging a belief as that one has met a ghost, or a causeless event. At the perceptual level such things have a fairly easy entrance. Though they drive us to doubt what we have taken for granted, we are not driven to ponder it, but only to take it less for granted. At the same time, the easier the entrance, the easier the exit, as with the beliefs that we have formed in a dream. Soon, if there were no corroboration and no reflection, we should forget the adventure and recover our old assumption. But when a correction is found to hold good in practice, the old belief, instead of being lost, is developed; the complex of sensation takes a more specific meaning, instead of merely losing the meaning that it had.

It is this process of development from indefiniteness to definiteness that accounts for the hierarchy of perceptual beliefs. It is neither a merely deductive nor a merely inductive development; it is not from general notion to less general, and finally to the individual; nor is it, on the other hand, from the case to the class. In perceiving, the thought is always of a present case, and the development is from a vague or a meagre to a definite and a fuller thought of it. That this is so will be apparent from the three points of view from which we are to examine the function of taking for granted. We are to look at it (*a*) in the single act of perceiving, (*b*) in the course of perceiving, and (*c*) in the satisfaction that brings the act and the course to an end. XII. 4.

§ 5. (*a*) Many points distinguish a definite from an indefinite perception. It involves a greater wealth of expectation, there is more attention to details, aspects of sensation take weight, are discriminated, and given a meaning of their own, both separately and in sensory wholes. All these points have their root in what is taken for granted, so that where there is one, there are the rest. For the factors of meaning have not only to conform to one another, but the greater the mass of them, the better they must be organised and so defined. To understand this structure we have to look at its growth; and the essential thing is to remember that the growth proceeds by differentiating, and that this is to generalise as well as to specify. We saw that the infant's world is at first an undifferentiated mass of sensory object, whose factors are afterwards dissociated by being found in different connections; and we saw that the process of dissociation is at the same time one of association, whenever, viz., the difference is felt. And now we have to see that the result is not a one-level association but an organisation: such a hierarchy as we make explicit when we classify. Things become known as instances or cases, at first as cases of little, but later of a great deal. In the end, and by no higher power than perceiving, a single definite expectation involves a mass of others, with which it has organic connection. In seeking to realise the expectation we are never altogether disappointed, except, as I said, we meet with bodiless visions and voices. And the part that we do find to be what we

XII. 5. have assumed it to be, enables us to make use of our disappointment in the part we care about, so that we learn to expect better in the future. The perception becomes fuller, and at the same time better organised.

Let me state this in general terms, and with an example in mind. An infant does not for some weeks give different meanings to the different forms of the people about it. When it comes to distinguish its mother she is still so far like the rest, and when she is still further specified, according as she seems about to do this or to do that, the specified point of interest in her is not cut off, but depends on the more general thought of her, and confirms or modifies it. When objects which at first appear alike, as *A*, are differentiated, it is not into *b*, *c*, *d*, but into *ab*, *ac*, *ad*; and when the process is carried further it is again not by omitting what they have in common, but by specifying it, *e.g.* ab_1, ab_2, etc., or *abk*, *abl*, *abm*, etc. The further this process goes, the more we are concerned with the special points, and the more the general factors become taken for granted. We have thus in every case of perceiving an ordination or hierarchy of belief or expectation. It is well or ill arranged according to the fortune of the experience by which it has grown; for there is no formal consecration, no naming. There is simply a sense of fitness, all of it acquired in this purely perceptual way without calculation, as in a child's dealings with its doll. "The diminutive waxen body must have all its belongings diminished in a corresponding ratio."[1] But we shall see that it is just this successful arrangement that we find ready to our hand, and that we analyse, when we begin to name or classify, to describe, to explain, and to entitle ourselves to our beliefs.

§ 6. (*b*) Passing from the single act to the course of perceiving, we find the function of what is taken for granted in actual operation. We saw how the selection of the course is dominated by an appetite, which allows no rest till it is satisfied. And seeing that the search is not directed by a picture or foretaste of what is sought, there is the greater responsibility on every step and thought to inaugurate the next, and prevent floundering about on the bare chance of

[1] Stout, *Analytical Psychology*, ii. 57.

satisfaction. A perceptual is distinguished from a purely sensory course by its being guided by meaning, and it depends on the structure of the meaning how well it can be guided. XII. 6.

As we value all thoughts, so we value perceptions, for their power to suggest. Calling this their suggestibility we may group many particular values under it, and say, as we said about the single perception, that what is taken for granted is the root of many points. These are (*a*) a wide and apposite suggestiveness, (*β*) a power of pre-perception, as it is called, and (*γ*) an insistent curiosity. Having said a word about these three, I shall add (*δ*) a fourth which must occupy us longer.

(*a*) The first I have called suggestiveness, to denote, as the word always does, the wealth of suggestion. Not that it is to be compared with the suggestions that are possible to reflection and imagination. The suggestion in perceiving is merely from one object to another, and requires a movement of some kind in order to realise it. But even within so narrow a limit there is great difference in the wealth of suggestion as regards both its quantity and its value. For the fuller the meaning the more may be suggested; and according as the meaning is well arranged, the more comprehensive is its command of other experience.

You have probably heard at first hand the stories of men accustomed to bush life, who tell how their horse has found water in a strange country where they have seen no sign of it, by persisting in bearing towards it, until at last they have let him have his way. Here the degree of intelligence would not be great if the cue were due to a greater sensitivity, nor would it be great if we had only an example of the very tenacious memory of horses. His intelligence consists in seizing an aspect of the present situation which formerly brought him to water; but he adapts an old knowledge to a new situation without recollecting the old, or reflecting upon it. Darwin quotes a case to the point. "Houzeau relates that, while crossing a wide and arid plain in Texas, his two dogs suffered greatly from thirst, and that between thirty and forty times they rushed down the hollows to search for water. These hollows were not valleys, and

XII. 6. there were no trees in them, or any other difference in the vegetation; and as they were absolutely dry, there could have been no smell of damp earth. The dogs behaved as if they knew that a dip in the ground offered them the best chance of finding water, and Houzeau has often witnessed the same behaviour in other animals."[1] Romanes, in corroborating this from his own observation of setters, adds: "It is evident that the ideas associated are of a character highly generic." Another calls them generic images.[2] Houzeau calls them general principles, and, when this conceptual reading is not expressly made, it is usual to employ that other language about unconscious or implicit conceptual processes of which I spoke at the end of last lecture. But the process may very well be perceptual, and involve neither ideas, images, nor association of ideas, if we mean by these words anything that is not perceptual. For the generic cue, viz. the dip in the ground, may give its meaning without becoming an explicit ground or a separate idea; and the generic meaning, viz. water, is really a simpler expectation than if the meaning were this or that piece of water. Indeed there are familiar cases where imagery is far more likely to be present than in the wonderful ones, as when your dog waits at a door, or searches for you in a crowd. And even here it is far less likely that an image is carried, than that there is still the same kind of perceptual expectation as in the most rudimentary searching or lurking for a prey.

But no matter how the suggestions of a perception are carried out, they must be more numerous, comprehensive, and to the point the better organised it is. The factors of the object as it is thought become capable of a general meaning with specific applications according to the occasion, as when a dog cuts off all sorts of corners, and animals in pursuit take the right lines across the course of their prey. The advance from perception to conception is to improve the organisation, with the result always that there is a corresponding increase in the wealth of suggestion.

(β) Besides the wealth, there is the readiness of sugges-

[1] *Descent of Man*, chap. iii. Quoted by Romanes, *Mental Evolution in Man*, p. 51.

[2] Ribot, *Evolution of General Ideas*, p. 17.

tion. It is most apparent where there is a definite expecta- XII. 6.
tion. "The animal, expecting the appearance of its prey, is ready to spring; all its muscles are adapted to that spring," just as, at higher levels of intelligence, "the mind, expecting the emergence of a particular thought as the conclusion of its search, is always ready to spring, and will seize only such evidences as lead to that conclusion." [1] A ready outlook makes us sensitive to distinctions that would otherwise be unfelt; it becomes, indeed, a frequent source of illusion,[2] and of that bias in our judgment which gives occasion for wise saws like, "The wish is father to the thought," and "Give a dog a bad name and you may hang him."

But the readiness, the pre-perception as Lewes called it, is found not only at the point of active expectation, which teachers and speakers try to secure at their opening; it is found in the body of our habitual thought. Most things and events among which we live awaken no interest in us, as they once did, because now they are all more or less as we expect them. We do not simply ignore them; we have learnt to read them in order to find ourselves at home as we move among them, and to have this quiet feeling about them. It is only because we constantly do so that the unusual strikes us, and strikes those best who do it best. "Why do we start on hearing a particular noise, and remain unmoved by myriads of louder noises? It is because we perceive this noise to be the explosion of a fire-arm, the smash of a window, or the cry of some one in distress. . . . But we also start on suddenly hearing a sound which is quite unfamiliar; it is this very strangeness, this disagreement with registered experience, which excites the emotion." [3]

(γ) Hence, thirdly, the influence of curiosity on the course of perception. If the unusual strikes us according to what we have taken for granted, our curiosity about it has the same root. At the lowest, as at the highest, grade of intelligence it is the character of our questions, and the persistence with which they are pushed, that give the best revelation to others of the structure of our thoughts. A question has depth according to the knowledge on which it

[1] Lewes, *Problems of Life and Mind*, 3rd series, p. 105.
[2] Sully, *Illusions*, chap. vi. [3] Lewes, *ibid.* p. 107.

XII. 6. is based, and this, too, determines the kind of answer that will satisfy.

(δ) Here we might pass to the remaining function of what is taken for granted, viz. how it determines our satisfaction with our knowledge, and wisely or stupidly brings the course of perceiving to an end. But the course of perceiving is always a course of action, and it is now in place to observe what thought of self and other minds there is at the perceptual level of intelligence, and to ask how conduct is affected by it. In answer it is convenient to contrast perceptual with higher conduct.

§ 7. The simplest entrance into the mind of another is by a spontaneous imitation of his experience. We saw how instinctive and early it is in animals. An infant, too, in the second or third year of its life, grins and crows in imitation and with glee, while it gives a stolid expression to any pleasant feeling of its own; and it has barely a purpose of any kind, far less the purpose to imitate. Emotions are communicated in this simple way throughout life. When one bird in a flock utters the alarm note and takes to flight, the others take up both note and flight, and obviously have the same fear, though without knowledge of the danger beyond a something or other. So panic, depression, hilarity, may pass through a crowd. But the thoughts of others cannot be copied so easily, nor emotions that depend on definite thoughts. And though imitation is at first without thought of a result, discrimination comes, and not every flighty mind is followed, nor every cry of wolf.

What enables an animal to read others is experience of itself, not merely of its own body, its organs of sense, its weapons of attack and defence, and where it is assailable, but the experience of itself acting spontaneously, animated by appetites, driven by emotions, eager, cunning, and provocable. The thought of another's mind includes not merely what it perceives and expects, but the expecting, the interest, the hope or fear, the whole state of mind. This knowledge is got (vii. 1) in living the minds of others, and is not first a knowledge of one's own mind, and then of the minds of others, but of both at the same time. The occasion comes especially in intercourse and rivalry. Here the animal

realises or feels its own nature to the full as a subject experience, and without reflection upon it, and it learns at the same time and in the same experience the nature of others. At first, as we saw, it gives a life to everything; it learns to separate living from lifeless by certain generic points, to separate its kin and kind by the habits that it has in common with them, and its family or particular belonging by the still more specific marks of their mutual concerns; and, at the same time, its own interests enter into more or less contrast and conflict with the interests of every other, Thus there is no essential difference in reading living and conscious beings from knowing lifeless things. But the answer is carried very much further, partly because minds are, in a sense, more easily learnt, and especially because friend, foe, and prey are always of interest. XII. 7

The sensory cue takes meaning from what the animal itself has meant, and the meaning must be given without reflection. The past experience that has brought skill in reading the signs, and in responding to them, can only be effective if it need not be repeated. The more one can take for granted the better, as in fencing or boxing. A struggle is the course of perceiving that most requires one's wits, and requires them to be most about one. It is equally fatal to have no thoughts or a multitude. They must be to the point, and, as always, what gives them point must be taken for granted, so that they may always be ready, but never in the way.

This general account holds not merely of the perceptual but of the conceptual knowledge of our own and other minds. In our long years of infancy and dependence the will of others towards us is a constant problem, and the solution of it is found to depend very largely on our own, that is to say, on our behaviour. In later years it is still a community or a collision of interests that brings us the most frequent occasion of knowing ourselves and others at the same time. Of course, there are also the solitary occasions when we study the mind for an æsthetic or a theoretical purpose, or for such a practical purpose as teachers have with their pupils, and a repentant sinner with his character. But the most frequent occasion is in our everyday intercourse. And it is worth observing that, little as we can know of the mind without

XII. 7. reflection, still, as I said of material objects, it is the same mind we are dealing with when we only perceive it, as when we reflect, and make it the object of our fullest intelligence.

§ 8. We call conduct impulsive when it is not characterised by reflection. The word impulsive has only a relative application in our own case, because just as our perceiving is usually a conceptual perceiving, so in impulse we seek an end, about which there has usually been reflection in the past, if there is not also some in the present. But we can apply the word absolutely to beings that are able to act only on impulse. They have only a perceptual knowledge of themselves, and for this reason we ascribe to them neither personality nor a moral character. The distinction is clear enough when we compare the behaviour of an infant with our own acting on principle, but between the two there are all degrees.

The growth is twofold: there is a development of the purely impulsive conduct, and there come all degrees of self-reflection. The degrees are according to the part of self to which we attend, and according to the depth of our thought about it. For in self-reflection we do not reflect on the whole self, though sometimes on the self as a whole, just as we do not attend to the whole of anything, but sometimes to the thing as a whole, though usually to an aspect or a part of it. Again this new and higher is not always the better way; for doing is often a better training of self than waiting to think. But the new way is far more economical and can go much further; it takes instruction and discipline through the medium of ideas. Impulsive conduct, on the other hand, is trained for the most part without the assistance of others. Any special training that it receives is by emphasising the means that are met in the ordinary course of experience. One means is imitation, the other is that discipline without reasons which, applied to animals, we call breaking in, and applied to children has been called (by Herbart) ruling them.

It is easy to bring discord among an animal's emotions, especially those of a young animal, and to excite impulses that drive in different directions, and that inhibit or modify one another. But the better it learns, the better it masters

a situation ; a change in its surroundings no longer creates the same tumult of emotions. There is dire enough confusion when an old and confident expectation is thwarted, but the normal conflict is not a rapid alternation or a mutual inhibition of impulses ; each of them is confined to its own part in the situation, so that the animal is wary of what is to be feared, but is not prevented from seeking what it wants. There is no limit to this training or organising of the system of impulses ; it goes as far as the perception of a situation can go. The more critical an animal's view of the things and creatures about it, the better its attitude as regards both its feeling towards them and its dealing with them. XII. 8.

But so far there is a dealing with only the objective factor in a situation, and beyond this the development of impulsive conduct does not go. The new or higher development is when the subjective factor, the seeking, is made an object on its own account. In our higher experience we frequently alter our practical attitude by taking thought of our impulses. Apart from such a power, no conduct is called moral or immoral, and the possession of it makes the difference between a moral and a non-moral being. But it is possessed in very different degrees : not at all by infants, to some extent in childhood, there is more of it in boyhood and girlhood, and it is usually in frequent exercise with young men and women. When I say the psychologist has it best, I need hardly add that the degree does not measure the degree either of one's morality or of one's responsibility, and that examining oneself is not always the best of occupations. We are not at present, however, concerned with the value of self-reflection, but it is obviously a new means of developing any practical situation. And because it is at zero in the infant, and presumably makes no miraculous entrance into our lives, the question is not merely whether it exists at the perceptual grade of intelligence. If it does not, what is there to prevent it, and what more is required for its beginning ?

§ 9. Two considerations bring us the answer. The first is that, according to our definition of perception, we cannot at that grade think of ourselves in any situation but the

XII. 9. present. There can be no thought of our character, no recollection of ourselves as in a past situation, and no forecast of ourselves in the enjoyment of a future one, even when we are expecting it. This is not a state that we find it hard to realise; for we have it ourselves whenever we are too well occupied, or too indolent, to think or plan about ourselves. But when opposition, or when weariness comes across the course of our seeking, or when the thought of work or annoyance dissolves our castle in the "pleasing land of drowsyhead," then we take thought of ourselves, and, first, of our attitude at the moment.

And the second consideration is that not even this reflection on ourselves, though only on ourselves at the moment, is possible to perception as we have defined it. This limit also is not hard to realise, for we have it whenever an interruption gives no time for thought or plan, but must be met by immediate action. Of course the power of reacting without reflection may have had the advantage of previous reflection, *e.g.* expertness in driving, in handling a sail, and in every sport whose mimic danger is so sudden, though various, that it must be met without debate. These impulses have not been merely broken to their task; they have grown because attention has been given to them, to the subjective factor, to skill, and not merely as occasion arose, but of set purpose in order to their bettering. And any creature that practises with purpose, and not merely for the fun of the thing, must exhibit a high degree of self-reflection. But we can also realise, for we often use, the purely perceptual or impulsive way of meeting a new situation. When we skip the right way out of a sudden danger in the street, we may have no higher thought and fear than those which direct the stupidest of beasts. The normal incidents of life, however, are not sudden, and there is time to take thought of our attitude.

What is the nature of this thought? We only take it when there is need, for we are not more bound in thinking to think always about ourselves, and our subject experience, than to think about anything else that is always with us. The occasion is usually a practical one; it is an interest in what we shall do, not in how we are feeling; or, if in

this, it is not for a theoretical purpose like ours at present, XII. 9.
but to decide what we shall do to be quit of our feeling or to keep it. The need thus comes when alternative courses present themselves, and our self-reflection consists in pondering one course against the other. For to ponder two courses of action is to ponder them as ours, and so to ponder ourselves in them. It is to weigh the future of ourselves in the one with the future of ourselves in the other, and the considerations are often complicated and far-reaching. They may include a thought of our whole character, or they may not; but in either case we distinguish and weigh ourselves in one situation against ourselves in another.

In perceiving, on the other hand, there can be no pondering. There are alternative courses, with their corresponding impulses, which have already measured the weight of one another, for they are inhibiting one another. So much must happen before the other kind of weighing begins. But to put the courses in the scales, to consider them, to attend to them, is to add to the thought of them, so that more of the mind—other interests and impulses—may have a say in the strife. At the perceptual stage they weigh themselves on their own merits; but to reflect at all is to throw other merits and demerits into the scale with them. It is not always the best thing to do, and it easily becomes a disease. For there are many who would rather continue to ponder than to give a decision; or who, having decided, delight in the thought instead of the seeking; or who proceed to wonder whether their decision has been quite just to the other side, and are always ready to reopen the discussion. We shall see the importance of these matters in theory as well as practice when we consider our practical character and the freedom of the will (xvi.). But good or bad, and long time or short time, that is what self-reflecting does. It does not, as the word again may suggest, reveal the self to itself by holding up a mysterious mirror, where it reflects itself as an idea of itself. It consists in nothing but making itself the object that is thought about, turning the subject into the object not merely of an implicit, but of an explicit thought. The thought is at first,

XII. 9. and for long, not of an abstract, generalised, or potential self like one's whole character, but simply of the part of self whose interests are in present question. The present conflicting desires come into some question when we are deciding to adopt one course of action against another that is in competition with it. So small a difference does the new way make to begin with, that we can neither point to its beginning in a child, nor say whether it ever comes to an animal. And at first it is the exception; purely impulsive actions are still the rule. But it is the beginning of the conduct that we call free, moral, rational, and responsible.

The wants of an animal are few, and, if they are often hard to satisfy, and require care and cunning, they are not often in competition. Sometimes they are, and then as a rule there is confusion of impulse; but in certain cases, as when a mother is impelled at the same time to defend her young and to flee for safety, an instinctive solution is provided. There is an access of courage and ferocity for the time being, and often a cunning that has the effect of intentional deceit. The struggle is seen best in domesticated animals when they have to conform their impulse to our purpose, and it is easy to trace the course of the struggle in their breaking. So, too, in an infant; but the more complex the wants, and the wider and more variable the fields of interest and risk, the greater the need for a different way of deciding among competing claims. A whole wealth of life is at stake at every turn, and the new way consists in requiring that the single impulse shall have the consent of the rest. At the purely perceptual or impulsive stage this consent is not sought, but at the higher stage, where the organisation of life requires a more and more flexible adjustment, consent is frequently demanded.

And just as a breaking-in becomes less and less necessary the more the results are taken for granted, so it is with this other development through deliberation and an explicit consent. A decision is not merely for the present; our particular decisions become a system of principles, able without argument to try nearly every suggestion as it comes, and to find it desirable or undesirable. If the decisions are carried

out, there is a similar result in practical efficiency; the conduct suggested is not merely thought desirable or not; it is sought or avoided without a reflecting thought. The character is thus always acting towards consistency, whether good or bad; and in conduct, as in knowledge, the conditions of its life prevent the complacence of a mere self-consistency. XII. 9.

§ 10. (*c*) We have seen how the single perception and the course of perception are affected by what is taken for granted, and it is hardly necessary to ask how this also affects our satisfaction with the degree of our knowledge. Our perceiving is primarily in the interests of our appetites, and we are restless till they are appeased. The result of experience is not merely to appease them more readily in the future, but two things. First, it renders them more exacting and complex. That will not serve now which once would have satisfied, and things that were of no concern become objects of like or dislike. And, secondly, with this growing complexity of practical interest there develops that interest in perceiving for its own sake which we dealt with as curiosity. This twofold result is to create a variety and a definiteness of expectation, and a more exacting demand for knowledge. The expectation is not, on the one hand, an idea, nor, on the other hand, is it a mere restless impulse. It has become an intelligent impulse. The experience which has informed it is not revived, but is now a taking for granted whose effect is to give prominence and ignore, to select and reject, in the manner we have seen. And now there has only to be added this other result, that it determines what shall satisfy the expectation, and bring the impulse to an end, so that no more knowledge of the situation is sought. This is obvious, of course, from the rest; but it is to be observed for its own sake, because here we have the essential description of stupidity, and the point at which it is to be attacked, if it is not invincible. We may treat the perceptual form as an instance of the general fact of stupidity. We shall see the conceptual forms of it in their place (xvi.), and I shall then (xvii. 2) remark on its explanation.

There are many brands of stupidity. Some are not

XII. 10. well named, their defect lying with the organs of sense, movement, and prehension, or with mere memory. Others that are correctly marked are occasional, being due to fatigue, to bad ventilation, to ill-health, or to distraction of other interests. But let us consider the stupidity of those who, at the moment, are at their best.

It is of two kinds, one felt, the other unfelt. A teacher finds both in his pupils, but more frequently the latter; for sometimes they puzzle themselves, but more often he has to puzzle them. He has constantly to be disturbing their premature satisfaction, and driving them from complacent to conscious ignorance, and thence to knowledge. He has to reveal the inadequacy, the error, or the shallowness of their thoughts; and he does it by presenting difficulties. Of these the simplest is when he attacks a thought by perceptual means, presenting things that contradict it. Other thoughts he attacks by recalling a previous experience. Finally, the pupil is made dissatisfied, not by mere sense or memories, but by reflection on other beliefs that are in opposition to the one he has made, or that demand a better than it.

And all the time he is learning to be his own critic. He learns a self-reflection in respect of all his beliefs, as we saw in respect of his conduct: he requires his particular beliefs to have the assent and so the support of the rest. He has seldom to recall the rest, because, as in conduct, he is able to take their agreement or dissent for granted. And just as he need not listen to the case for a temptation before condemning it, so, without pondering, he may know whether an opinion is entitled to acceptance according to the system of his beliefs. But, and also as in conduct, it is not the mere consistency of the system with itself that he seeks to maintain, but its agreement with the independent system of real objects of which it claims to be true. He has some sort of ideal system for his knowledge and intellectual character, as he has for his conduct and moral character; and the better it is, the more it prevents a monotonous self-complacency, and drives his ignorance and stupidity from the unconscious to the conscious form.

At the perpetual level, however, though there are the conscious and the unconscious forms of ignorance, we can

hardly say that there is the conscious form of stupidity; and as regards both ignorance and stupidity, the unconscious form is far more prominent. Where dull thoughts answer every expectation, the obtuseness is invincible. In perceiving, as in higher thinking, some see nothing in problems that puzzle others, because they do not really see the problems. Their complacence is undisturbed, not because they would have no use for better knowledge if they had it, but because they do not feel the need. There is nothing to rouse from ignorance and dogmatic slumber but the shock of opposition to what is taken for granted. And so, the more there has been learnt, the more there is found to learn. This you will see in a variety of ways if you compare the learning powers of different animals according to their kind and their upbringing. There is, for example, the small difference between the intelligence of young and old among the lower, compared with that among the higher animals. But the conscious ignorance that is possible at the perceptual level is very limited. Expectation is modified by failure in practice alone; and the part of it that has been taken for granted is corrected and developed without reflection upon it. That is why the conscious failure to understand is hardly yet a conscious stupidity; the impulse has become intelligent, but the intelligence remains impulsive. For the grounds of expectation are not turned into reasons, and they continue to be acted on for no reason but that they have hitherto happened to work. XII. 10.

The problem of all perceptual learning is to give meaning to the data of sensation. Its solution depends, first of all, on the efficiency of the organs of sense, but apart from this it depends on the power to differentiate their data. There is always a mass of simultaneous and successive sensation, and the task is to resolve it into different factors. To do so, to differentiate, is also, as we saw, to connect. It is in the failure to differentiate that all perceptual stupidity is revealed, both the relative stupidity that is found in the various degrees of difficulty with which different creatures can be taught, and the absolute stupidity on which no teaching makes any impression. In every case the question is, why does the animal fail to differentiate and so to give

XII. 10 the proper significance to the several factors in its thought? And the answer is always the same, but we shall take it as two: it is because the factors have too little interest, or because they have too much. In the former case the sign is unnoticed, in the latter it is unnoticed as a sign.

The former is far the more common, and the problem of teaching at this stage is nearly always to give interest to what has little or none, by allying it with what does have interest, that is to say, with consequences that are pleasant or painful. By this means it gains a cognitive interest, becoming the ground on which the consequences are expected. It may afterwards acquire an independent interest, but the difficulty of learning is that it has little or none of its own to begin with. Hence the practical problem in teaching minds that are merely perceptual is to eliminate accessories, and force into prominence the factors that are to be distinguished. Some accessories are easily dropped: sensations, for example, from other senses that are present at the same time. Some, again, can only be minimised; this is done by varying them while the requisite factor is kept constant, and followed immediately by the interesting consequence that it is to mean. The process is familiar to us when we seek knowledge for ourselves, but it is far from easy with animals; for the best of them barely grasp one's intention to teach them, and never, of course, the process we adopt. The difficulty is not so much in controlling the external stimuli, and so shaking the sensations and their aspects apart from one another; the difficulty is in controlling the interest or attention with which the animal meets the situation. For this, when it is present, is never simply cognitive, but always more or less of an agitating kind. And so we are brought to the other, the opposite source of stupidity.

If it is hard to break up stupidity when there is no interest, it is nearly as impossible to teach when interest is violent, passionate, hard to control, as in terror or hunger. This occurs when the sensation that is to serve as a sign has interest enough, but will not take a meaning. Odours, lights, musical tones and rhythms may themselves be so attractive that it is hard to take them for presages of evil. Their interest is already so absorbing that there is little

room for an interest also in their outcome. To give it prominence we have to pursue the same general plan of bringing the two so constantly and so closely together that the absorbing sensation becomes also a sign. XII. 10.

The unassisted learning of an animal pursues the same course with this difference, that, instead of having its experience selected by another, it has to rely on the analysis of things and situations that is made for it in the ordinary course of events, and by its own movements. And so, whether assisted or not, an animal's learning depends on three things in its own possession: on the strength and the variety of its interests, on the frequency and the variety of its activities, and on the knowledge it has already acquired, that is to say, on the system of meaning that it has already learnt to give to its sensations.

LECTURE XIII

CONCEPTUAL INTELLIGENCE (i.)

XIII. 1. § 1. IN accordance with our plan, we have still to see the effect of a higher level of intelligence on perceiving. This will not occupy us very long, but the rest of the lecture must be devoted to the transition from perceptual to conceptual intelligence.

§ 2. The effect of conceiving on perceiving is like that of both on our sensory intelligence. We found how there they supply the spur to a further analysis, and so to a better synthesis or definiteness of sensation. The result, you remember, was of two sorts. (*a*) Aspects and groups of sensation are distinguished which could have no interest of their own at the merely sensory stage. These are discerned because they have a meaning, and without it they would never be distinguished. (*b*) There is the spur to distinguish aspects and groups, not for their meaning but for themselves. These are such as might be had on the purely sensory level, were the senses more acute. Flavours, tints, faint sounds, all the qualities we call delicate, are aspects of the kind; and harmonies and rhythms of sound, of colour, and of movement are groups of the kind. It is in the same two ways that conceiving is a spur to a better perceiving.

(*a*) As we seldom have mere sensations, but nearly always give them a meaning, so we seldom, though not so seldom, merely perceive. Not by any means that we are always either thinking or imagining. Far the greater part of our sensations take an immediate meaning without either; and such thoughts come within our definition of perception. But they are seldom mere perceptions, for the meaning that

is given is only possible by reason of a previous thinking and imagining. Part of the meaning has been learnt and organised by mere perceiving ; but part is due to our thinking in the past, and we now have the reward of it without repeating the work. Instead of a mere perceiving, there is that conceptual perceiving which is often spoken of as apperceiving. It is exemplified in such expert perceiving as I spoke of before : the astronomer's look at the sky, the soldier's at a landscape, the sound of music to a musician. I am not referring to their trains of thought, but to the meaning and the value which they give immediately to their sensations. The aspects and the grouping that strike them would not be discerned but for a previous history of reflection. And, without any special expertness, every one of us perceives by seizing aspects that we could not seize without a conceptual handling of them in the past. The prominent and the typical example is our hearing voices as words and sentences, and not as the babel of sound in which we once heard them. XIII. 2.

We are nearest a mere perceiving of objects when we are not attending to them ; but even then there is usually a difference. For we do not merely strip off and dispense with the conceptual thought that we have when attending. Much of it is taken for granted. The result of our thinking or attending in the past has been to organise our whole thought of a thing under a name, and, when we perceive without attending, the name or its meaning is never far away. Of this the proof and the advantage both appear when, though not attending to a thing, we are struck by something in its behaviour that could appeal to no one who, in the past, had no better thought of it than mere perceiving.

(*b*) But there is also the effect on mere perceiving, viz. the spur of an external interest whereby the purely perceptual analysis is carried further. The spur to differentiate sensations is sometimes for the sake of their intrinsic interest, as in the detecting of flavours. But usually it is for an interest in the meaning ; and so the spur to better sensation is usually the spur to a better perceiving. When we practise to be perfect in any form of skill, the persistence is due to our higher intelligence ; but the growing perfect may

XIII. 2. need no thinking, no reflection, only practice. And it is not only the skilful co-ordination of our own movements that we learn in this way, including the handling of tools ; there is a keenness to detect and appreciate differences in the feel of the tools themselves, in the behaviour of opponents, in the gestures and tones of those with whom we come in contact. There is a knowledge, as there is a skill, that comes with mere practice, though, as we saw, the practice is not so mere as to be merely a repetition. We rely on it, without being able to give any ground for our faith, except that it works. Such are an old farmer's instincts about the weather, a blind man's detecting the presence of people, the importance that our sense of smell may learn to assume in the absence of sight and sound, the reading of people's thoughts from their eyes, and what is called thought-reading or muscle-reading. In all of them the sensations that are the ground of belief may never have been separated out, and recognised as the ground.

§ 3. Thus conceiving affects perceiving, as both affect the definiteness of sensation or sensory intelligence. And there have to be added the same two remarks as before about the growth from a lower to a higher level. When, in any mind, sensory grows to perceptual intelligence, it is not superseded ; on the contrary, it rises in importance, and the new depends upon it. Secondly, when comparing the minds of different species, we frequently find that, instead of developing to the perceptual grade, there may be a further development on the lower grade. This consists in a multiplication of sense-organs, or in a greater sensitivity. It is in such a way that many insects, though mainly sensory and able to learn little of things, show a conscious power in dealing with their environment that is not found in more intelligent creatures.

Both remarks fall to be made as well at the higher stage. The first is the dependence of conceiving on perceiving. A training to observe is not merely in the interests of scientific or other explicit problems, but in order to a general habit of being alert and exact. And, though the observing that is expressly taught is usually conceptual, viz. conceptual perceiving, there is also the aim to give skill, and subtle sense of whatever kind, by way of practice and

intercourse, without the need of theory or very much reflec- XIII. 3.
tion. Taste, manners, many things have to be learnt in this way, if the higher or conceptual intelligence is to have object and subject (viz. matter to work upon and power of dealing with it) from which to develop.

The other remark is this. Just as sensory intelligence does not come to the end of its tether before perception begins, so neither does perception before the rise of conception. And if an animal may remain at the lower level, and be better adapted to its environment than another that has risen to the higher level, so we find a better development of perception, and even a better conduct of life, among the higher animals than we may find in man. The remark has often been made with respect to degraded races and individuals among men. But its most obvious application is to little children. Think how helpless a child of three is, though it is far more intelligent than any animal. The reason will appear when we consider in what our higher intelligence consists. And to this we now pass.

§ 4. Though it makes a great difference that sensations should come to mean things, their qualities, and relations, we saw that the transition from sensory to perceptual intelligence involves no marvellous leap, as from a knowledge of what is in the mind to a knowledge of things outside. The path from perceiving to conceiving does not appear to be so direct. It is not attempted by most animals, and those that are thought to do better than perceive are not thought to go further than a debatable land between the two.[1]

The lowest races of mankind may seem to have minds

[1] Between perception and conception Romanes (*Mental Evolution in Man*) put a "wide intermediate territory" called reception; to different heights in this different creatures may attain, and beyond it none goes but man. Percepts are defined as thoughts of particular objects, concepts of abstractions, recepts of abstractions not yet abstracted from the particulars. They are abstractions that are felt but not separated out; they are thought, but not thought about; in his words, they are "spontaneous associations formed unintentionally as what may be termed unperceived abstractions" (p. 37). But it has been apparent that every percept is a recept, and indeed Romanes says as much. "We find as a matter of fact, both in infants and in animals, that the lower the grade of intelligence, the more is that intelligence shut up to a perception of class distinctions" (p. 66). Therefore the transition is not from percept to recept and thence to concept, but from percept (part of which is always recept, if the word is wanted) to concept. And so it is taken in the text. For his view of how the transition is made, see Note B (2) at the end of this lecture.

XIII. 4. that do little more for them than minds in the higher animals; but their children can suffer education to a degree, and by means that are quite beyond the range of the most cunning of animals. What makes the difference? The presence of a new faculty, of course, but that is to say nothing; and a dispute is apt to arise about which of the faculties, and whether it is different in kind, or only in degree, from the faculties required in perceiving. It is usually sought among the faculties denoted by the word reason, *e.g.* the faculty of comparing, or of reflecting, or of having abstract ideas, or merely of introspection, or of nothing but speech. And, whichever is chosen, there is left to be decided the question about the difference being due to a want of the faculty altogether, or a want of a proper degree of it. The very acceptance of this as a serious question betrays the same error of accounting for mental acts by a co-operation of more or less independent faculties. The error is brought to light when the question becomes, as between man and animals, whether or not it is the faculty of speech that makes the difference. For we might as well ask whether the fore-leg of a horse differs in degree or in kind from our fore-arm, as whether it is in degree or in kind that his intelligence differs from ours. It would be as impossible to say, because it would be as absurd to try, and for the same reason. He has developed only one digit, and presumably does not feel the need for more; and, if he has not learnt to speak, we may presume that here, too, the need does not weigh on his mind. We shall have to consider the function of language towards the end of the lecture, and I shall speak of the limits of mind in animals; but nothing can be gained from the notion of co-operating faculties. The question of mental development is not what faculties are necessary, and how they combine to form a complex faculty like our reason, but rather, as in all organic growth, how they separate and form it.

The development of intelligence depends very greatly on the use of speech, and to a degree that we do not easily observe. But the value of speech had to be found, and the need of it had to be felt. Hence we should account for the growth of wealth by the history of money with just the same

kind of truth as we should account for the new growth of intelligence by the discovery and development of speech. Words are the counters of thought, as money is the counter of wealth. In neither have we a mere counter, as if one form were as good as another, or as if the quantity and the increase did not matter, or as if none were necessary. On the contrary, the growth of intelligence, like the growth of wealth, was, at a certain stage, bound to demand a means to hold and handle it by. And it was equally bound to find the means in materials already existing, and to select and give currency to the fittest. And there are other points of resemblance between the coin of thought and the coin of commerce; but the metaphor has this serious defect, we shall find (xv. 8) that words are not substitutes for the wealth they represent. They must carry their meaning with them to have any value. XIII. 4.

There is no metaphor, however, we shall also find, in speaking of language as an instrument, as the chief instrument of thought; and so the question of its place in the growth of intelligence is part of the general question about the invention of tools. It is not the absence of tools, or of the hands to handle them, that keeps an animal ignorant of their use. In its use of limb and claw, in its copying the movements of others, in its selecting the site for a dwelling, and the proper materials for building, the animal knows tools and purposes. But if it had explicit thought of them as tools and purposes, it would not be content to remain where it does, nor be impossible to teach. An occasional use of sticks and stones as implements has been observed in several creatures, from spiders and wasps to monkeys, but the intelligence need be only perceptual. And as with limbs and tools so with its voice: an animal has hourly evidence of its efficacy, and yet there is doubt whether in calling, warning, barking, growling, purring, it ever selects its voice as the instrument of an intention to communicate with others. The fact that many animals understand what is said to them is no more surprising than that a dog can distinguish printed cards by simple words boldly printed on them. Sounded or printed, the words are groups of sensation; they take a meaning like every other group that can be distinguished

XIII. 4. from the rest of the mass of experience in which it appears. And there is no more intelligence in a parrot's learning our words, and fitting them to the occasion, than in the perceptual imitation of a dexterity that is seen and not heard. Speech may be significant and used with expectation, as every gesture may, and yet there need be nothing conceptual about it. It is only one of several articles of perceptual commerce between minds, whereby they are revealed to one another. At the higher level we still use other means than words, though language alone can anything like signify all that we think. That, we shall see, is because it has become the indispensable means of thinking, as well as of communicating. But it does not create the thought. The reason that animals do not speak is that they have nothing to say [1]; and it is because they have nothing to say to themselves that they have nothing to say to one another.

It is also misleading to speak of reason as the new faculty, unless we say quite what is new. And, whatever we mean by reason, it has no miraculous or unexpected birth in the mind to which it is born; there is no astonishment in its advent. Indeed, it would be less misleading to say that animals have an arrested intelligence, than that the child adds a fresh faculty to theirs. He does not rest satisfied with their grasp of things and their interests, just as the higher animals do not rest satisfied with the meagre thoughts and interests of their inferiors. He continues to analyse, and so take a better grasp of the situations in which he finds himself. Why he should continue while they stop and remain stupid, why perceiving should grow to conceiving in him, and not in them to any demonstrable extent, why he, for example, should learn to count and not they, is a question that we have postponed because it is beyond our general explanation (xvii. 2). But we know what happens when he does advance, and we may very well describe it by saying that now he has begun to conceive, think, or reason. If we also say that now the faculty of reason has appeared, we are not wrong, of course, for we are adding nothing. But

[1] "In very many animals the development of the organ of speech has gone far enough to enable them to clothe thoughts in words, if the thought were there to clothe" (Wundt, *Human and Animal Psychology*, p. 363).

it may suggest that the new faculty has no connection with the faculty of perceiving, and it may suggest that the experience of conceiving from its very beginning is like ours when we argue or deliberate. On the contrary, conceiving grows from perceiving, and, at the start, the new experience is very like the old, and very unlike the kind of experience of which the faculty will become capable. XIII. 4.

§ 5. We shall best understand the nature and the origin of conception if we look to the function of all intelligence. We saw that it is the same object, the same real world, that is dealt with at all grades. And we saw that it is dealt with in the same general way: every advance, whether within the same level, or from level to level, is from grasp to better grasp. There are two directions in which our knowledge of the world may improve: (*a*) by our having more material to deal with, and (*b*) by our organising it better. It is the second that makes the essential difference between conceiving and perceiving; but let us begin with the other, where we shall find a very important difference complementary to it.

(*a*) All the materials for our knowledge of nature are given us by our senses, and we have no end-organs of sense that are not common to all the higher animals. In two respects, indeed, animals may be better served by their senses: usually in them there is a more immediate connection with instinctive reaction, and sometimes there is a greater sensitivity. For usually they are more easily warned or attracted by the mere sensation of distant objects through nose, eye, or ear; and sometimes they have sensations from stimuli that are not intense enough for us. But, on the other hand, our senses are capable of far higher education. We have seen how meaning distinguishes aspects and groups of sensations, *e.g.* words that would not be distinguished but for the meaning. And when the group involves a length of time, *e.g.* a melody, it appears to be less and less within the grasp of any animal's sense. But, taking together our advantages and disadvantages in point of sensation, we may say that there is no very great difference between ourselves and animals. The rise to our better knowledge of nature is not due to better sensation.

XIII. 5. It is another question how much of the material of sense we grasp at a time, and still another how far we are independent of actual sensation. The first is the question of the scope of attention, the other the question of memory and imagination.

With every development of intelligence we take a more comprehensive grasp of things. Such a grasp we have, for example, in laws, formulæ, and definitions. It is an easy grasp because we are able to take so much for granted; and it does not become harder the more comprehensive it is, and the more it takes for granted. But in learning it we have to hold, analyse, and organise the mass of material that we seek to comprehend; and that is not easy. We have to take many a partial grasp, till the parts are easy, before we find the single thought that contains them all. And in every case our grasp fails, so far as we find ease in merely omitting the differences of the facts. Abstraction is even less of a subtraction in the growth of individual and general notions, than we saw it to be in the development of perceptions (xii. 5). And still less in developing or in following an argument; every one knows the difficulty of holding in mind a variety of facts, all of them abstractions, in order to organise them without loss in conclusion, law, or formula.

While it is especially in forming general notions that the scope of attention is great and growing, the growth is not confined to the work of conception. It is required for the grasp of merely sensuous forms like melodies, where no effort must be made to abstract and compare. It is prominent in our grasp of a field of vision, and of the course of time. As you walk in town or country you map the field before you into a variety of nameable objects without any difficulty. It is not a feat of addition, but of dividing the scene into definite parts. The feat is doubtless performed by animals, though without the conceptual definiteness that requires the power to name the parts. We become able to do the same thing with any piece of time that we pass through, and with the events that occupy it. They become, as it were, spread out before a mental eye; and as we think a present field of vision as part of that which is not present, so we not merely

date the events of the passing moments, but think the present as part of the great course of time. The scope of attention is nowhere more striking than when we date a past event by running over the events of the hour, the day, or the years that have intervened. XIII. 5.

But this has brought us to the other difference between the material dealt with in perceiving and that in conceiving. Not merely do we grasp more at a time, but the matter need not be before our senses. We recall what we have perceived in the past, and we form new images on the model of our old perceptions. At a still higher stage we economise in images too, dealing with things through symbols that mean them, but have no likeness to them. As a rule it is only when words fail to give us the requisite material that we resort to images, when images fail that we resort to perceiving, and when perceiving fails that we resort to sensation. The whole procedure is an economy. There is less time and trouble in thinking a thing through its name than by making an image of it, in making an image than by going to see it, and in seeing it than by seeking the taste, feel, and other sensation of what we see.

But the economy is more than the mere saving of time and trouble. In perceiving we have to take things as they are, but with our images of them we can do as we please. We can collect a group of things that have a common factor but with every kind of variation in it, and we can, in a few seconds, put an image through a cycle of changes that need months or years in reality. I need hardly say that such a gift is not merely to play with. There are the pleasures and the play of imagination, but its essential function is to enable us to get a conceptual grasp of what is real. The recollecting and the imagining are not this grasp, but they give us the material for it in a serviceable and, indeed, an indispensable form.

§ 6. We have here one side of the case that can be urged in answer to the question whether animals recollect and imagine. And before passing from the material dealt with to the manner of dealing with it in conceiving, we may look at the two sides of that question. For the one emphasises the use that recollection and imagination have

XIII. 6. for conceiving, and the other emphasises their difference from conceiving.

We are apt to think, when a horse shies at a corner where he has long before had a fright, that he recalls the old scene. Why are we not so ready to say that he also has a twinge of the old pain, and that, when he is hungry, he recalls the old taste? It is because most of us are so readily able to give ourselves old scenes, and not old pains or tastes. But observe that although we can picture the past, we seldom do it; we have not to be reminiscent of the past in order to use our knowledge of it. And though we can rehearse the future, we seldom do it, except we have to form a plan, or are willingly or unwillingly set to indulge our hopes or fears in detail. The truth is, that when we begin to describe thoughts, of no matter what level of intelligence, we find this way of reading them as images an easy way. We take the thought for a little model of its object, part for part, though often sketchy. It is a better way of describing thoughts than merely assigning them to faculties, but it is the way of thinking that we have already condemned when dealing with the transition from sensation to perception. In answer to the present question whether animals and infants imagine, it says: Yes, if they perceive at all. Thus Romanes: "On seeing any object, such as an orange, we are at once *reminded* of the taste of an orange—have an imagination of that taste."[1] And Perez: "The child, hardly a month old, . . . shows that the image of his mother's breast must be deeply engraven on his memory."[2] And it is not surprising to find both observers giving even pure or free ideas—ideas without sensation—to a very early stage of perceiving; the wonder is only how shell-fish and infants could be thought to imagine so well, and yet be so stupid as they are.[3]

[1] *Mental Evolution in Animals*, p. 144.

[2] *The First Three Years of Childhood*, p. 147.

[3] "The spiders which attach stones to their webs to hold them steady during gales must be actuated by a faculty of imagination; and the same is no less true of the crab which, when a stone was rolled into its burrow, removed the stones near its margin lest they should roll in likewise. The limpet which returns to its home after a browsing excursion must have some dim memory or mental image of the place" (Romanes, *ibid.* p. 146). "The child who, at the age of three months, turns sharply round on hearing a bird sing, or on hearing the name *coco*

But proof is to be found if we turn to the other side of the case. We frequently conceive without imagining, and imagine without conceiving; and it is easy to suppose that animals and infants have images, though they do not use them to form plans or other conceptions. There is no certain evidence in the fact that an animal recognises things in pictures; but only people who have, or who think they have, no visual images of their own would quite deny that a monkey has them when imitating a man's shaving in his absence, and that a dog has them when leaping over an imaginary walking-stick. There is also the evidence of dreams, and it hardly matters what share we ascribe to organic, and what to external stimuli in producing them. Then there are the imaginings of hypnotic and of insane subjects. There is the point you may have observed in yourselves, that our imaginings are never more vivid than when we are fagged or in a reverie, and do not direct them to a purpose. Finally, there is evidence that the ordinary dearth of visual images in us, and their extreme faintness as a rule, are largely due to their being inhibited or controlled. They would certainly often be useless, and even in our way. It may be that we suppress them, just as we do the expression of emotions to which animals give full tongue, and just as we turn the thinking aloud of our early childhood into the shorthand methods of internal speech. XIII. 6.

Putting both sides together we have a result analogous to that which we found in dealing with speech. As there is a perceptual use of words, so there is a perceptual imagining. Neither has full development till it becomes the instrument of conceiving, but because they are already there, the transition to conceiving is made smooth. And just as words remain particular sounds, though they come to stand for a general meaning, so visual and other images, though they are often called general, generic, and abstract, are themselves particular, as every picture is. It is the thought of what they represent, or the thought of them as representative, it is not the pictures but their meaning, that is general.

pronounced, and looks about for the bird-cage, has formed a very vivid idea of the bird and the cage . . . and is performing a feat of imagination" (Perez, *ibid.* p. 147).

XIII. 6. And as picturing is a comparatively slow process, we do not greatly indulge in it except for pleasure, or because it is peculiarly suited to our problems.

It is an error to suppose, as is frequently done, that thinking is a procession of images, especially visual images.[1] If there were the visual procession, the images would not be the thinking, but the means of thinking. And we have so much more manageable a substitute in auditory images, that is to say, in internal speech, that the procession consists more often of them ; and, of course, they are not the thinking, but means of thinking. I shall return to the question of the means of thinking, whether words, images, or sensations, and to the difference between imagining and conceiving (xv. 7).

§ 7. (*b*) At present we do not need to consider imagination at all, and it will become apparent that the differences we have found in the data or material are only complementary to the essential difference between perceiving and conceiving. This consists in the different grasp that they take of the material. In many a case, indeed, the material is the same. From the same sensation our grasp of a thing may be perceptual, or it may be conceptual without any recall of the past. In perceiving it we know its attributes, and connect them with one another ; we begin to conceive it when we know them as connected. We begin a different organisation of the same sensory material. It is the difference between an implicit and an explicit thought of the connections, between thinking the connections and thinking about them. And the first step to the higher level is merely in thinking of a thing as having a certain quality or in thinking of the quality as belonging to a certain thing. It seems like hair-splitting, as it ought to seem, if the transition is a development and not a mere addition to the mass of what is known. But, like the yard or two on a watershed, though the difference appears to be little, it is great enough in the long-run. And the end of the stream—the deepest and broadest thinking—like the shallowest and narrowest

[1] It is due to the way of thinking which takes sensations to be impressed copies of their real objects, and other thoughts to be copies or remnants of the impressions. But it is assisted by the ambiguous use of the terms abstract and concrete, general and particular ideas and images (see Note A at the end of this lecture).

beginning, is still about connections. We learn to deal with them when abstracted as easily as we handle physical things apart from one another; but, to begin with, we can handle them only in their embodiment, and first as embodied in the objects of perception. XIII. 7.

The beginning of conception is not at the point where perceiving has reached the end of its tether. On the contrary, the perceptual dealing with things may be better than the conceptual. Animals that give no evidence of conceiving, and have no superior gifts of sense, compare well with young children, whose use and understanding of language show their higher form of intelligence to be already well grown. The restless, inquisitive animal learns far more rapidly what to do and what to avoid, though it forms its thoughts, as we say, without thinking, that is to say, without reflecting. And the two ways—the perceptual and the conceptual way—of attacking a problem are not only frequently combined, but frequently seen as alternatives. A teacher has often to prevent his pupils from taking the perceptual, the rote way of learning, instead of the harder way of thinking. And now and then he finds it well to allow them to learn to work by rote, before requiring them to think by taking the perceptual result to pieces. Finally, in adult life, it is not at all uncommon to find a man so devoted to thinking or theory, that he cannot grasp a situation so well as another, who has worked himself into his knowledge by practice, and has learnt to manage men and things without any thought of principle.

Conceiving begins with a new analysis of objects as they are perceived. The analysis in perceiving is all made by changes in things, and by our own movements. These differentiate the sensory data; and the perception, the synthesis, consists of definite expectations of other sensation. We have seen how great the mass of expectation may become, and how highly organised, though the only sifting of the material has been by actual change of it. The new analysis begins with things as they are already perceived, and the new synthesis is called a concept or conception of the same things. The analysis is not made now by a change of sensation; it is made by selecting or attending to

XIII. 7. the connections that are already thought, though they are not thought about. Any part of the object as perceived may come to be thought about; a whole scene, for example, or a thing in it, or a quality of a thing, or a relation between things. A scene may be thought about as a scene, or as including a number of objects, or as comprising various distances and directions; a thing in the scene may be taken as a case of any of the series of classes—the genera and species—under which we come to name it, *e.g.* obstacle, fence, post-and-rail; a piece of colour may be thought of as a colour, a shape, a size, or as belonging to a field of wheat; the distance between things may be thought of as a distance; and the things that we deal with alike, we may think of as being alike in quality, in size, in desirability, in direction, in distance, or in any other connection. That is the transition.

To know at all, even at the lowest, is to connect; it is to put things together because they have been found together. But it is not till we conceive that we know the connections, and put things together by grasping their connection. We had illustration when dealing with the ground of our belief in perceiving; while we think the ground, seeing we believe on the strength of it, we do not think of it as the ground. But observe that when the time comes and we do think about it, we do not begin with the distinction between sensation and meaning. Indeed, most people never go beyond the thought that seeing is believing; the further analysis has no interest but for those who have to distinguish between sensation and perception, in order to learn how much is really seen and how much is inferred. So of all the connections that we think in perceiving: when we begin to think about them we do not deal with them in their abstract form; that is the end, and not the beginning, of the new analysis. Few people ever go the length of thinking about the bare connection of thing with quality, of one thing with another, of cause with effect, or about space and time as mere extension and duration. The progress here, as everywhere, is from an indefinite to a definite thought. We saw from our example of an approaching horseman that we identify him with a case of something or

other, of distance, of figure, of moving, of cause, of approaching, of cantering, of trooper, and the rest, so that the more definite our perception becomes, the more the classes of which he is a case. In this there is no thought of class, or of its definition. Nor does the first step beyond perceiving bring us to it. The thought of a class, such as we have in a definition, is preceded by a more elementary conception where we do not merely think the case and so perceive it, but think of it as a case, and so conceive it. XIII. 7.

Perception is always of individual objects; conception may either be of general and abstract, or of individual objects. The individual conceptions which you and I make, usually take for granted certain general conceptions which we have previously made. But there is also individual conception before there is any general conception; and in it we find the point of departure from perception. It is impossible with any certainty to tell the time when the new direction begins. A child's first naming of persons and things is more or less an emotional expression on seeing them, and no more conceptual than its earlier inarticulate excitement. From being emotional the expression may grow habitual, and so come to be used as a sign; and still it may not be the sign of a concept; it may have only the perceptual reading that we give to the whining of a dog at the door, for he has learnt the virtue of his voice in that very way. Hence it is hardly criterion enough that the child appears to use words or other signs with intent, but, first, that the intent is to express or convey a thought. And, secondly, even this has to be qualified by saying that the thought must be conceptual; for there is an imitative use of words, and there is a mere pride and pleasure in speaking them, that are easily deceptive. On the other hand, a child must begin to think about things long before there is proper evidence of it, and it is fair enough to read more into its absorption with things than we should do if its mind had a different future.

As before, the difficulty of dating is not to be deplored; it is to be expected if the new is rooted in the old. And, of course, the date of the first conceptual thoughts does not concern us. What we have to consider is, first, their

XIII. 7. content when they do arrive, and, secondly, the motive that induces them.

Of the motive I shall speak in a little; but now to complete what I have said about the first. The beginning of conceiving is when we begin to take to pieces the system or organised group of attributes which we know in perceiving a thing. We may have little conscious intention, but we always make the analysis in order to grasp the thing as a system of attributes, and the attributes as in connection. The occasion is offered when a familiar thing presents itself in an aspect unexpected at the moment. The mere shock of surprise, the curiosity, and the watching or the movement in order to observe better, are only perceptual, unless our surprise is that the thing should have such a property. If conceptual the quest is not expressed in the question, What is this? but in the further question, What kind of thing does this? Instead of merely accepting the fact so that it is less unexpected in the time to come, there begins a thought about the connection, which at first is only a thought of the thing as possessing this quality, or of the quality as belonging to this thing. There is not merely a putting of things or qualities together, so that from the one there is an expectation of the other. The thought is now concerned with the fact of their belonging to one another.

Our perception of relations begins to be a conception of them in the same way. We saw that spatial or temporal relations are perceived as qualities of a group of things, not otherwise than we perceive the size of a single thing, the duration of a single event, or the identity of the same person from day to day. They begin to be conceived when the single thing or the group is so analysed that they are thought about as relations, that is to say, as connections. We depart from the mere perception of space, time, and quantity when we can think about extension, duration, and units, so that we are in a position to put questions like how far, how long, how many? Again, when the similarity or the difference of two things, or of the same thing at different times, is not merely perceived, but is the object of interest, then we begin to conceive these relations too.

And when the grounds of our expectations not only give us expectation, but are thought of as the grounds, we pass from perceiving to conceiving causal relations; and with that from perceiving to all thinking. XIII. 7.

§ 8. The departure from perception appearing so little abrupt, it might seem that the higher animals may go some little way at least in the new direction. But, as I have said, we have no proper evidence of conceiving till it has gone a good way, for its value is not evident at the start. Once evident it is hard to see why the advantage cannot be pursued, and the power of thinking developed. It is easy enough to see that the power to think may be there and fail to come on, for little thinking easily satisfies ourselves. But it is not easy to see why, if it is there, no means of instruction or discipline can bring it on. If an animal does not measure, nor otherwise bring things together in order to compare them, it is because the need of doing so is not felt. And if we cannot teach the need, it is because we have not an earlier conception to work from. Surprising though it may seem, it is harder to draw a line anywhere above our point of departure from perception than at it; and, as the deepest line is certainly drawn between brute and human intelligence, it is as easy to deny as to assert that animals reach the conceptual level at all, though the ascent to it is so gradual. It is possible that they never take an interest in the connections of things, never feel the need nor seek the satisfaction of grasping them.

To know things by thinking about them is so easy a matter with us that it is not only in marvellous tales of animals, but in their everyday life that we read their thoughts as conceptual. When a dog seeks his master in various directions, down one street, then back again and down another, till he strikes the trail, we do not merely tend to read into his mind that model or image of his master of which I spoke; we still more readily equip him with the intention of trying one street after another, and at least of thinking as he turns back, Not here, and so, the more likely, there. But "there is nothing to show that he ever has before him more than one idea at a single time.

XIII. 8. One suggestion follows and drives out another, but different suggestions are not held together. And we should remember that the retention of an idea, which, by being defined, forms the basis for a further positive advance, is a very late acquisition of the mind."[1] It is with animals as very often with children: they come by rote to a result that you think they are reaching by reason, that is to say, by seeking the connections. And if so simple a piece of reasoning may be denied to animals, and no teaching can give it them, it is hard to keep for them the power of making judgments, and even of forming individual conceptions. For the essential motive in both is their use in explicit inference. The mind is not built up like the familiar text-books of logic, dealing first with words or concepts, then with statements or judgments, and then with inference. In the mind these grow explicit together. And it actually agrees better with the popular view to say that animals have no conceptual knowledge of things, than to draw the line higher up, allowing them notions and judgments, and only stopping short at explicit inference. For people readily agree that the notions and the inferences they ascribe to animals are both equally vague, and this is within reach of saying that they are perceptual, seeing they do not feel at all vague to the animals themselves.

At the same time it is to be understood that the line we have drawn between perceiving and conceiving is drawn between levels of intelligence, and that we should take it as we have defined it, whether animals cross it or not.[2]

What is it that induces us to take the step is the question how we come from a perceptual to a conceptual interest in things. And we are limited to the question how the transition from the old to the new interest takes place in those who can make it.

We have seen the rise of interest at the lower levels to be a gradual emancipation from merely organic appetite.

[1] Bradley, *Principles of Logic*, p. 462.

[2] The question of the transition from perceiving to conceiving has been confused by its connection with that about the intelligence of animals. There have, however, been two other sources of confusion about which it is far more necessary to be clear. They are explained in Note B at the end of this lecture.

The special senses take an interest of their own, intensest where they serve an organic appetite, but they also give pleasure by their mere exercise. And objects that have little interest of their own become interesting through the meaning or expectation with which we learn to qualify them. When the expectation is challenged or is doubtful, it becomes a curiosity that is resolved by further examination. But it only becomes a conceptual curiosity when it begins to be an interest in the system of things. It is not enough that the real object be observed; the object as observed must raise a new question which requires reflection on it.[1] XIII. 8.

§ 9. The motive to this further development is still its advantage. As perceiving economises the trouble and risk of actual sensation, and imagining economises perception, bringing the past and the distant to mind, so conception economises them all; it makes predictions or expectations that are not possible except by thinking about the connections in what we perceive. But again, as before, the advantage is no sudden revelation. Thinking is a task; its advantage has to be learnt; it can only be learnt in the exercise; and it does not become spontaneous, does not furnish its own occasions, till it is already well developed. Nothing is easier than to rest satisfied with a little of it. We have at first to be driven to it and kept at it, and we continue, as a rule, to think about things no further than thinking about them has become habitual.[2] As inventions are simple after they are made, so a multitude of problems, once they are pointed out, appear to have been always staring us in the face and calling us to question. But they have to be pointed out. Let us examine this obtuseness more nearly.

All power of intelligence, from the lowest to the highest, acts only when occasion offers, an occasion that is a stimulus, and challenges a reply. The challenge may come from within, as when doubt and difficulty disturb our satisfaction, and there is something of a civil war in the state of our knowledge. But primitive or uneducated minds depend on

[1] It is essential to distinguish between reflection on the perceptual object and reflection on the mental act. See Note B.

[2] "I am inclined to hold that man really thinks very little and very seldom" (Wundt, *Human and Animal Psychology*, p. 363).

XIII. 9. external occasions for their stirring, and these bring no stimulus nor challenge to them beyond what is met by perceiving, and by the working solutions of common sense. So habitual can this complacency become that not only individuals, but whole communities, tend to resent every effort to disturb it. For, though our perpetual beliefs may be shocked in various degrees according to their structure, they may recover and incorporate the new knowledge without any reflection on them; there may be no thought of the structure of things on which our beliefs are built, far less a thought of the structure of the beliefs themselves. Most of us are satisfied to think about things no further than they are perceived, doing little more than turning the implicit thought of their structure into the explicit one that is involved in speaking about them. And we do not go the length of thinking about the more general parts of their structure, *e.g.* the relation of thing and quality, or of cause and effect, because we meet little to challenge us in respect of them beyond the occasional suggestion of a ghost or a miracle. A working system for practical use is all that we want. The system of common sense is enough to satisfy us, and we should be satisfied with a great deal less but for our association with one another. The impulse to think grows only with the thinking, and, when we have little knowledge to disturb, there is little disturbance of a knowing kind. It is those who understand most who find most left to understand, but the stone age lasted long.

Hence if, in pursuit of the primitive motive to think, we ask to what a human mind would grow if it had no communication with others, and never saw their handiwork, it is possible to reply that it might be satisfied with mere perceiving, and never grow to thinking at all. And doubtless language, however necessary to individual thinking, would never have developed but for the sake of communication. Both in the individual and in the race the challenge to think has been social. But there has been a challenge only because it could be met; the occasion, however stimulating and compelling, does not, of course, create the desire to respond, or the power.

And so to conclude. We account, of course, for the

developing power to think as the response of the power to think which we already possess. It is a power that we have realised in a body or system of knowledge, and, when this is challenged at any point, there is a disturbance of our satisfaction, which rights itself by some degree of development in the system. Similarly, when there is yet no conceptual system of knowledge to develop, the new growth must come by a disturbance of the implicit or perceptual system. The disturbance must prevent satisfaction with the old way, and require not merely a knowledge according to the system of things, but some knowledge of their system. Modestly as the knowledge begins, there is now an interest in an aspect that is not a sensory aspect, and that before had no interest. XIII. 9.

§ 10. I may now bring together the words that denote the species of thought at the three levels of intelligence. Like the generic word, they may denote the whole thought, or only the object as it is thought (iii. 4). As the whole thought is an act or process, it is described by verbs; and, following others, I have used as the generic term the expression, 'I think an object,' though it is unusual. The gerund is usually confined to thought at the conceptual grade, where, namely, we 'think about' things, or think explicit judgments, such as are expressed by noun clauses. For this reason there is no confusion in our confining the word 'thinking' to the conceptual grade; and we need it, because the words conceiving, understanding, and reasoning have usually a specific reference.

When we name our thoughts by substantives, it depends on the context whether we refer to the whole thought or to the object as we have thought it. Technical writers make a difference where the words permit, using perception, imagination, and conception for the whole thought, while percept, image, and concept denote the object as it is thought. And the word idea, having no verb, refers always to the object as it is thought. But there is no such convenient arrangement with the word sensation, which is used sometimes for the whole thought and sometimes for the sensory object, as well as for mere sensation.

Idea, image, and concept are the most general of the

XIII. 10. specific names for the thoughts that are formed at the highest grade of intelligence. Their best and usual arrangement is that 'idea' should denote every thought beyond merely sensory and perceptual thoughts, and that 'image' and 'concept' should denote its species. We use it when we do not specify—as we seldom need to do—whether our thought is an image with or without a concept, or a concept with or without an image. An image is the thought of a sensory or a perceptual object in the absence of sensation from it. A concept is the meaning of an image; it is the thought of whatever the image is taken to represent. It may represent an individual, a general, or an abstract object; and then the concept is called individual, general, or abstract. But an image is not necessary in order to have a concept (xv. 11), any more than a concept is necessary in order to have an image. The use of adjectives with 'idea' and 'image' requires a note to itself.

NOTE A

The ambiguous use of the terms abstract and concrete, general and particular ideas and images

They are used to refer sometimes to ideas as felt, sometimes, as in logic, without reference to their being felt. In the latter case there can be no ambiguity, for then we always mean by abstract idea, the idea of an abstract object (*e.g.* length); by concrete idea, the idea of a concrete object (*e.g.* a wall); by general idea, the idea of a general object (*e.g.* any wall); and by particular idea, the idea of a particular object (*e.g.* some particular wall). In this use of the adjectives there is reference neither to the way in which ideas are thought, nor to the means by which they are thought. Let us introduce the way and the means; and, first (1) the means, for (2) the way makes no difference.

(1) In thinking of triangles I may, to help me, draw one, or I may imagine one, or I may be satisfied with a word, or I may not require even that (xv. 11). Of these four alternatives the first and the last offer no question; but we have to consider the meaning of our adjectives when applied in the other two cases, viz. to images and to words. Applied to words, there is, again, no ambiguity; for when we call words abstract or concrete, and general or singular, we refer entirely to their meaning, saying nothing about how the words are thought. Abstract name is simply an elliptical expression for name of an abstract object; and so the rest. And in this sense

we may apply the adjectives to images. No matter whether my image of a wall is schematic or impressionist, or full of detail, it is an abstract image if I mean it to represent not a wall, but strength, or length, or resistance; it is a concrete image if I mean it to represent any wall; and a particular image if I mean it to represent a particular wall. This application of the adjectives to images—the application that they always have to names—may be distinguished as the elliptical use; an abstract image is the image of an abstract object.

But often the adjectives are applied to an image in two senses in which we do not apply them to a name. (α) First, they are applied to an image when there is no reference to its function as an image, the function of representing. But this is quite in error. For when an image loses its meaning, so that the image is thought without thought of it as an image, the adjectives have no application to it at all: we might as well speak of an abstract whistle, or a generic yellow, and try to draw a triangle which should be neither equilateral, isosceles, scalene, nor of any particular height. (β) But with reference to its meaning the adjectives are often used to describe the image itself; they describe the image on account of its meaning. Whether the object that it means is abstract or concrete, general or particular, the image of it may be either schematic or impressionist, and then it is often called abstract. This is not a good use of the word, for in the same sense we should speak of an actual sketch or outline as an abstract picture, and we never do. Nor do we ever say that the opposite of such an image is concrete; we say that it is full of detail. The other pair of adjectives are frequently applied to images in this sense. Generic or general image is made to denote not merely the image of a class, but also a certain kind of image frequently employed for this purpose. While any sort of image may be employed, the usual image employed is one that emphasises the common factor of the group that is meant, like a photograph in which all the members of a family are represented by a single face. If we do not call this photograph generic or general, but compound or composite, it is not well to call images generic or general. And perhaps no one would have done so but for the error of supposing that the meaning of an image is a part of it.

Obviously, the safe thing is to apply the four adjectives to images as we apply them to words, without thought of describing the images themselves; and to employ other adjectives when we wish to describe the images. But the essential thing is that the image is always one thing (§ 6), as the sound of a word is, or the sight of a picture; and that its meaning, like theirs, whether abstract or concrete, general or particular, is another matter.

(2) But the meaning, too, is felt: there is thought not merely

of the image, but of the image as representing. This part of the thought is not a part of the image, nor is it another image, nor a mass of images. The thought of the image as representative is a belief or expectation; and, if we seek to analyse it into sensations, it is a belief, and not a picture, that has to be analysed, as we saw in regard to the sense of reality (x.). Even when the image means an individual object, the meaning is more than the image. So is it, indeed, when the image means another image, as when I run through in my head the barest outline of an air or any movement, to see if I know it, and then go through it as fully as I meant it. For the second time would be foolish if I really did it the first time. But certainly, if the object meant is either abstract or general, *e.g.* length or wall, it would be absurd to suppose that the meaning is another image, or a multitude of them. It is a conceptual object, and it may be thought without the help of an image. In lecture xv. it will be found that words are enough for the purpose, that they are often better than sample-images, and that we come to form and handle abstract and general ideas without either word or image to hold them by. Hence, if we use the four adjectives in speaking not of the means but of the meaning, it makes no difference in what way the meaning is thought, and it does not matter whether we are speaking of the meaning as felt by some one, or without reference to its being felt. In every case by an abstract idea is meant an idea of an abstract object.

There is thus a single unambiguous use of the adjectives, but, of course, the length of this note is not merely to say so.

NOTE B

The confusion about the transition (p. 312)

The two sources of confusion referred to are: one, the failure to distinguish within a thought between the thinking and what is thought; the other, the failure to distinguish between the thought as a fact or event, and as a function yielding knowledge.

(1) The latter distinction gives rise to two forms of psychology, one of which deals with any and every experience as a complex of elements, and professes not to deal with the experience as an exercise of functions. It deals with such matters as we have dealt with, *e.g.* perceiving and conceiving, believing and expecting, interest and attention, but not as such, not as meant by these words, not as the functions of our mental life whereby it thrives in the world. They are treated as merely states of mind, which may be analysed into a mass of elements 'fused' or simply 'colligated' together. "We are often told that our treatment of feeling and emotion, of reasoning, of the self, is inadequate. The answer is . . . protoplasm

consists of carbon, oxygen, nitrogen, and hydrogen, but this statement would prove exceedingly disappointing to one who had thought to be informed of the phenomena of contractility and metabolism, respiration and reproduction" (Titchener, *Philosophical Review*, vii. p. 449). "There is nothing more absurd than to blame the psychologist because his account of the will does not do justice to the whole reality of it. . . . It is not wiser than to cast up against the physicist that his moving atoms do not represent the physical world because they have no colour, and sound, and smell" (Münsterberg, *Psychology and Life*, p. 33). From this point of view a conceptual experience can only be a greater complication of the same kind of elements that are present in perceiving, anything apparently new being ascribed to a new fusion among them. And it also follows, of course, that there is nothing in the elements to account for the fusion till it has taken place. We considered (ii. 2) the claim of this procedure to perform for experience the service that physics and chemistry perform for physical things. But the greater source of confusion and dispute about 'sensationism' or 'associationism' has been the failure to define its province. The confusion has been the more persistent owing to the view of the opponents of associationism that the combination of elements in perception is due to association, whereas the combination in conception is due in part to association, but in part to reasoning, thinking, organising. As if association and organisation were alternative notions, and as if their union were by addition. To organise is to associate, and organisation is felt as early as the first conscious belief or expectation.

(2) The second source of confusion is of another sort: it is the failure to distinguish within a thought between the thinking and what is thought. As explained in the text, the transition from perceiving to conceiving is by reflection on what is perceived. But this is not at all to reflect on the process of perceiving, or on the fact that I am perceiving, or on anything but the object in which I am interested. The confusion is best seen in the exposition of Romanes, who has written more fully than any one on the transition. He makes reflection to be the difference between the percept (or recept) and the concept, and also to be the difference between brute and human minds; but he sees no other objects of reflection than such as we have in introspection and self-consciousness, and indeed he uses the three words as synonymous. A water-fowl, he thinks, perceives the earth as solid, and water as fluid, exactly like a man; the difference is that the man is able to turn round on his perception of them and "cognise them as ideas," and then, and only then, to give them names properly so called. "In virtue of this act of cognition whereby he assigns a name to an idea known as such, he has created for himself . . . a priceless possession: he has

found a concept" (*Mental Evolution of Man*, p. 75). What keeps a child of two below the conceptual level of intelligence, though it can speak very well to others, is that it "is no more able than the animal designedly to make to its own mind the statement which it makes to another" (p. 204). But surely it cannot but let itself know what it designedly says to others; and though "the mind cannot state to itself a truth as true till it is able to be conscious of itself as an object of thought" (p. 194), why should it not state a truth as true without having to think of itself at all? The beginning of conception, he thinks, is this. Children and infants, when they perceive, have in their minds "a world of images standing as signs for outward objects" (pp. 196, 200). They cannot attend to the images, but only to the objects, a curious inability if the images are objects in their minds and the real objects are not. Later, however, they come to attend to the images as images, and this is reflection and the beginning of conception proper. Reflection would thus appear to be a mirroring of the images, as the images are a mirroring of the external objects. But a mirror to the inner world would be even more useless than we found it to be for the outer one.

It is not, however, about the *process* of reflection that confusion is apt to persist, for the metaphor is obvious. It is about the *object* on which we reflect when we pass from perceiving to conceiving. "The power to think at all is the power which is given by introspective reflection in the light of self-consciousness" (p. 175). And Prof. Lloyd Morgan, who has done so much to further and improve upon the work of Romanes, while he realises the problem apart from such metaphors, also takes the view that conception, "the perception of relations," which differentiates men from animals, is due to introspection. The infant, like the animal, only "senses" relations, has a "subconscious" or "marginal consciousness" of them. "The subconscious awareness of relations has its origin in the transitions of consciousness from one focal state to another," that is, from observing one external object to observing another (*Comparative Psychology*, p. 225). If that were the case, then, of course "it is clear that it is only by looking back on the past course of the psychical wave that we can definitely perceive the relationship that was previously only sensed. In other words, the perception of a relation (that is to say, the making of a relation focal) involves introspection, which is also retrospection or reflection" (p. 226).

But that there is an error here is apparent, for this is the very course that is required of one who would become psychologist, and turn from observing physical to observing mental processes. To quote an early page from the same book: "It is only by a process of introspection, or looking within at the workings of our own consciousness, that we can gain any direct knowledge of psychical processes. But all such introspection is also retrospection. We cannot

examine the psychical wave as it passes; we can only endeavour to focus it, or its constituent parts, in the mental vision, as it was when it was passing" (p. 20). The error is due to ignoring the distinction between perceiving and the object as it is perceived; or, as the book has it, between consciousness of the object and the object in consciousness (p. 312). Reflecting on the former makes the psychologist, and this alone is introspection, or self-reflection. The reflection required for the far earlier transition from perceiving things to conceiving them, from "sensing" to "perceiving" relations, from implicit to explicit thought of them, is not a reflection on the state of mind, the "consciousness of the object," but on the object as perceived, the "object in consciousness."

When taking the general analysis of experience, we saw the difference between (*a*) a real object, and (*bc*) a thought of it, and, in the thought, between process and product, namely, between (*b*) the thinking, and (*c*) the object as it is thought. It is to a certain part of (*c*), to the relations in (*a*) as merely perceived, that we attend when we begin to form conceptions; only much later, when we begin to psychologise, do we think about (*b*), namely, about the "transitions of consciousness," and about "the past course of the psychical wave."

LECTURE XIV

CONCEPTUAL INTELLIGENCE (ii.)

XIV. 1. § 1. LET us now ask the same questions as at the lower level about the knowledge that is reached by conceiving or thinking, and about its development in individual minds. We shall take the two together under the three questions, viz. (1) about the nature of the *problems*, (2) about the *grounds* that are taken in solving them, and (3) about the *solutions*. In answer to the last we shall be occupied mainly with the working of the individual mind. But in the present lecture, dealing with the other questions, we shall be occupied mainly with the organisation and development of knowledge, and only to a small extent with the growth of individual intelligence by means of it,—by means, namely, of the instruction that knowledge affords, and the mental discipline or exercise that it demands.

(1) When children reach a school age they are already in possession of a mass of perceptual knowledge, much of it worked over into simple conceptions in the manner that we saw in last lecture. By the mass, stock, or store of one's knowledge, is simply meant all that one can think. None of it is thought except as developing our thought on an occasion, and it is in this way that it grows in amount and organisation. Every question that a teacher asks, every call to think about absent things or present examples, is a stimulus to greater definiteness and coherence in the mass, by drawing attention to its connections. The loose empirical character of a child's thoughts are seen in its description of things by a catalogue of striking qualities and powers, and in its narration of events by 'and then,' 'and then,' 'and

then.' The system of its mass of thought becomes less empirical the closer and more definite the descriptions and narratives that are required. But the task is definitely undertaken only when the connections within the mass are separately developed, *e.g.* number, form, size, cause, and the classes of thing and attribute that are meant by the words of everyday speech. With this goes a gradual development of its power of taking interest, of putting questions, and of receiving explanations; and the power is always relative to the system which its knowledge of things has already assumed. All instruction, all explanation of the didactic sort, and all mental discipline deal directly with this developing system. XIV. 1.

Besides the didactic form of explanation there is the other form, which we may call real; and without prejudice, for didactic explanations are usually meant to convey those that are real. Didactic explanation concerns the growth of knowledge in individual minds; real explanation is indifferent to this, and concerns the growth of knowledge with reference to what has to be known. The two are frequently combined; but to explain a fact, and to explain it to some one, are different notions, and should always be distinguished.[1]

Every one sees the error of giving explanations without regard to the minds that are expected to receive them; here the didactic explanation is wanting, though it is intended. The reverse error is not so apparent, and yet an exclusive devotion to simplifying matters may be quite as harmful by committing it. There is the obvious case in all teaching by tips instead of by reasons, where there are reasons to be had; but there are less obvious cases where a path is made round a difficulty instead of over it. That, of course, is often the right way, but sometimes it is not; and always it is an error to suppose that it overcomes the difficulty that it avoids.

[1] "The true meaning of explanation," as Clifford said, is to "describe the unknown and unfamiliar as being made up of the known and familiar." But because he does not distinguish the two applications of his definition he proceeds: "It is an explanation of the moon's motion to say that she is a falling body, only she is going so fast and she is so far off that she falls quite round to the other side of the earth instead of hitting it, and so goes on for ever. But it is no explanation to say that a body falls because of gravitation." For "this attraction of two particles must always, I think, be less familiar than the original falling body" (*Lectures and Essays*, vol. i. pp. 147-149).

XIV. 1. Real explanation is not concerned with the development of knowledge in given minds, but simply with the development of knowledge. Like the didactic form it consists in simplifying or making plain, and it depends on the degree to which knowledge has already developed. But in it there is no difference between teacher to explain and pupil to learn. It is a continuous building of the body of knowledge. The workmen come and go, but the work of building goes on. We shall see its foundations when we consider our second question, viz. the grounds that are taken. But we need not first examine them in order to see the plan of the building, and the variety of parts on which the workmen have distributed themselves; we may begin with the variety of conceptual problems. Though we can have little understanding of their system without being expert in their work, the little may be clear enough, and give some volume to what we saw of the aims of knowledge when we considered the different explanations of the mind (ii. 1, 2).

As it is only with real explanations that we are now concerned, I shall omit the word real. The word explanation, meaning real explanation, is used sometimes in a special, and sometimes in a general sense. In the special sense it is contrasted with classification and description, and in the general sense it includes them.

As always, the result is a nominal confusion that appears like a real contradiction. It is said by one that science only classifies and describes, and does not explain: "The Darwinian theory of evolution is truly scientific for the very reason that it does not attempt to explain anything," and "physics and chemistry in their turn render nothing explicable."[1] Another, on the contrary, says that science does nothing but explain: "Science, in fact, has taken the conception of explanation from common life, doing nothing more than defining it, widening its scope, and making its conditions as stringent as possible. Even when it is asked, Why is it difficult to walk on ice? the answer, Because it is slippery, is an explanation, though not the best we can obtain."[2] And of other two writers who compare classifica-

[1] Pearson, *Grammar of Science*, chap. ix. § 11.
[2] Venn, *Empirical and Inductive Logic*, p. 493.

tion and explanation, one contrasts them, saying that modern science has made a revolution in knowledge by substituting explanation for classification, "by which antiquity was exclusively dominated"; and that "explanatory theories are averse both to using and looking for universal generic concepts, and to schemes of classification."[1] Whereas the other writer allies them: "It is the mark of a true generic classification that it proceeds from a generic explanation of the objects in question," *e.g.* the conic sections.[2] Contradictory as these statements appear, there is nothing in the intention of any of them that the authors of the others would reject. The best way in such a confusion is, as we saw, to take the generic meaning of the word and specify the cases, even if one of them is important enough to deserve the word for itself. XIV. 1.

And so, reading the four statements together, we get this summary result regarding the science of nature, which agrees, so far as it goes, with what we saw of the aim of scientific explanation in the second lecture: Science does not explain why things are as they are, but seeks only the most economical way of knowing them as they are; every statement that makes a fact less isolated by connecting it with others does this in some degree; but the aim is not the primitive and the popular one which is satisfied with connections in the abstract, that is to say, with definitions of classes and with the statement of generic laws; for the aim is to reduce things and events not in order to find something more real than themselves, but in order to define them most completely as factors of a system, the system of nature.

§ 2. All conceiving being an explicit thought of connections, every case of it is a case of explanation in the general sense. But it is the more necessary to differentiate among the forms of explanation. This is done in three ways: (*a*) by distinguishing description and classification from explanation in especial; (*b*) by distinguishing each of the three as either empirical or scientific; (*c*) by distinguishing them according to their subject-matter.

(*a*) The distinction between description and classification is too obvious to trouble about, and we may include both as

[1] Lotze, *Logic*, § 145. [2] Wundt, *Logik*, ii. (1), p. 58.

XIV. 2. description ; for all words classify, and a classification is just a systematic description in shorthand. To distinguish them from explanation in especial we have only to follow out the popular way. We are said to describe when we state what we merely observe, and to explain when we state what we cannot merely observe, but have to understand. The difference, indeed, is relative and not absolute ; for what needs a mere observing from one person may be unintelligible to another, who is not yet capable of the requisite conceptual perceiving. Similarly, the explanation of one age or epoch is description to the next, when the explanation comes to be explained ; for the old is then regarded as presenting the data for the new explanation. The old is still, however, an explanation with reference to the cruder data, because it states a ground for them, and so argues a further necessity than is contained in the cruder description. The dodging tides on our coast, as described by a fisherman, are first explained by a chart of their periods. The chart is in turn only a description of the data, when the question is of their causes. Part of the cause being found in the positions of the moon, this explanation becomes in turn a description, as if on a larger chart, when the question is to connect it with the explanation of other movements ; then the law of gravitation is the explanation. Finally, this law becomes a description, as if on a chart large enough to include a property of all matter, when the question is to connect gravity with other properties of material systems, *e.g.* elasticity.

That is the specific difference between description and explanation. Every problem has certain data or facts, and a certain question about them ; description refers to the facts, explanation to the question. Or, the problem being answered, that part is description which does not care to specify grounds of connection, stating no reason of any kind ; and that part is explanation which does. In this way we distinguish between the descriptive and the explanatory parts of science, and every science has both. And as certain sciences are essentially explanatory, their descriptive parts being confined to defining and classifying their data as a preliminary to explanation, we can also make

a convenient distinction between descriptive and explanatory sciences. XIV. 2.

(*b*) Secondly, the difference between scientific and empirical. A description and a classification are scientific or empirical according as they do or do not state their matter in the manner, and with the exactness, required for its explanation. And an explanation is empirical or scientific according to the kind of connection that it takes for its ground. Any scientific explanation becomes relatively empirical when a more systematic ground has been discovered. The most empirical explanation of any fact is that hitherto it has happened so ; *e.g.* this ice is cold because ice is always cold. The higher degrees of explanation, and the nature of a complete explanation, we shall see when we look at the grounds. It will then appear that the degrees represent degrees of necessity and of reason in our knowledge ; and thus the three notions in familiar contrast with empirical knowledge really coincide, viz. scientific, necessary, and rational knowledge.

(*c*) Thirdly, we distinguish description, classification, and explanation according to their subject-matter ; each may be mathematical, historical, biological, and so forth. Everything real is dealt with by many sciences, each raising its own class of problem, and marking out a field for itself from its distinctive point of view. The purpose of the classification of the sciences is to set out the organisation or system in this division of labour. For our purpose it is enough to mark the great divisions and connections in the problem of knowledge.[1]

§ 3. The chief division is into A. Physical, and B. Non-physical Sciences. The latter are sometimes called the human, sometimes the mental sciences, after their most prominent parts.

A. The former—the sciences of nature—are divided into I. the Formal or Mathematical, and II. the Material or Real Sciences.

I. Of the Formal sciences of nature there are three

[1] A history and summary of the literature occupies the greater part of Flint's *Philosophy as Scientia Scientiarum, and History of Classifications of the Sciences* (1904).

XIV. 3. groups, viz. those dealing with quantity, those with quantity and space, and those with quantity, space, and time. The most general deals with quantity in general, viz. with the connection of discrete quantities in Algebra, including number in Arithmetic, and with quantities as varying continuously with one another in the Theory of Functions, including the Differential and the Integral Calculus. Geometry investigates the connections among positions and forms in space, and, including Trigonometry and Mensuration, it deals with all spatial measurements. No corresponding science is required for time, but, when we add time to quantity and space, we have the factors for determining motion as continuous change of position. The science which deals with motion to this extent is Kinematics, or the pure geometry of motion. The extent is purely formal, so that kinematics applies to whatever change in the form or the state of a body can be read as change in the relative position of its elements. These sciences of pure mathematics are all explanatory, dealing with mutually necessary, and so demonstrable, truths. To them should really be added Rational Mechanics (see below).

II. But from this point onwards the sciences of nature are called Real, because we pass in them to what occupies space and time. They are distinguished into two groups, which, following our definition, we may call (1) the Explanatory and (2) the Descriptive sciences. The former are the sciences of physical processes, the latter the sciences of physical things.

(1) The explanatory group may be comprehensively called General Physics, and divided into (*a*) the General Physics of Matter, and (*b*) the General Physics of the Æther.

(*a*) As concerned with matter it is divided into Mechanics, Physics, and Chemistry, and, as explanatory, in that order. Mechanics is the general science of the group. It deals with the conditions of equilibrium (statics) and of motion (dynamics) in material systems solid, liquid, and gaseous. In the most general and fundamental form the only property of matter introduced is mass, so that instead of the geometry of moving points (kinematics) there is now a geometry of masses determining the position of one

another. So defined a material system is studied as simply a configuration of positions occupied by masses, the configuration being maintained or altered by their mutual action. To this extent it is a formal and purely explanatory science like kinematics. "It may be regarded as a purely ideal system, and its validity is unaffected by the question whether it has or has not any relation to the observed motions of natural bodies. The subject, so treated, is known as Rational Mechanics."[1] But by thus adding to space and time the two factors of mass and energy, and by defining them as constant, it has this fundamental importance that there is still in it a common scheme for the explanation and measurement of all the variety and change of form and state that we find in any actual material system. "The practical interest of the science arises from the fact that real bodies *do* behave in a manner strikingly analogous to that in which we have proved that the mass-systems of abstract dynamics must behave."[2] It is the aim of physics to read the other properties of matter besides mass, and the other forms of energy besides motion and position, in terms of these as defined in the formal science, so that they may have a common measure, and the difference in quality may be read as differences of a common quantity. In this consists their explanation, and the degree of it is the degree of their explanation. One great part of the task of chemistry is the resolution of the differences of things into differences of molecule, and thence into differences of atom. XIV. 3.

(*b*) The General Physics of the Æther, or the Theory of Radiation, gives the scheme of explanation for the facts that are studied in the special sciences of Light, Heat, Electricity, and Magnetism. And there remain the facts and the problem of the relation of the chemical atom to electrons, and, generally, of the material to the electrical systems of fact.

(2) Compared with the explanatory physical sciences the rest of the real sciences of nature may be called Descriptive, and may also be classed as dealing with objects rather than with processes. So far as they are explanatory,

[1] Love, *Theoretical Mechanics*, § 84.
[2] Clerk Maxwell, *Scientific Papers*, ii. p. 781.

XIV. 3. they may all be regarded as applied physics and chemistry. The degree of explanation varies very greatly; we saw how it depends on the distance of the matter from reduction to the common denominator. Among the natural sciences of life we saw that physiology has another aim in its explanation, that of purpose and function. The practical sciences are also formed from this point of view, and are classed according to their purposes, *e.g.* agriculture, engineering, therapeutics. Finally, there is the difference between a treatment of objects as they exist, and a treatment of their history. For the latter there is a general science comprising theories of evolution, and including parts with specific names, like palæontology; but having pointed this out we need not make a separate classification from this aspect. Omitting it and the practical sciences, we have the simple arrangement that Astronomy is concerned with objects as members of the physical universe, the others with objects on the earth. These are inorganic or organic. The former occupy Geography, Geology, and Mineralogy; the latter Biology. Biology is divided from two points of view: from one into Botany and Zoology, and from the other into Anatomy and Physiology (with pathology). The specific names are innumerable, but they are specific under one or other of those heads, sometimes under more than one, *e.g.* histology, embryology, bacteriology. Mental life is best excluded from biology (ii. 9); but, of course, if it has any convenience, the term may be used to include the mental, as well as the physical groups of fact. The connection of the two groups we saw in the first lecture.

B. The Human or Mental Sciences, under the name of Humanistic Studies, are divided by writers on education into formal and real, the formal study being given as language, and the real as literature having a general human interest, *e.g.* literature proper, and history. This distinction between formal and real has an obvious, but a superficial likeness to the corresponding distinction in the sciences of nature, and we must look deeper.

If we ask what are the formal sciences of the mind corresponding to the formal sciences of nature, the answer is this. Space and motion are not aspects of mental, when

distinguished from physical facts; mental facts have no common constant to which their variety may be reduced, and in terms of which they may be measured and so explained; and no mental fact, no fact of experience or of mental faculty, can be completely determined in mental terms. Hence the ideal of explanation throughout the physical sciences, in view of which they are classified and called formal and explanatory, does not hold of the direct account of the mind. XIV. 3.

Yet neither psychology nor any of the mental sciences is merely descriptive; they do not merely state how their data are arranged as events in time; they deal with grounds or conditions. And these are of two kinds: the conditions of existence, and the conditions of value. In the sciences of nature the conditions of existence are the main concern. The question of value is present, as I have said, in physiology, and in all the sciences called practical; but, as all value is ultimately in a mental interest, the general sciences of value, viz. logic, æsthetic, and ethics, are placed in the mental group. They are the Formal as distinguished from the Real sciences in the group. I say *in*, rather than *of* the group, for they have not at all the same relation to the real sciences of the group, as the mathematical sciences have to the real sciences of nature.

I. As questions of value presuppose a knowledge of the material in which the values are realised or realisable, the Real part of the mental group comes first. It is divisible into (1) the sciences of mental processes, and (2) the sciences of mental products. (1) The former are comprised within the general heading of Psychology. (2) The latter have no common name, but their division is naturally according to the products. These all involve a physical material, and so they are spoken of not as mental, but as human products. The most general product is language, of which the science is Philology. The others are grouped according to the three great mental functions: knowing, feeling, and willing. They deal with what man has achieved (*a*) in knowledge, (*b*) in art, and (*c*) in practical life. As sciences of what has already been realised they are, in the first place, descriptive and historical; but they also, of course, include an account

XIV. 3. of the conditions on which the results have been realised, and so far they are explanatory. (*a*) The group which deals with knowledge is divided as we are now dividing it, and (*b*) the group which deals with art is divided according to the arts, and includes literature. (*c*) The sciences of the third group, that dealing with practical life, may be collected, if necessary, under the conglomerate name of Sociology; but the branches are easily distinguished as dealing with economic, with moral, with political, and other social conditions of life, as these actually exist, or have existed.

II. The group of Formal Sciences has the same threefold division according to the three functions of experience, and the corresponding products. (*a*) Logic deals with truth, *i.e.* with value or validity in knowledge. (*b*) Æsthetic with beauty, *i.e.* with value in objects for contemplation or absorption, and (*c*) Ethics with goodness and right, *i.e.* with value in practical life. Each has its particular applications: logic to the aims and methods of the sciences, æsthetic to those of the arts, and ethics to economics, politics, and jurisprudence, whenever there is a criticism, as well as an account, of existing conditions. All the sciences of the formal group are called normative, and this word is perhaps enough to distinguish them from the other formal sciences, viz. those of the mathematical group. For these deal with relations of quantity, space, and the rest as they are; but logic, æsthetic, and ethics deal with relations that ought to be, whether already existing or not. They not merely discover the conditions of truth, beauty, and right, but lay them down as laws to be realised. For this reason they are the formal sciences not of the mind as distinguished from nature, but of nature as well. The laws of logic are also laws of nature, and so are the laws of æsthetic and ethics, for they must all be realisable there.

Hence there is a final science, or group of sciences, called Philosophy, which deals with the ultimate grounds and extent of our knowledge in the Theory of Knowledge, or Epistemology, and with the nature of what is real in the Theory of Reality, or Metaphysics.

§ 4. (2) We pass from the problems of conceiving to the grounds on which they are solved. They are of two sorts:

one subjective, in which the claim is based on our individual experience, the other objective, appealing to the system of things. In considering them let us consider only our knowledge of nature, and we can afterwards (§ 6) include our whole knowledge. XIV. 4.

It is to subjective grounds that we appeal when we argue from the use of our senses, from the strength of our belief, or from its universal or very general acceptance. We are aware that these grounds are not fundamental, for they are not always to be had, and, when pressed, we base them on the system of things. Sometimes they are not even reliable. We often use our senses to corroborate the testimony of one another, but so we do in our dreams. Nor need it be true what every one believes; there was a time when every one thought the earth to be flat. And, finally, that may not be true which we feel we must believe. A biassed person is not well able to allow for his bias; illusions persist against our better judgments; and there are matters, *e.g.* the freedom of the will, about which people may feel equally bound to believe two contradictory doctrines, while yet they hold that truth is one. No matter how we differ about it, and even if we think it an inviolable secret, we hold that truth is one and the same for all. We regard our senses, the strength of our convictions, and universal assent as revealing truth, not as creating it. We have to conform to it, not it to us. Truth has objective, not subjective necessity. It is never merely what we feel bound to think, but what is bound to be.

But how do we know what is bound to be? What is the objective ground of belief?

§ 5. To know the truth is to be true to nature. Consequently, if we ask what is the ultimate ground and criterion of our knowledge of nature, the answer is, Nature itself. But to be used as a criterion, nature must be known; to test an opinion by the facts, one must know the facts. And we have just seen that our senses do not give us all the facts, and that what they appear to give has itself to be criticised. Even if our senses never distorted things, we are met by our old fact that they are not mirrors, and that we could not know them to be mirrors if they were. At the

XIV. 5. same time we know nothing about nature but through our senses. I am repeating this because it is necessary to see that all other ways are blind; otherwise you will feel strange in the only one that is open.

And yet we always use it in extremity. We fall back on the ultimate criterion every time that we wake from a dream. Things may have been so vivid in the dream that on waking we can hardly disbelieve them; or again, we may have no hesitation in rejecting them, however vivid, because they have been so absurd. In both events we apply simply this one test, viz. whether our dream-beliefs consist with the rest of our beliefs; and we infer that we have been dreaming because they do not. We do not doubt that an insane person has the visions, and hears the words, that he professes, but we do not hesitate to reject them, because they are inconsistent with the rest of our beliefs. So it is with every other belief that we reject, whether another's or an old one of our own; always our reason is that it is contradictory to something else that we believe. And if you ask the reason for preferring the latter, the answer is an extension of the same, viz. we keep what has the support of the rest of our beliefs. Whenever we doubt, there is competition between two beliefs, each claiming support for itself, and rejection of the other. But, as a rule, we are not in doubt, because the mutual dependence of our beliefs has a systematic character. Hence, as we saw in the case of perceptual beliefs, some are readily rejected, causing little disturbance; others less readily because they cannot be rejected alone, but drag others with them; and there are some which so involve the whole system that they cannot be rejected without the ruin of all knowledge or belief.

But, you may very well ask, have we not so far only subjective ground and criterion? We take and reject beliefs according as they are consistent with the system of beliefs that we happen to have formed, but what is the test of the system itself? How do we know that it is true to nature? The answer is not different from what we saw to be the warrant of perceptual belief, namely, it works. It is still a system of expectation, still expectation of sensations, and the test is whether the predictions can be made good.

Every belief that we have in the existence of present or absent objects or attributes is the assertion of conditions on which we have, or may have, sensation. And that we are having sensation and not dreaming is tested in the same way. Our system of beliefs about nature presents, as far as it can, the system of physical conditions on which we have sensation; and the system of physical conditions is nature. XIV. 5.

Because we know nature as a system, and only as a system, we can assert nothing to belong to it except as necessarily belonging to it. And we discover it to be an independent system, indifferent to our having sensation or other knowledge of it. Consequently our aim is to find the connections within the system, in order to make them the objective grounds of our belief. When they are fundamental we call them laws of nature, but so we may, however superficial they may be, provided, of course, they are the fact. For even to name a thing is to classify and so connect it; it is to place it under a set of natural laws, which are stated explicitly in the definition of the name. The difference between fact and law is really between particular and general fact. And laws are nothing in nature over and above the particular facts, which are metaphorically said to obey them.

Therefore if we brand some objective grounds of our knowledge as empirical, it is not because they need be less valid than those we honour with the names of scientific and rational. Neither is it because they are not universal; for every law is universal with respect to the cases of which it holds, and none is anything beyond them. Nor is it because they refer to a limited set of cases; for no law could well have wider scope than that all matter exists as things, that things have size, weight, can be moved, broken, and so forth. We call a law or a ground empirical with reference to the aim of knowledge. This, you remember, is always to specify, to connect, and so to systematise. Those grounds are especially called empirical which merely make explicit the system of laws that we learn in perceiving. Though they are laws of nature they are not known to be necessary. We have found them to be uniform; each gives an objective

XIV. 5. ground of expectation, but it is only a *ratio cognoscendi*, because we have found no ground for the uniformity, no *ratio essendi*. We know that crows are black, and green oranges sour, because they happen to have been so in our experience, and so far as we know; but we know nothing that would make exception to these laws impossible. Hence the laws are said to be empirical, and to afford only an empirical ground for any beliefs that are based on them; and we change or qualify them without difficulty, when we meet the exceptions.

We go from the empirical to the scientific point of view when we realise that all things, attributes, and events are completely determined apart from our way of knowing them, and when we seek to discover the conditions that determine them. But the complete *ratio essendi* or *fiendi* of any total fact is an endless problem; for nothing less than the whole system of nature is involved in the complete determination of any event. Hence that arrangement of the sciences which we have seen. When a science of nature, *e.g.* any of the mathematical sciences, takes a province abstract enough to have its conditions completely defined, the laws or facts may all be found as involving and determining one another. Unexpected discoveries are made in it, but nothing remains merely empirical, nothing isolated. And there can be no exceptions. Its laws, rules, formulæ are not merely time-saving discoveries that happen to work. They may be taught as empirical, but to the science itself they are not. Every science aims at passing from an empirical to such a rational connection of its data; and progress is a matter of degree. We know with increasing certainty that the sun will rise to-morrow, not because every day is adding to the empirical proof, for every day adds hardly anything to the chance, but because we are becoming better able to detect any change in the conditions on which the rise of the sun is known to depend.

The connection between the grounds that we use, subjective and objective, empirical and rational, will be understood if we think of nature as a geometrical figure, where every part and change determines and is determined by the rest. It is the independent system of the conditions on which we

have sensation, and so our sensations may be represented by points here and there on the figure. The problem for all our knowledge of nature is from the points to complete the figure. A great part of our effort is wasted, for there is no way except by trial and hypothesis; but every success defines in some degree the direction of further effort, specifies the problems, puts some hypothesis out of court, and makes all of them less wild. And in this way we may represent the task that is undertaken not only by the sciences but by every individual, however much or however little of nature he seeks to know. XIV. 5.

§ 6. When we ask what grounds we take in dealing with other objects than those of sense, the answer is to the same effect. Always there is an objective system independent of our ideas about it, to which they must be true. This is so even when it is our own minds that we seek to know, and so it is when we inquire about other minds, about historical facts, about human institutions, about ideal social relations, or about the world as a whole. Always we presume that the facts are fully determined apart from our opinions. Only on this presumption, indeed, can our ideas be true or false, or even probable or not. Whenever we rely on our memory, on the testimony of others, or on the mere strength of our convictions, it is in lieu of an objective criterion, and we have to find objective grounds for relying on them.

And not only must the object be independently determined if it is to be known; it must be known as thus determined. In order that we may know it not to be a piece of our own prejudice or other imagining, we must find it to be a part of the system of conditions which accounts for the course of our experience. It is in this way that we have to estimate even our own character and abilities, as it is in this way that we know and judge the character of other people, the constitution of our country, its banking system, its foreign policy, its future, and all the topics of the non-physical group of sciences. In order that our opinion about them may be true, they must all be determined apart from our opinion, and we must experience them at points enough.

A sceptical attitude is taken when it is thought that our

XIV. 6. experience does not give us points enough from which to draw a proper criterion. Then it is said, Every one to his own opinion about, for example, historical characters, about his own intelligence, about politics. There is no more mystery here than when we are sceptical about a forecast of rain. But there are cases where we are apt to suppose that no objective grounds can be known at all, that we can never have anything but our individual feeling to guide us, and can take no ground for belief, and for teaching, but authority. Every one, it is said, to his taste, every one to his conscience, every one to his religion. Yet these cases are not really exceptional, and a teacher must regard taste, duty, and religion as all capable of being convincingly taught. He has to observe, however, that they cannot be taught unless his pupils have the necessary experience; and within the school period of life this is far the more important consideration. Practice or discipline is therefore far more essential, as it is usually more neglected, than theory or instruction.

§ 7. (3) Having considered the problems and the grounds, we come to their solution. We have seen how complex the problems become, how the grounds on which they must be solved are systematic and cumulative, and so the third question appears infinitely more urgent than it did under perception, viz. How does my single present thought manage all that complexity in itself, and introduce its proper successor in a course of thought, till I am satisfied, and bring the course to an end?

As our sight of the advancing horseman gave us a final thought which assumed all we had learnt in the course of observing him, so our trains of thought about any problem, though they may last on and off for years, result in solutions that may be said to summarise the whole process. And as another, coming suddenly on our horseman, had pretty well the same perception of him as one who had seen him approach, so when we meet problems like those we have solved before, we have not to repeat old trains of thought; we see the solution with ever less pondering, and often at a glance. Hence there applies here all that I said about the structure of one's thoughts in perceiving; and, without repeating it, let us look, from the same three points of view,

at the far more highly developed structure of our thoughts in conceiving. We shall observe the function of what is taken for granted (*a*) in the single conception, (*b*) in the course of conception, and (*c*) in bringing the course to an end. XIV. 7.

(*a*) The first concerns our power of taking an interest in a point, of attending to it, and grasping it. We have had illustration enough in conceptual perceiving; and the grasp of any point, from the point of a joke to a poetic allusion, is obviously of the same sort. But two applications deserve a remark to themselves.

At the stage of mere perceiving one does not enter into the labours of another beyond what we found in perceptual imitation. But the whole advance of human knowledge depends on co-operation. Those who devote themselves in one direction rely not only on the work of one another, but more or less on the work of those who devote themselves in other directions; and every coming generation, if it is to advance, must enter into the thoughts of its predecessors with lessening trouble. But it is an error to suppose that we can appreciate, and use their results with less than their knowledge. They have pioneered and they save us their failures, but we can know their results only if we enter into the fulness of their thoughts. If we take their results on authority, if we simply take it for granted that they had grounds enough, we do not take their grounds for granted as they did, and consequently we do not think their results as they thought them. To realise the difference we have only to remember how the first announcement of a discovery affects different people, some with indifference, some with extravagance, and only those fruitfully for whom it brings into system a mass of knowledge already demanding, and so far pointing to a better connection.

Plain though the matter is, it presents a constant problem in education, and there are two ways of solving it badly. The problem is to bring pupils over the old course without needless delay, but so that they may arrive at thoughts with the same virile understanding as the pioneers who first made them. One error is a too early specialising; but the other is worse in this respect, that it is always tempting. No

XIV 7. complaint against education is more common than the want of general knowledge on the part of boys when they leave school; and there have been various devices to compel a reform. And it is not a bad notion that an intelligent youth should be able to read the newspapers intelligently. But the whole set of this complaint is towards confounding general intelligence with general information, and a general education with general knowledge. It is very well for knowledge to be wide, but the besetting temptation of modern teaching must be to sacrifice depth, and what used to be called the hardening of the mind. There are teachers who more than escape the temptation, who believe in the benefits of floundering, puzzlement, pioneering, and big dictionaries. Against them it has to be said that no making plain is in itself adverse to mental discipline. But things may be made plain in a manner that leaves discipline out of account, and then there is produced understanding without intelligence, and very likely information without proper understanding.

§ 8. The second remark about the grasp of conceptions is not at first so obvious, but it presents no difficulty if we recall what we found in the case of perception, and in the difference between imagining and thinking or conceiving. You have likely read that very large numbers present no definite idea to the mind, that atoms are inconceivably small, that we cannot conceive space, time, or number to be infinite or infinitely divisible, because it would take us an infinite time to make the idea, and that we cannot think contradictions like silent thunder or a round square. In all, the statement is true of imagining, but it is wrong with respect to thinking.

We have already seen that thinking is not a procession of images. Still, it might seem that thinking is limited by them, merely adding to images the thought of their connections. But on such a view there would need to be also another image for the connections, and then there would be nothing but image. If when thinking of triangles, or mankind, I must have a sample in my eye, and regard it as representing the rest, why must I not also have a picture of the rest in order to think that it represents them? The fact is that the more expert one becomes, the more one dispenses

with accessories. We shall see this when considering the use of internal speech. But the present point is simpler and preliminary, namely, that words can carry meaning without the need to picture it, even if it is a meaning that can be pictured. When I am about to go out, "if some one tells me it is raining, I do not need, in order to understand the words, to picture a sky overcast, drops of rain, and so forth. It is enough that consciously, or, in a way, half-consciously, I take my umbrella. . . . The word is simply there to perform the task that the sensation of the rain would perform if I had the sensation ; . . . it is enough that I react to the word as I should react to the sensation." [1] XIV. 8.

In this connection also there is an error in education. It is less prominent than its opposite—than the familiar error of expecting the young to learn definite conceptions in the absence of examples or illustrations. If a pupil cannot turn his conceptual thought into images well enough to give him adequate instances, it is the proof that his thoughts are meagre, or poorly organised, even when they are correct enough. Hence a teacher can hardly appeal too much to sense and imagination, no matter what he is teaching. But it is quite possible to rest there, and to omit the further step of securing a general conception that is clear and effective, though independent of the material by which it is learnt. It is not a step that can be taken by means of instruction, but only through mental discipline, and for that reason it is the more likely to be neglected. There is, however, another reason for neglecting it, due to the common notion that a general idea, so far as it is abstract, is not a clear idea. Perhaps few would say that 4 apples + 2 apples is a clearer notion than $4 + 2$, but many would say that a certain theorem in Euclid is clearer and more fruitful than $a^2 - b^2 = (a + b)(a - b)$, and that $4^2 - 2^2 = (4 + 2)(4 - 2)$ is clearer and more suggestive than either. It obviously depends on the grasp of different minds, and this on what they take for granted ; and it is equally obvious that the more abstract is always the better grasp, if it is adequately taken. When we deal with very large numbers or very abstract objects like rates, ratios, equity, or even the grammatical definition of a

[1] Paulhan, *Revue Philosophique*, xxi. p. 47.

XIV. 8. preposition, it is thought that the notions cannot be clear and full in their bare form, and so they are left embedded in illustrations. Indeed, the illustrations may be created for the purpose. Instead of 186,000 miles a second, one may say how often to gird the earth ; instead of putting the annual production of coal at about 800 million tons, it may be put into ton loads requiring fifteen times all the horses and mules in the world, one for each load, or it may be put into ten-ton loads in railway trucks standing eight deep round the middle of the earth. If the fact needs advertising, or one's attention needs a special arresting, such pictures have their use ; but their use is not, as is frequently said, to make ideas more definite, or to adapt them to the nature of human understanding. On the contrary, they are very trying if one already has all the enthusiasm for a fact that it deserves, and if the exact information is withheld when we want it, because of the error about what we can and what we cannot grasp. But the more serious error is not with particular, but with general abstractions ; it comes from failure to appreciate the importance of what is taken for granted, and to see how necessary it is to bring the thought of a complex topic into this form.

Abstractions are useless, just in proportion as they are vague or empty. But the notion that they must be so from the nature of the object is due to a confusion between imagining and conceiving, whereby an abstract thought is assumed to be the residue of an image with the detail rubbed out, and the image to be a composite photograph of the real objects that it represents. On the contrary, the infinity of time is just as conceivable as a second, and need take no longer to think ; and a number like 10^{21} is as conceivable as 10 or 21. For every conception is simply the thought of a rule which may be realised in a variety of ways on the variety of conditions contemplated by the rule. If my perception of the ink-bottle before me need not include a thought of the bottom of it, so the far more highly organised conceptions do not contain, but take for granted, the particular thoughts into which they can be resolved.

And, as in the case of perception, the organisation of the single conception can best be seen in its power to determine

a course of thought. This is the second part of our question, and, with the third part, it will occupy us in next lecture. XIV. 8.

§ 9. Before closing, let me revert to the organisation and development of knowledge in order to remark on the entrance of the individual into this inheritance. It belongs to the theory of education to say how, and how far, entrance should be made for the sake of the knowledge, and for the growth of intelligence. It has the same double task regarding other than cognitive interests; and education in them all requires the same two means, viz. instruction and discipline. The question is thus too complex for any but a systematic treatment, and that is why my remarks are mainly critical, and only on matters that illustrate and emphasise our general account of the growth of the mind.

In regard to the curriculum in knowledge four notions have suggested themselves, and claimed to be in accordance with nature. One is that the course for the individual should follow the order of the history of knowledge, another that the logical order should be followed, a third that the psychological order requires the descriptive parts of science to be taught first, with explanation only when reason has arrived, and a fourth would take the units of study as in the classification of the sciences.

The notion of following the history of knowledge is due to exaggerating our ignorance of the growth of individual minds, and to neglecting available facts in favour of general doctrines, like the law of biogenesis. We shall have to look at these matters when we consider the limits of the direct explanation, and the means of extending them (xvii.), and I shall speak of this notion in connection with them. Of the other three notions, one points to the fact that the formal sciences deal with what is first and fundamental in the nature of things, and this was used to justify an early, and too often an exclusive attention to grammars and mathematics. Against this the third notion argues that what is first in the nature of things is last in the nature of the pupil, and should be kept to the last in his education; and therefore that descriptive sciences and parts of science should occupy his earlier years, and theory should wait till his reason has developed. We have seen why practice should come before

XIV. 9. theory, and familiarity before explanation, but it is not because reason makes a late appearance. Theory or explanation has all degrees, and is properly given from the beginning.

But a fourth notion is the really serious error, for the others are more in books and opinion than in practice. It is that the units of the curriculum in knowledge should be in accordance with the classification of the sciences. Now though the curriculum in whole or in part is not to be selected in ignorance of the division into sciences, and of their logical order, it is a mistake to differentiate before the time. Didactic explanations are meant to give the real explanations, but the simple superficial explanations that are taught at the outset are real, and not merely didactic. They are as real in their degree as those final explanations, in view of which the sciences are divided and organised. If we ask when a certain knowledge is to be given to the young, the answer never is by reference to its place in the system of the sciences, but always by reference to the system of knowledge in his mind. The theory of religion is part of metaphysics, and may be said to come last in the real order of truth, since it presupposes the rest; but who would take this to mean that ideas about God should be kept to the last? Such, indeed, was the view of Rousseau, who thinks religion the appropriate finish to an ideal education for boys. But his rule about following nature accommodates quite as well the opposite view of Pestalozzi, who, also to be in accordance with the rule, puts the teaching of religion first. Common sense will always set out a curriculum with reference to the growth of the mind rather than with reference to the system of the sciences. But it is thought to be unscientific, and this has its effect in practice. To take examples from the three main groups of school studies: there is the divorce between grammar and reading in learning a language, there is the unnecessary separation and withholding of mathematical methods, and there is the suspicion of general introductions to natural science as being of a hybrid character and not pure bred.

LECTURE XV

CONCEPTUAL INTELLIGENCE (iii.)

§ 1. (*b*) THE power of a thought to determine a course of thought is its power of suggestion. When dealing with this power in perceiving we observed how the wealth, the readiness, and the depth of suggestion depend on the structure of the present thought. At the higher level I need not again take these points in detail; they are comprised in what we may regard as the distinctive property of conceptual suggestion, and call its freedom. XV. 1.

The word has a negative and a positive meaning. There is, first, the independence of the thought, its independence of sensation and movement, of times and places, that we saw (xiii. 5) when contrasting the freedom of thought in imagining with perceptual thoughts bound to sensation. So free, indeed, does our thinking feel, that it comes as a revelation, and even a shock, to find that nearly every next thought, when it is not due to a new sensation, depends on the present thought, and may be said to spring from it. Even the apparent exceptions, even, namely, our chance thoughts, have this origin as often as not. It is only that we do not know what has given us the cue to the incoming thoughts that we call them chance, for very often there has been something to suggest them. In this there is nothing against our freedom of thinking. Anything else would be incoherence over which we had no control.

But there is incoherence, too, when the course of our thought is not determined at every step by a single purpose, but rambles in aimless stories and arguments without point. When it is directed by a purpose of which we are aware, the

XV. 1. course is self-directed, and self-direction is the positive meaning of freedom.

Let us examine, then, the free course of our thought. And first a remark on the course of narrative and discursive thought, and on general intelligence, before looking at the individuality and originality of thought.

Narrative is distinguished from discursive thought in having nothing to discover. Its course is so mapped from the beginning that in every present thought there is the demand and suggestion for the next in order. The purpose to give the description or the story drops more or less out of mind, so do the little preliminary planning, the story so far as it has gone, and how it is to end. But these are not merely forgotten; they are taken for granted at every present point, and form a great part of its power of suggestion. Once you have set out for home, you have not to keep reminding yourself of your resolution.

The course of discursive thought is harder but not essentially different. It may be very short, as when the right word fails to come in the course of a narrative, and it becomes necessary to think. Or it may last long, like the problems that occupy men of science. In every case there is a question that must lead to its own solution by its power of suggestion. We can continue to ponder only so long as suggestions come to be pondered; and we are making progress if the question is becoming more definite, and its suggestions more obviously to the point. So long as a great variety of words have to be suggested before we get the right one, and so long as every sort of hypothesis presents a right to be tried, our suggestions are inferior. And they are not to the point, because our present suggesting thought is either so meagre or so ill-organised that little is taken for granted, and everything needs to be examined.

Suggestions whose entrance we command must come from a present thought. What comes is in completion of our present interest, and is brought by a factor in the present thought, that has been united with the new matter in the past, and so serves to introduce it. So far, thinking is like remembering (iv. 2). Often the suggestions are quite

unexpected even when they are what we are looking for. XV. 1.
This is a fundamental point, as we are soon to see, and, instead of being exceptional, we shall find that it points to the rule.

If, in thinking, suggestions must come from the present thought, it is easy to see how a whole course of thought must be directed, including the pondering and the comparing that appear to interrupt it. When the course runs smoothly it is either because we have no single dominating interest, as in a reverie where we let every casual interest have its moment; or it is because our purpose easily directs the course to the satisfaction of its own interest, as when we solve a familiar type of problem without hesitation, and without being allured by intervening interests on the way. The suggestions come as they are wanted without our having to remind ourselves of the purpose, or to observe the factors which bring them.

The course, however, is often rough, the right suggestions do not come easily, and then we have to ponder. When our goal is knowledge or action, pondering is all a taking pains. We are driven to it when our thought of the problem fails to suggest the course, or when the suggestions are tentative, or when they come as rivals. These three cases you will easily realise if you examine your procedure when you are asked for a date that you cannot give at the moment, and your memory is said to be at fault; or when you are puzzled with a mathematical problem, and your reason is said to fail. When the first of the three occurs, when nothing to the point suggests itself, you proceed to specify the problem so that its points of contact with the rest of your knowledge may assert themselves, and open a likely course. When the second occurs, when the suggestion is tentative only, you develop it, comparing it with the conditions that it must satisfy. And when there are rival suggestions, all claiming to fulfil the conditions, the battle develops between them in the same way.

As with pondering so with comparing; for comparing is simply the name given to our pondering when the matters to be thought about do not need to be suggested, but are assumed to be given. They must be given as so far identical

XV. 1. before we can compare them; for we can only compare them in respect of what they are already felt to have in common. As it is by a common factor that they must suggest one another, so it is by means of a common factor that we must hold them together in a single thought, and yet distinguish them in it. There is no aspect of an object in respect of which it may not be held and compared with others, *e.g.* its size, its charm, its elusiveness, its fitness for purpose or ideal of any kind. And obviously it depends on the degree of organisation in our thoughts whether we can seize the common aspect at all, and in what degree we can hold the cases of it before us without confounding them, while we measure or otherwise specify their likeness and their difference.

The organisation or system in our thoughts may be such that a single thought is able to command the whole of our knowledge bearing on a topic without the help of a prompter. On this also depends our general intelligence. We found perceptual problems to be so far alike that the great bulk of every perception is effective in the form of being taken for granted. So it is in every department of knowledge. One acquires ways of thinking, a talent for a kind of problem, and it is no longer necessary to think of principle, to ponder what is irrelevant, or to recall the past. All education in knowledge gives some degree of this faculty or facility, though it is not given by the mere amount of knowledge, nor even by the degree of understanding, but especially by the mental discipline that has gone to the learning. A faculty for one kind of problem is not, of course, equally good for another, and may act as a prejudice. But it should be obvious that the faculties for different tasks are also alike, and that they combine to form for every one his degree of general intelligence. Or rather, as before, they have separated to form it.

§ 2. People have no very valiant belief that general intelligence can be learnt, far less taught; and when it comes to individuality, and the originality which at its best is called genius, they expect little or nothing from education. But there is a certain pose of mystery in speaking of individuality: how singular and unaccountable it is, though

how greatly to be revered. And especially in speaking of genius and its education: how it is something quite apart, whose inspiration its owner can feel but cannot command and hardly direct; how learning may be a burden limiting the freedom of its going, though ignorance too is a clog; how, nevertheless, genius will out, and not consent to lie wrapped up, as a mere talent will lie, if education does not put it to use; and how it is an innermost temple that a teacher is sure to profane, if he deals with the favoured spirit in his ordinary way. And every one has heard how original and interesting children are till they are educated. Apart, however, from the practical difficulty in all class teaching, there is none in different pupils having a different individuality, and different degrees of originality. The route is essentially the same for all who can take it, no matter what the rate of their progress upon it (xvii.). xv. 2.

In an early lecture I pointed out that we know every individual thing simply by its action, which is all reaction even when spontaneous. So also the whole character of our individual minds has to be revealed, whether to ourselves or to others. The revelation begins in the kind of occasion that we take and make, continues throughout the course of our thought about it, and is completed when the course is brought to an end because we have achieved our purpose, or because, tired of the effort, or attracted to a new occasion, we are satisfied with defeat. It is a revelation of the nature of our interests, and our power to realise them. When they are strongly marked in any direction, we speak of a strong character, or a marked individuality, in that direction. The directions give the three great divisions of character into intellectual, practical, and emotional. I shall speak of them as characters in next lecture. In the present lecture we are to see that the working of the mind is essentially the same in all three directions. And if I speak of the three at their height, it is because the explanation is clearest where the strain on it is greatest, and because there are two points to emphasise. I mean the unexpectedness of our thoughts, and the dependence of thought on its expression.

Great works can be perfectly well appreciated, though not by everybody, yet by people who could not produce them.

xv. 2. We may have the knowledge or the taste to appreciate them, though we want the originality that created them. Our admiration may have less surprise in it than a sense of fitness, and often the surprise is that no one had hit the course before. The men who create appreciate their own work in much the same way as this, once it is done, and often have the same surprise. We are to look at the course of their thought in producing it.

And first at originality in scientific discovery and invention. It obviously walks by understanding, and its course is subject to the criticism of knowledge at every step. But what is there beyond this? There is what we saw at the lower level as alertness, a readiness to seize every difference, and an insistent curiosity, declining to be easily satisfied; and we saw how alertness, curiosity, and satisfaction are directed by what is known and taken for granted. When Newton was asked what more than knowledge went to his discoveries, he replied on one occasion, patience, and on another, that the problems were never out of his mind. The modesty of the answer hides its truth a little. The problems did not merely remain in his mind, and his patience with them was nothing passive. We fail in thinking if, when we dwell on a problem, it remains the same, or, revolving it, we bring round again only the same points. From the given problems others must be suggested, whose solution is the means to its own. They give hypotheses, on which alone we can rely for discovery and invention. It is here in the raising of new questions from the given question that originality has place. It does not lie in the mere multitude of hypotheses; on the contrary, the claim of Newton is the prayer, viz. *hypotheses non fingo.* The fewer the better, if the right one is among them. Fictions are easy, and a little knowledge lets any one be eccentric, fly wild, and perhaps light upon the truth. But the originality that has value is where great ingenuity is directed by great grasp; in other words, where hypotheses are suggested by factors that take for granted a great and well-organised body of knowledge. Good hypotheses are working hypotheses, working themselves out of doubt; they are pre-conceptions which, like our pre-perceptions, depend for their worth on what they take

for granted. Often there is nothing for it but to plod in many directions, and, may be, for a generation or more. But always, as the plodding proceeds, new openings are given to those whose faces are not quite fixed to the earth, whose absorption with the main problem sees everything that may bear on it, and who are never satisfied with defeat, but have the active patience of a great obstinacy or a great faith.[1] xv. 2.

All these factors, viz. knowledge, imagination, and an absorbing faith, are also found in the production of great action by men who are said to have a genius for war, government, finance, or other affairs. Like the problems of knowledge, theirs too are how to realise an ideal in and by means of conditions that are more or less chaotic and adverse. And here, even more than there, the suggesting factors are functions of a power whose originality is not in wild attempts, but in anticipating and seizing opportunities, to which other men with a like purpose are blind, until they have them pointed out.

When, however, we pass from theoretical and practical ends to those that are realised in literature and art, the course of thought in both author and artist may appear to demand a directly opposite accounting. For the creation of the best work, indeed, we are intolerant of all accounting, calling it the work of an inspiring genius in the old sense of an inhabiting spirit. Where calculation is apparent we call the work mechanical, or, if the joints are well hidden, a work perhaps of talent or cleverness. If the calculating is intricate, far-seeing, and successful, we admire it as we admire great work in science and affairs; but that is all.

[1] "I have been in a position to solve several mathematical physical problems, and some, indeed, on which the great mathematicians, since the time of Euler, had in vain occupied themselves. . . . But the pride which I might have felt about the final result in these cases was considerably lowered by my consciousness that I had only succeeded in solving such problems after many devious ways, by the gradually increasing generalisation of favourable examples, and by a series of fortunate guesses. I had to compare myself with an Alpine climber who, not knowing the way, ascends slowly and with toil, and is often compelled to retrace his steps because his progress is stopped; sometimes by reasoning and sometimes by accident he hits upon traces of a fresh path, which again leads him a little farther; and, finally, when he has reached the goal he finds to his annoyance a royal road on which he might have ridden up if he had been clever enough to find at the outset the right starting-point" (Helmholtz, *Popular Scientific Lectures*, vol. ii. pp. 281-2).

xv. 2. The appeal in a work of art is not to knowledge but feeling. It is his own feeling that the artist expresses; often, as Goethe says of his work, it is undertaken in the first place for the satisfaction of utterance. Always the utterance is to give a present completeness to the artist's own feeling by giving it an adequate base. This is also to give it a form or body that puts the feeling equally within the call of every one who is capable of being adequately absorbed in the work. But the thought required for absorption in it is very different from that which went to its creation. "We are all poets," Carlyle said, "when we read a poem well. The 'imagination which shudders at the Hell of Dante,' is not that the same faculty, weaker in degree, as Dante's own?" I am afraid we cannot so flatter ourselves. For the poet is the maker or inventor, and that is quite a different thing from being able to appreciate his invention.

We saw in the eighth lecture how our appreciation, our æsthetic understanding of his work depends on many factors that we do not need in appreciating a new truth or a great action. Every great work improves with a repeated seeing or hearing. The improvement comes with our easier but fuller or more intensive contemplation. Our progress is from a first indefinite satisfaction to a final satisfaction that is frequently so definite that we resent any alteration being made in the work. Why it should grow on us, why stir and satisfy us as it does, we need not know; it absorbs us, but we do not know what of us is absorbed.

When we turn from the thought in appreciating to the thought in creating, we find the same contrast between that of the artist and that whose aim is knowledge or action. The artist's object is individual; it takes form and expands by his absorption in it. There is freedom from reflection, caution, and criticism; instead of collectedness there is a self-estrangement, a being rapt, the unexpected spontaneity of a dream. "Mozart frequently said the ideas of his creations came to him as in a dream. Gluck said thoughts flowed to him, and he knew not whence they came." Of *Werther*, Goethe said he had written it "somewhat unconsciously, like a sleep-walker." Jean Paul: "Genius is, in more senses than one, a sleep-walker, and in its bright dream can accomplish

what one who woke can never do ; bring it out of its dreams and it stumbles." And "even Schiller complains that when he sees himself at work creating and constructing, his imagination is embarrassed, and does not perform with the same freedom as it had done when nobody was looking over its shoulder." "In the arts of genius," said Voltaire, "instinct is everything." "It is not I who think," said Lamartine, "but my ideas which think for me." [1] "Beethoven when asked to improvise would strike some notes or chords at random, and forthwith entwine them in a rich succession of images ; three notes of a bird would inspire him with a leading motive." [2] XV. 2.

Yet there is not a mere difference from theoretical and practical thinking. The artist, too, acts only on occasion. It may come from himself, or he may find it in any sort of incident that has happened to move him. How he develops it we may compare with the growth of our appreciation of his work at the first, the second, and the later times of our hearing or seeing it. It begins in an outline of movement, image, or plot, that is more or less crude, but suggests the idea of its possibilities ; and the outline takes body in fulfilment of the idea, till it satisfies. Similarly the man of science proceeds with his problems, and develops the hypotheses to which they give rise. The difference is that while he proceeds by pondering, by the handling of abstractions, the artist must be able to feel his way. The one imagines in order to think better, but if the artist has to think, it is in order to imagine better. Creative imagination becomes a law to itself, finding its own way ; it is the power of developing an object by being absorbed in it ; it is the power of self-development in the object, when we live it, or live in it. The more an artist has pondered the better, if the result is a spontaneous insight. And, of course, he must have a corresponding facility in handling his material, whether language, sound, colour, marble, or in whatever substance he is to express himself. No matter how apt to learn, he has to learn, till he can take his knowledge and skill for granted, and use them in a spontaneous production. If science can destroy poetry, if painters were once well

[1] W. Hirsch, *Genius and Degeneration*, chap. ii.
[2] L. Arréat, *Mémoire et Imagination*, p. 105.

XV. 2. advised when told to leave anatomy, botany, and geology to critics, it is because knowledge is in the way when it stands outside, and is not incorporated as an organ of creative insight, a power of spontaneous suggestion. The self-criticism that is necessary to prevent premature satisfaction must be spontaneous too, a criticism by taste and not by theory; and yet to form taste a hundred things have gone, thinking and theory included. As Buffon and Newton ascribed their kinds of genius to patience, so Bach his: "Analysis, reflection, much writing, ceaseless correction, there is all my secret." But the result was a spontaneous faculty at once creative and critical. Schumann was astonished at feeling everything "harmonically," as the result of his training. "I had for long," he wrote, "to rack my brains, but now I hardly need to rub my brow. Everything comes from within, and often I seem able to play right on without coming to the end."[1]

§ 3. Though the course is self-directed in all three directions of interest, we have seen (*a*) an unexpectedness in the thoughts as they come, and (*β*) a certain ignorance of them until we have expressed them. Let us look at these two points, for not only are they no exception, they point to what is fundamental in the working of the mind.

(*a*) When our thought directs itself without purpose, the way that it takes is, of course, more or less unexpected, and as if out of our hands. But so, too, when we have a purpose and keep strictly to the track of it. It is not merely that success may come, as to Kepler, like a happy dream. Not merely what we meet, but the course we take, surprises us, though it is the course we intend. When in talking we pledge ourselves to a simile, we are a little surprised that the right one is good enough to come and redeem us. It is with reference especially to great work in imagination that we hear of dreaming and possession, as if poet and composer surrender themselves to the inspiration of another spirit than their own. But also in respect of action, for right measures may suggest themselves in a flash, and the more brilliant they are, the more they seem to come of their own

[1] Arréat, *Mémoire et Imagination*, p. 118.

good pleasure. And, lastly, in discovery and invention there are happy ideas, that seem merely to happen, coming like a piece of luck. Indeed this account by Helmholtz may be taken as typical: "As I have often been in the unpleasant position of having to wait for lucky ideas, I have had some experience as to when and where they come to me. . . . They often steal into the line of thought without their importance being understood; then afterwards some accidental circumstance shows how and under what conditions they have originated; they are present otherwise without our knowing whence they come. In other cases they occur suddenly, without exertion, like an inspiration. As far as my experience goes, they never come at the desk or to a tired brain. . . . They were usually apt to come to me, when comfortably ascending woody hills in sunny weather. The smallest quantity of alcoholic drink seemed to frighten them away."[1] xv. 3.

But ideas do not drop from the clouds. They came to him and not to another because he had prepared their way, and sought to compel them; they were all his own suggesting. Yet they did not come at once to his call and pondering; nor, though he suggested them, could he forecast them. Hence they appeared to come of their own accord, and, as we say, to suggest themselves. In this respect they are typical of all our thinking, so far as it has any invention in it. And there is invention whenever the course of our thinking has to direct itself, and is not merely a course of understanding things that are put fully and plainly before us. We have all left problems unsolved, and found them easy when we have gone back to them, though we may have been exhausting ourselves with other work in the interval. I am not speaking of feats of memory. There we have a cue in hand which has to suggest a thought that we have had before; and, as you know, it may succeed easily in the morning after failing badly the night before. But I am speaking of our power to get new thoughts by means of a cue that is still to find. All our creative thinking, even the meanest, is in this predicament. For it is not only in eminent, but in ordinary work

[1] Helmholtz, *Popular Scientific Lectures*, vol. ii. pp. 283-284.

xv. 3. that we may fail to hit the cue and afterwards succeed, though we have no more knowledge than before. We have all had occasion to regret that our repartee has been belated, that a decent excuse has come only as an after-thought, that obvious solutions of problems do not suggest themselves at the proper time, and we have all known the value of sleeping on a decision.

If in these familiar cases it is not to be supposed that the mind has been unconsciously brooding over the problems, and putting this and that together, neither need we accept the myth in any case. Often, especially in matters of memory, it seems to be a reasonable explanation, as when, having failed to find a name, we drop the subject, speak of something else, and the name suddenly presents itself. But then we have not quite dropped the subject in the interval. For puzzling questions are a vexation, and you know how a source of agitation, pleasant or painful, is not merely dropped when we turn from it to something else; when a lull occurs in our new interest, it returns at once. We can hardly say that we have not been aware of it in the interval, for it gives us a mood that colours whatever we take up; we often feel a tendency to fall back for a fresh look at it; and we are alert to every sort of hint. But also the disturbance made consciously persists quite unconsciously as a strain against an opposition of which we have and have had no feeling. And when the interval is a long one, no one would say we have been pondering the problem unconsciously (xi. 9). Rather, on looking back after we have succeeded, we ascribe our failure to our thoughts having been confined to a rut, or a confusion of ruts, which time has levelled and let us forget; and even when we do not now succeed, we may see the problem better for having forgotten our previous dealings with it. Many an author is driven from his satisfaction only when his work is less familiar, and he is able to see it as if it were another's. Finally, there are all the ups and downs of our nervous life, whose place in the explanation we have still to consider (xvii.).

So it is that, looking back, we are often surprised that we did not observe what was then before our eyes, and within our knowledge, as well as now. And if we add the

opposite case, where we are surprised not at a success but at a failure which we did not expect, we shall pass easily to the character of all our inventive thinking, whereby it is more or less of an adventure. Often an idea has struck us —a mode of solving a problem, for example—that afterwards we would fain recall, but cannot. We did not make a note of it because, not being a matter of mere memory, it seemed bound to suggest itself, whenever we should ponder the problem again. But the idea does not chance to come. For its previous coming was due to more factors than we thought it necessary to observe; and now the simple bait that we have to offer is not enough. xv. 3.

When, then, can a purpose suggest, and so command, the means that will satisfy it? The answer is that it all depends on the extent to which we can specify the purpose as a case of what we have known and done already. Thus it is an easy matter to give familiar examples and similes in illustration of notions that are also familiar; having started a parallel we may easily go on, though often to our own surprise; given the outline of a plot, it is not so hard to develop the story; and once we have read our problem in terms of a rule or formula, we may go smoothly to the solution. The difficulties of suggestion are all in reducing the strangeness of our task by specifying it as a case. So far as we succeed, so far we are able to direct our course.

§ 4. Let us observe this more closely in the simplest case, namely, in the execution of intellectual purposes. Compare the chance that a boy has of solving a rider on a given theorem, with his chance of solving the same rider when the theorem is not specified, and with his chance of guessing a riddle. If you think how he begins and proceeds in the three cases, you will see that the chance depends, not on what he already knows, nor on what he can understand, but on whether his thought of the question can turn it into specific questions that he can answer. Or compare the depth of knowledge that a teacher can draw from his pupils by a series of questions with the little that he gets if he asks a single comprehensive one that really includes them all. The moral, of course, is not that the teacher should ask many questions instead of one, but that

XV. 4. his pupils do not know the subject until they are able to turn his one question into many for themselves. Of late the cablegrams of the morning newspapers have frequently given a sentence or two about the progress of American 'trusts.' Suppose that three of you read that of this morning, one a poet or a mathematician with head high above the market-place, another a man of catholic interests fed by newspapers, and the third a student of economics. To-day they read that one large trust has been paying dividends out of capital, and that the ordinary shares of another are selling at a price that should give 14 per cent if the former prosperity were being maintained. To our poet there is little more than a riddle; he knows the news important because it is cabled; but he is nearly as ready to take the significance of it in one way as another. Our newspaper student, on the other hand, is astonished. If the second statement had stood alone, his thoughts would probably have started in the wrong direction; the advantages of combination, the fears and hatred of the trusts, the reports about great dividends and the watering of stock, all the things he has read for weeks past, add the wrong suggestion to the news without having to be recalled. And when the clash of suggestions comes, he finds himself with a turbulent stream of thought that is not content to remain within the old limits. He sees the need for re-thinking and reorganising his body of knowledge in order to admit the new piece of news. It is as when our school-boy, after thinking his geometrical rider to be a case of a familiar theorem, is thrown back to something like the chaos and chance with which he meets a riddle, and wonders if he can command the right suggestion at all. Finally, our economist, though he gives a far fuller significance to the news than either of the others, has far the simplest thought, because he can take so much more for granted; and it gives him a far smoother course of reflection, because it is well organised. He has not to remind himself of the previous cables, or of how he has come by the mass of his knowledge. He has arrived at the stage to which the boy will have come when he solves a problem without thinking of theorems, taking them for granted.

The more nearly one has arrived at such a stage with respect to any class of problem, the more one is said to have acquired a faculty for it. The essential aspect of a problem is taken immediately, and the course of suggestion is to the purpose, without the need of pondering. On the other hand, one may be all at sea on a problem, not knowing where to turn, and feeling it a chance if land is sighted at all. Then there is said to be no faculty for it. Between the extremes there are all degrees of faculty; they are degrees in the amount and organisation of knowledge bearing on the problem. And the difference appears not merely in dealing with types of problem that are more or less familiar, but in exploring new country; for, though it has never been entered before, it is by no means as new to one as to another. And so there is better faculty in one than another, and more chance of success. xv. 4.

It is not because there is a better knowledge of how the faculty works; for what could a knowledge of psychology do? Nor is it because we take any thought of our thinking, or more thought of the factors that suggest. If you compare various degrees of the same faculty, you will find that the weaker it is, the more need there is of attending to the going. The man who goes easily and certainly does not feel that he merely chances on the right suggestions, for he habitually succeeds. And yet it is only on reflection, if at all, that he can say how he has come on them. They are simply the most obvious things to think in the circumstances, and he is a little surprised and impatient that they are not as obvious to others as to him.

§ 5. In the same way we have to deal with the working and the growth of faculties for any kind of problem, and with habits of thinking. At the lower grades we did not find one sort of intelligence for one kind of problem, another for another. Though animals have the three kinds of interest, the process of suggestion is the same, whether it is their curiosity they are satisfying, or their organic appetites, or their power of emotion. The occasion is differently developed according to their interest in it; that is all. At the conceptual level it is notorious how understanding, taste, and conduct may become independent of one

XV. 5. another; within each class there are all sorts of difference; and there is a corresponding difference and independence of faculty. And yet there is a common explanation of their growth and their working. It does not make light of their difference, or come anywhere near the notion about great men, that, if they are heroic in one way, they may be heroic in any. For remember that we can say *a priori* neither what interests and faculties any one has, nor what facility in acquiring them, except so far as they are identical with the interests, faculties, and facility that he has already proved himself to have.

In faculties that need much training the common mode of their growth, and of their working, cannot very well be seen without entering on detail. But we all form a multitude of minor habits or faculties whose growth and working are fairly familiar to us, and answer to our description. An inveterate punster does not say on hearing a sentence, Here are so many words from which a pun may be made. It comes to him without his having to select the suggesting factors, and presumably it strikes him so unexpectedly that there is no concealing it from others. And it strikes him even when his interest is no longer voluntary, as other habits do after one would fain be quit of them. He need have no memory of his former achievements to help him. His faculty has grown by a habitual attention to words in anticipation of receiving a ridiculous verbal suggestion. The interest of this aspect now steers the course of his thought, though doubtless he has occasions of agitation when the interest is so overborne by another that even obvious puns escape him. The faculty for rhyming or alliteration has a similar growth, and its products are similarly unexpected. Other habits of speech are less isolated, *e.g.* the habits of using short or uninvolved sentences, or of complicating them, the habits of rugged or rhythmical speech, of diffuseness or of terseness. Like the different order of words in different languages, they mark the forms or ruts in which we habitually direct the course of our suggestions. And, looking more directly to the matter of thought, consider such a habit as the tendency to metaphor, and to different classes of metaphor. Like puns, the analogies come without a search for the factors

that suggest them, so that they are more or less unexpected. xv. 5.
It is not as if thoughts were first dull and colourless, and were then furbished into vividness. That would give quite a different effect. I remember an author who, on being assured that a certain book of his was too dry, sought to enliven a later edition by working in metaphors wherever they would go. It surprised him, but it did not surprise his friends, to find that they were all military metaphors about marshalling facts, defying, challenging, finding points of attack, defeating all along the line, pressing home, grappling with difficulties, or turning their flank.

The influence of our moods is in quite the same manner. They determine the course of thought by a preference for certain aspects of our present thought. These are the factors that suggest, and they have their value determined by what they can suggest. Habitual moods give rise to habitual lines of suggestion, and we can easily predict how we and others will severally think on any occasion. But there is plenty of room for surprise at the turns we take, *e.g.* at our different interest in things at night and in the morning, when they are near and when they are far, when we are young or old, when we are well or ill.

§ 6. Let me summarise this long account of the working of the free course of thought by reverting to the simple analysis of it with which we began. It is a poor reading of the facts to say that the course is suggested sometimes by reason, sometimes by memory, sometimes by taste, sometimes by temperament, moods, feelings, the state of our health, and so forth. The suggestion is always of something that completes our present interest. And, first, the interest may be one that we cannot spontaneously realise. It is then made a conscious purpose, a demand for satisfaction, and gives an interest to all that promises to satisfy it. Or else the interest commands a habit or faculty, whereby it is realised without effort, often against our will, and with little positive pleasure in success (p. 405). There is no limit to what we may speak of as directing the course of our thought. But it makes all the difference if we see that, whatever our interests, they direct it in this one way of selecting factors in the present thought. And whence the matter to select?

xv. 6. Every suggestion consists of matter from our former experience, and so far it may be said to come from memory. But the old is introduced in a new form or connection in order to serve a purpose, and in this respect is said to be the work of reason or intelligence. Thus reason, memory, and interest direct every course of thinking, but in distinct and perfectly definite ways, already forecast in our analysis of the course of all experience (iv.).

And I need hardly remind you of the error in saying that these faculties co-operate in the work; for the reason, the interest, and even the memory required are impossible apart from one another. To explain by the co-operation of two or three faculties, each doing its own share, is not nearly so superficial as the other which introduces an unlimited number, and does not define their share. And indeed it would be a very simple matter to understand the course of thinking if we divided every step to an apposite suggestion into two or three, taken one after the other, viz. first an act of memory, then a recognising, and then a selecting from the mass that memory brings. But the essential thing is that, the better the thinking, the fewer the suggestions that are not to the purpose. It would never do if a poet had to pick his words from his mind as from a rhyming dictionary, however rapidly he could finger the pages. We should be in a poor way, as I said, if we had to rethink our previous experience in order to use it. Nor would it improve the explanation to say that when we think easily we have really had a multitude of memories, and have made our choice, but both in such a flash that we are not aware of doing one or the other. We saw the futility of such myths when we considered the explanation of perception as an exceedingly rapid, and therefore unconscious act of comparison. And if at that low grade of intelligence we found that appropriate suggestions are made without our having, first, to notice the suggesting factors of the present thought, then by means of them to recall a mass of old associates, and, finally, to make our choice, we may very well expect the same economy from the far greater organisation of conceptual thoughts. The power to steer a course, so far as the power has been learnt, lies always in what our

thought of the purpose can take for granted; the point of xv. 6.
our purpose to which we attend is rather the steering wheel; and, of course, the better the steering, the more direct the course, and the fewer the suggestions to reject.

§ 7. (β) We turn now to the mutual dependence of thought and its expression, which we have already considered (viii. 5) in regard to thoughts that are the bases of æsthetic interest. The dependence of our expressions on our thoughts is, of course, evident. And, in accordance with what we have seen already (xii. 1, xiii. 2), it is only if we give it meaning that we properly hear or see another's expression. When, for example, we hear badly through a telephone, proper names are the hardest to catch; and we appear to hear every word better, though we are often wrong, if we presume what the speaker is talking about.[1] On hearing a foreign sentence of three or four words, we cannot repeat the bare sound of the whole, far less distinguish the words, if we do not know the meaning. We may observe several aspects of the sentence, *e.g.* its rhythm, stress, vowels, but, in our ignorance of the meaning, we want the only interest which would enable us to seize the essential aspect.

But now we are to look at the reverse side of the fact, viz. at the dependence of thought or meaning on its expression. We have seen it in the eminent cases, for, like the unexpectedness of thought, it is especially apparent in the work of genius. But here also we have a character that belongs to all our thinking. One of the thoughts of Joubert is that we never know what we want to say till we have said it. With the same degree of truth it may be added that we do not know what we think till we have said it to ourselves. Indeed, thought and

[1] "Every one knows that we hear the words of a song much more easily when we know their meaning. When we hear people about us speaking a foreign language that we do not know, not only do we not grasp the meaning of the words, we do not grasp even the words themselves; and though our sense of hearing is unimpaired" (Paulhan, *Rev. Phil.* xxi. pp. 57-58). The meaning is not suggested before the words; there is not first vague sound, then meaning, and then words. Parallel illustrations are to be found in various forms of aphasia, *e.g.* in word-blindness, where a patient sees a page of writing or print much as he did when an infant, and yet may speak quite well, and even write to dictation.

xv. 7. language are often identified, you remember, like wealth and money. They are different, however: language is the implement of thought, crude for crude purposes, but a scientific instrument, itself the product of the best thought, for exact and delicate work.[1] And we are now to look at the function of language in thinking, in order to see why it is that expression is so important. It is important, you can easily see, because of what it enables us to take for granted; but there is more to see than appears at first sight.

Consider the occasions when we do not use it, though we might. We do not, of course, in mere perceiving, but neither do we in a conceptual perceiving, nor in a great part of the thinking demanded by the work of our everyday life. When at a glance we solve any problem, or appreciate any situation, we seize the aspect without naming it, and we act on the knowledge without naming our purpose. This is what happens as we become independent of rules, and so of words. About ordinary matters we seldom address ourselves or formulate our problems; we do it only when they present unusual difficulty. Workmen, though their work is not merely mechanical—carpenters, for example, or instrument-makers—do not use words to think with, nor even images of what they intend. They deal for long periods with nothing but the materials and the tools in their hands. In other work, *e.g.* architecture and engineering, a substitute is necessary. Such are the drawing and the modifying of plans, whether actually or in imagination. When the drawing is actual, there may be no more need of verbal signs than the carpenter needs; and there is just as little need when the plans are visualised, provided the images are clear and steady. And the image may be denuded of factors that are always present in the corresponding sensation. When used as a sign it may be made so schematic as to contain nothing irrelevant; and the abstraction may be so great that the sign loses the character of a sample, and becomes an arbitrary sign like a word. Some chess-players of experience, speaking of their method in blindfold playing,

[1] "No exercises of reason, in fact, are so closely and instructively parallel as the making and using of implements and the making and using of words" (Whitney, *Life and Growth of Language*, p. 145).

say that they mark a group of relative positions without xv. 7.
picturing black and white or even the shapes of the pieces.[1]

In these cases of wordless thinking we can quite well distinguish the instrument of thinking from the thought. The distinction corresponds to that which we found between the two meanings of attending. In the sense that we adopted, to attend to any thing or topic is as wide as to think about it; it is the whole act of thought regarded as an act (xi. 6). But we often speak of attending when we mean only a dealing with the object in order to think about it, as when we fix eye or ear on it, or turn it about in our hands. It is the same function that we perform, though the process is harder, when we fix mental images and manipulate them in order to think about their meaning.

Neither when we have the actual object, nor when we have images of it, do we need words to help our thinking, if the problems are easy to us; but we begin to use them when in trouble. By their means we fix and recall easily what we want to think about, and handle it to suit the needs of our thinking. And it constantly happens, as we grow expert, that we are able to give them up again, and to work from percept and from image without their help. Language performs other functions: it is the chief means of communicating and of storing thought; and its original use was doubtless for communication. But its fundamental function is this for thinking.

We use it in the form of internal speech, that is to say, of words as images; for we seldom think aloud. The images correspond to the ways in which words may be felt as sensory objects, and so they may be visual, auditory, motor, and, in the blind, tactile. Few appear to visualise the words they use, most say that they imagine their sound, while many maintain that they feel nothing but slight movements, or impulses to movement, in throat, mouth, and lips, corresponding to those required in utterance. Whether you find that you use auditory or oral images, or, more frequently, both, you will find that they are as clear as the actual sensation of the words, that you can use them more freely

[1] Binet, *Psychologie des Grands Calculateurs*, etc., pp. 284 ff.

xv. 7. than the sensations, and that you think better by their means than if you uttered and heard the words.

§ 8. Even sample images tend to become arbitrary signs; but the difference is so obvious between the two kinds of image—the word image and the sample image—that the fact of their performing the same function is obscured. Added to this there is the common failure to distinguish between thinking and means of thinking. We have seen the difference when the means are sensations, and when they are sample images, and it might seem useless to consider it when they are words. But it is an old and still a common view that words are somehow a substitute for thought: a substitute for the object of thought, or else a substitute for thinking.

The former is especially common: "A name is a substitute for an idea of an abstract character which is itself the substitute of the thing, and often only through many intermediate stages, till at last, by a series of equivalents, the chain retouches the distant objects which we cannot directly reach."[1] It is as if, meeting practical problems too complex to solve at sight, we at first turned them into arithmetical ones, and then, when they multiplied, into algebraic ones, where they are solved without thought of their application. And the use of words is frequently likened to the use of algebraic symbols. But words are not symbols in that sense. "A word is an instrument for thinking about the meaning which it expresses; a substitute sign is a means of *not* thinking about the meaning which it symbolises."[2] But, you may say, surely words are a substitute for at least part of the object of our thought: for the part of their meaning that we are not thinking about, but taking for granted. No, they do not stand for it; they put it at our command in the manner that we shall see. And so do the other means, viz. observing and imagining; these give us command not only of the point that interests us, but of what we assume in thinking it, although, as a rule, this is far less than the body of thought that a word puts at our command. Language, then, is not a substitute for thought; it is not a substitute for what it means.

[1] Taine, *On Intelligence*, p. 31.
[2] Stout, *Analytic Psychology*, vol. ii. p. 194.

Nor, secondly, is it a substitue for thinking. It is a substitute for imagining, as imagining is a substitute for the use of our senses; but we saw that imagining is not thinking, and that the mere use of our senses is not sensory intelligence. Language is not a substitute for thinking, but for other means of thinking. xv. 8.

But the notion of being a substitute at all is superficial. The fundamental notion is the economy of organisation, and it is in this sense that there is substitution. For language as a means of thinking holds the same relation to the lower means as we found when comparing higher with lower grades of intelligence. It economises imagining and observing; it brings to mind, and holds, matter of thought that they cannot command; and yet they are not replaced by it, but, on the contrary, are given a new importance.

§ 9. Corresponding to the view of words as a substitute is the error about their meaning. It is due to regarding abstraction as if it were substraction, with the result that the more general a notion the less there must be in it, and the less the word that names it must mean. Thus it is said that notions like tree and justice contain in an unlearned mind a great many elements that do not properly belong to them, because they are not common to every tree and every form of justice.

But does a botanist give a less complex meaning to the word tree, or a jurist to justice? If asked for their meaning they give a definition which may indeed be short and apparently simple, but it includes for them a large and organised body of knowledge. It is a rule expressing for them the unity and organisation of this mass. And when they use the word they do not mean merely the rule, for they seldom think about it, except when the body of knowledge that it organises is threatened and in difficulties. In the actual use of the word there is always some special reference: there is a question, say, of a doubtful case of justice, or of the age of a tree; and the meaning given to the words is the part of the total meaning that fits the present purpose. If surprised at the age of a tree, the botanist might have to reconsider a part of the meaning that he had made up his mind about, and had been taking

xv. 9. for granted. A notion like justice is challenged far more frequently, and hence the rule or definition has often to defend, and to adjust itself. Otherwise it is taken for granted like any other part of the notion.

The meaning of a word on any occasion takes the colour of its occasion. Though every word in a sentence has a general meaning, the sentence is not a group of general meanings such as we should get if we read it backwards, or if it were a foreign sentence whose point we do not know, though we know how a dictionary defines the words in it. But we call the meaning of a word the same meaning, though we specify it differently according to the occasion, just as we call tree the same tree, though it is seen differently from different aspects. In specifying one aspect we take the rest of the meaning, of which it is an aspect, for granted.

And there are occasions when we specify none, taking the whole for granted. If I began a sentence with the word truth, what meaning would you give to the word when you heard it? Not the essay on truth that you could write, nor any picture or a sample of truth. These, if you gave them, would come differently from each of you, but presumably in using the word I expect you all to give the same meaning to it, and without the need of illustration. Then what is the meaning you do give? It is not a definition, for very likely you cannot define the word, even to please yourselves, on the spur of the moment. There is simply this: I have raised an expectation by opening with the word, and the meaning is part of the expectation. You do not think about what you expect, you do not think about the meaning of truth as a whole or in part; you simply wait for me to continue in certain ways which you do not think about, but which you will be astonished if I do not take. There is the same thing as we found in mere perception. If I see a tree, I do not need to think of the other side of it, but I should not see it as I do, if I did not expect that I should see the other side if I went to look. So it is with the meaning I give to the name. In neither case have we, as is sometimes thought, mere sensation and mere word; nor, on the other hand, have we all that sensation and word may

mean to us, nor even a particular part of it. Instead of a revival of past experience we have a result of it; instead of a forecast, or expectation of definite objects, we have a definite expectation determining the course of our thought, and the end that will satisfy it. xv. 9.

It is only from this working, and not from an analysis of how the expectation feels, that we can say what it is that we take for granted. If I continue my sentence and say, Truth is a matter of degree and nothing is all a lie, it depends on what body of meaning the word commands for you, how you grasp the point that I specify, and whether you take or reject it. And if I should go on to speak of truth, though now only by a bare 'it,' which would equally serve for any other subject, the meaning would continue to grow in the same way. It should become a more complex and definite meaning at every step if my discourse is coherent and to a point. In order to the fuller meaning, you no more need to recall the earlier parts than you need to think about the earlier chapters in a novel when reading the later ones. And unless my language provoked figures in you by being figurative, you would not need them; nor, unless I were extravagant, would you need examples to make my general statements clear, though now and then examples would suggest themselves, usually in a helpful, but sometimes in a distracting way.

Suppose you are about to tell a story. As you think the rest of it when you are still at the beginning, so you think, without thinking about, the meaning of any familiar word. You do not, of course, think the full story at the moment when you begin; nor do you think merely the point with a view to which all is organised, for its point cannot be thought if the rest is merely subtracted. The better your faculty with the story, the better you confine yourself to every present point in it, and think of nothing else. Yet you are aware of keeping to the future point which you want to reach; you hold the end, and the incidents between, in a taking for granted; they direct your course without having to be thought about; and they do it by determining the interest and suggestibility of every present stage in the course till, the tale being told, your

xv. 9. desire is satisfied. When considering intellectual stupidity we shall see how this is the constant difficulty both in making and in understanding explanations.

§ 10. So far of the function of language in thinking; and far enough, if that were necessary, to see its value for the development of individual intelligence. It is an old outcry that against words, words, words, against the study of language instead of things, and against the study of things in books instead of directly; and perhaps the cry has still good reason to be loud. Yet "'words, words, words' must constitute a large part, and an always larger part as life advances, of what the human being has to learn. This is so even in the natural sciences so far as these are causal and rational, and not merely confined to description."[1] But it is an artificial means of thinking, and there is something more to say before we can see the necessity for it. So far we might still agree with Locke:[2] "He that shall well consider the errors and obscurity, the mistakes and confusion, that are spread in the world by an ill use of words will find some reason to doubt whether language, as it has been employed, has contributed more to the improvement or hindrance of knowledge among mankind. How many are there that, when they would think of things, fix their thoughts only on words?" They do not fix their thoughts on words, but on ideas that they mean by the words, and these are often poor enough. "The ideas they annex to words are very confused and very unsteady, or perhaps none at all." And, if it were not for the words, they would not be able to deceive themselves with what they call subtlety—"a virtue which, consisting for the most part in nothing but the fallacious and illusory use of obscure or deceitful terms, is only fit to make men more conceited in their ignorance and more obstinate in their errors." Would it not be better, then, if we dispensed with words in our thinking, though we have to learn by means of them?

There are two cases in which, as we saw, we do dispense with them. For, as a rule, if things are either before our senses or clearly imagined, we do not use words in thinking

[1] W. James, *Talks to Teachers on Psychology*, p. 150.
[2] Locke, *Essay*, book iii. chap. xi.

about them. But when we meet with difficulty we at once resort to speech, falling back on it as on a means that we learn to dispense with sometimes, but not always. It is the same when the objects about which we think are abstract; we can have an example of equality, of truth, of running, of into, or of but, before our senses or in an image. xv. 10.

Because the same samples can serve for quite different aspects, their meaning is not marked so definitely as it is by words. But surely, you may say, samples must carry a meaning better than words, for they are like it. This is a common notion; yet they do not carry it better for many reasons, and especially three. Compare the trouble in making and recalling images with our easy grip of words; think of the difficulty of giving an image a meaning that shall be at once full and general; and, thirdly, there is the inconvenience of having one way of expressing thoughts to others, and another way of expressing the same thoughts to ourselves—one language for speaking, another for thinking. But two efforts of your own will convince you better than anything. Instead of taking the three points of the previous sentence from my words, try to take them from three pictures, one of the trouble, another of the difficulty, and a third of the inconvenience. And especially try to represent in one picture that separation and union of the factors of any object of thought which it is the business of every sentence to express. The error that thinking is better done by samples than by words is none the less an error, that words are never well used, unless they are convertible into samples.

§ 11. But why not dispense with every instrument of thought? Can we not dispense with words and think only of meanings? The answer is, in the first place, that we frequently do; and it is so far illustrated in our parallel dealings with sensation and image. As we learn to perceive better, a mere hint of sensation is enough to give us meaning; and in thinking by means of sample images we make them so schematic, that it is often hard to say of what parts they consist. The schematising is most apparent when the meaning is general, and where detail would be more or less in the way; but also where meanings are individual they are held by mere skeletons of the original sensory objects and images.

XV. 11. Words, verbal images, are especially amenable to this treatment, and their schematising goes beyond the faintness and the curtailing of sound or articulation. In a smooth course of thinking we use only the salient words, and the ellipses are such that we may be said to use the form of sentences rather than their actual expression. Our talk to ourselves is, in this respect, not unlike the highly elliptical talk of an infant; but, of course, there is the same comparison between the drawings of a child and those of an expert who uses few lines because he has learnt to rub out what is not essential. Since a great part of the meaning that we thus command is more than we can call the meaning of the words, we think it without its own proper words. It has freed itself from them in the way that a perceptual meaning may become independent of sensation and be called a free idea. Of course, we have to be expert in the objects that we can think about without words, images, or actual examples. A familiar instance is when we run over any topic rapidly in our mind prior to expressing ourselves about it. And it is a good exercise. With older pupils, at any rate, before testing their knowledge of a subject, a teacher might very well ask whether they know it, and, on getting the usual answer, 'I think so,' to ask what part they are not sure about. The effort to find and define it brings the matter as a whole to their mind, so far as they can bring it. The mental discipline accords with what I have said about the matter not being known, if many questions are required. But especially it gives practice in moving about among ideas and thus organising them; for in order to think comprehensively one must always be more or less free from the slow trammels of expression. From your own experience as students you have doubtless learnt that a knowledge held in such a grasp, and with such a freedom, is greatly superior to a knowledge where your thinking has to be piecemeal.

That is the answer in the first place, but there is this to observe in the second place, and it is quite as important. Though the grasp, though what is called a bird's-eye view, may be nearly speechless, we immediately resort to words if we have any difficulty with it. Names lie nearest the surface of what we take for granted; hence our difficulty in saying

exactly what words, or ghosts of words, we have been using, and whether any. As we have found so often before, this is not a difficulty that we have any reason to deplore; it is what to expect if words have the function, the kind of necessity, that we have seen. When we are able to handle their meanings easily, specifying, separating, and combining abstract like concrete objects, they become less necessary. But they are not dropped like a scaffold from the building. Indeed, it would only be wrong to say they remain to support it, if that were taken to mean that knowledge depends on a memory of words. But in another metaphor they are the supports of our knowledge; for whenever we have difficulty in advancing without them, we at once call them up. And if we fail, having got out of touch, we have no right to go on, and have not made the progress that we have assumed. So, in solving problems of all kinds, we have often to return and name where naming seemed unnecessary. We do not name things as we pass along the street, but when there is any challenge to our power of identifying them; when, for example, a familiar object presents itself in an unusual attitude, the name is the first thing to come or to be sought. XV. 11.

Still, you would fairly demur if I were to say that ideas are absent when they cannot be expressed. I recently read this at the end of a long, rambling answer: "The above may not be very clear, but I *do* understand the question." I think you will agree that at the time of writing the student's ideas were no clearer than their expression. But as we claim to have a better moral character than that to which our actions bear witness, and to have deeper feelings than we can express, so we say that we have ideas for which we cannot hit the right word. There is a difference, however, when the expression does come. Suppose the word we want is an adjective that will give the precise shade of our meaning; is our idea the same before and after we have hit upon the word? It is an idea of the same object, but it is nothing like so vivid, steady, full, or suggestive. When in grief, or joy, or love one reads or recalls the work of a master, and says, "That is just what I feel," the words have made a difference, have they not? And there is

XV. 11. no need to remind you of the function of expression in the arts (viii.).

§ 12. (*c*) What I have said about the direction of a course of thinking refers also to the satisfaction that brings it to an end. For the course consists in specifying a demand to a fulfilment that will satisfy the demand. Satisfaction may be premature, and it may be beyond our power; and, in both, the failure may be 'due to' ignorance or to stupidity. There is ignorance when suggestion fails owing to our loss of memory, or want of matter to remember. It is called stupidity when we fail to use the matter that it is within our power to recall, or that is actually being offered to our senses. According to the demand that we fail to satisfy, we call the stupidity intellectual, moral, æsthetic, and so forth. And we distinguish our more permanent stupidities from those occasional failures that occur when our course is affected by distractions, by ill-health, or by fatigue. Finally, a stupidity is unconscious of itself or conscious, according as we are wrongly satisfied or rightly dissatisfied with the thought, feeling, or conduct that we achieve.

We saw the general fact of stupidity when dealing with the perceptual form of it (xii. 10); and the conceptual forms are easy to see from the explanation of our course of thought in any interest. But I shall speak of them in next lecture by way of practice in that explanation, and as a preliminary to bringing our account of the development of intelligence to an end. For convenience, you remember, we took the development of thought and knowledge for our guiding line; but, though thought is essential to all our interests, it does not produce nor guarantee them. And, because it is a common error to think otherwise, or rather to act as if it were otherwise, I shall preface what I have to say about the structure and development of the three great divisions of character, by speaking of the stupidities that are found in the typical forms of them, viz. in reason or logical sense, in taste or æsthetic sense, and in conscience or moral sense. The great divisions of character are taken, we saw (v.), according to our three heads of interest. They are units for describing a self or mind, and each includes the knowledge and action necessary to realising its form of

interest. I shall take the growth of (i.) our intellectual character or power to know, (ii.) our emotional character or power to feel, (iii.) our practical character or power to act, and, finally (iv.), the three together, or the self or mind as a whole. XV. 12.

LECTURE XVI

CONCEPTUAL INTELLIGENCE (iv.)

XVI. 1. § 1. (i.) IN last lecture I spoke of the course of thinking where one has to supply one's own material, and I said little about the thinking that has only to understand material offered by another, as in conversation or in a book. But this is merely a simpler case of the same. Some seize an explanation quickly, some slowly, and others cannot at all; it is according as they can take for granted what is taken for granted in the explanation. The mere slowness is a kind of stupidity; the learner knows, but has to set before him what he knows, and cannot yet take it for granted, being unable to use it without thinking about it. If, on the other hand, he is unable to help himself, the explanation not only takes more for granted than he yet can, but more than he can even think without assistance. It is in connection with this power—often simply called one's intelligence—that I wish to make two remarks about intellectual stupidity as a preliminary to taking the growth of our intellectual character. One point is about grasping explanations, the other about accepting them.

The first is seen if we connect the function of language with our old point that, though an explanation is communicated, it is yet the hearer's own handiwork. A teacher, or other speaker, has a systematic thought of what he is going to say, though he may use no word to himself at all, or only a word or two to name the topic as a whole. It is this systematic knowledge that he tries to leave with his hearers: a single comprehensive thought, not a mere series of thoughts, still less, of course, the words that mark the

series. Before utterance he has a thought that involves the series into which he must resolve it, and his hearers in turn have to involve the series again, each for himself. This holds not only for the whole explanation, but for every sentence of it. A sentence is first in the speaker's mind as a single idea. If he utters it to himself, it is still a single idea—a complex and not a simple idea, but a single one—making its object a whole, and so at once complex and single. It is this single systematic idea that one's utterance to others is meant to convey. They may not catch it till the last word, or they may catch it before the sentence has gone half way, or they may fail even at the last, and find themselves with so many bits of meaning on their hands. Or they may grasp the sentence superficially, failing to see its relation to the single purpose of the whole explanation; whereas others will catch the gist of the whole, and forecast what is to come, long before the end. Thus there is plenty of room for stupidity, both conscious and unconscious, in involving the series into a single systematic thought. And, of course, there is plenty of room also for the speaker to be stupid in resolving his single thought so as to suit different minds. The difficulty is always that the series is not to be summed after being set out, but from the first word. For at every later stage the earlier parts have to be taken for granted; they have to give a definite value to what follows, till, the nearer the end, the nearer the whole is organised into the single systematic thought from which the series has been evolved. XVI. 1.

In following an explanation our first concern is to understand it, but we have also to accept or reject it. Here also there is plenty of room for stupidity, as well as for ignorance. We saw how the criterion of truth is the system of knowledge that we happen to have formed already, and how, the better organised and the fuller this is, the better it serves the purpose. But consider how it feels in working, and you will not wonder at unexpected stupidities. As we listen to a story or an explanation, we have to recall little, and usually none, of the system of our knowledge; we have not even to name laws or principles, far less think about them, or recall the mass of knowledge that they take for

XVI. 1. granted ; we assent or dissent immediately, or else, when we cannot, we are first in doubt or confusion, till we know what precisely it is that we challenge and why. Either we feel no incoherence at all in the story or the explanation, whether with itself or with the real or the ideal world of which it professes to be true ; or else we feel that there is something or other incoherent about it. In the former case, that is to say in not challenging, we may show stupidity, and then it is unconscious ; or we may show it in challenging, and then it is of the conscious form, if we fail to point to the error.

If we fail to challenge a statement when we might, it is because we do not feel the conflict between it and what we already believe. Nothing is commoner than for a man to hold mutually inconsistent beliefs without knowing it. There is an example in every dispute between two people who know the same facts, and whenever a teacher has to intervene in order that a pupil may bring his conflicting beliefs together, and see them inconsistent. It is not as if people were intent on deceiving us, and we had always to meet their sayings with suspicion. They habitually earn our assent, and so we give it habitually. We give our assent with little or no feeling of giving it ; we only feel that we give it when it is not easily given. And when we give it more easily than we should, it is because our adverse beliefs do not suggest themselves, but allow their enemy to pass unchallenged. This usually takes the form of what we may call a stupid docility. It may be due to amiability or to laziness, as when one takes for granted the insight of editor, teacher, or other authority, and escapes the effort of thinking what they must take for granted, if their statements and explanations are true. Or it may be due more to inattention, and a want of alertness, than to laziness ; it is then that tricks of persuasion prevail—from persuading to a policy down to traps, *e.g.* which do you think right : 7 times 8 *is* or 7 times 8 *are* 54 ? But often the real reason for the apparent stupidity is ignorance : we fail to see the inconsistency between two beliefs even when they are thought together. It is due to the empirical way in which we have to learn most of them, and, as it is a great part of learning to turn implicit into explicit thoughts, so it is a great part to

turn explicit thoughts that are empirical or inadequate into more rational or adequate thoughts. This, as we saw, is to organise them into a mutually supporting system, whereby one part takes the rest for granted, and the whole becomes a ready criterion for beliefs that seek an entrance at any point. XVI. 1.

The better our knowledge is organised, the more immediately it acts as a challenge, as well as a means of understanding; it points to error without our having to ponder and recall. On account of this immediacy our power, and the experience due to it, are frequently called a sense (ix. 5), a logical sense. Instead of this pointed attack there may be all degrees of indefiniteness in the challenge it gives, down to the mere sense that something or other is wrong or wanting. When we speak of this as a vague sense of error, we cannot mean a vague state of mind, as if there were such a thing as a vague fact. The sense or thought is vague, because the object that it makes is vague; and we call this object vague because it exhibits but poorly the object as existing, which, of course, has nothing vague or doubtful about it. Looking at a page containing a printer's error you may detect nothing, or you may see the error at once, or you may have only the sense of something wrong. The last is what we call a vague sense of the error, meaning a thought of the error in this vague or poor form. And observe in this case, and still more in the case where you detect the error at once, how complex a reaction you give in your momentary glance; you distinguish the mass of letters well enough to turn many of them into words without uttering them. It is not otherwise when we pass or challenge a wrong statement. It may be contrary to our other beliefs, but we pass it if we are inattentive, just as we may pass the printer's error, making a poor thought from the data before us. And we also pass the wrong statement if our knowledge is sporadic, because little of it can be suggested and challenged. It is a better logical sense,—there is a fuller reaction, giving a deeper thought,—if we meet the statement with a feeling that it is wrong somewhere. And the sense, the reaction, and the thought are better, fuller, and deeper, when we can point to the error, and develop at will the reasons against it. You have only to consider what the sense does on any occasion,

XVI. 1. how, that is to say, it develops the occasion, in order to see the variety of defects that are possible to it, and how they may reveal one's whole intellect and intellectual character. Besides the stupidity in accepting statements, for example, you may observe a stupidity in rejecting them; for, besides a stupid docility, there is the stupid indocility of people grown cantankerous or prejudiced, and of young or old who would rather criticise than learn.

§ 2. When we speak of an intellectual character, we take a larger unit of mental structure and function than we usually mean by a logical sense or a power of understanding. It is one of the three great units which we take in describing a mind. By intellectual character we mean our whole power to think and know; by emotional character our whole power of being affected; and by practical character our whole power of seeking. The three are often called, for short, our intellect, our disposition, and our will; but in this descriptive use of the words it must be remembered that each includes the other two, so far as they are in its interest. We may state the division of the mind into characters, you remember (v.), from two points of view. It is a division according to the three great functions of experience. Each requires the other two as means to realise it, the intellectual character including the necessary interest and desire, the emotional character including the necessary thought and desire, and the practical character including the necessary thought and interest. And since all the functions have their own interest, it is also a division according to our three heads of interest. Each kind of interest requires its appropriate thought and desire, and the character corresponding to it is taken to include them.

Knowledge is first of all in a practical interest, and as our life grows complex, we require more thinking, and a broadening and deepening of our knowledge. When we come to take an interest in truth on its own account, and in the exercise of thinking on its own account, the interest depends on the knowledge and skill that we have already learnt. And this connection remains; for, as we saw, our theoretical or cognitive interest is never in a single truth, but in it as member of a system. There is no isolated

truth, and, as distinguished from the purely intrinsic interest of things, a purely theoretical interest in them is in them as members of the real system to which they claim to belong. Hence it is that one finds interest in questions, in particular facts, in general facts or laws, and in theories, that another without the requisite knowledge does not feel at all, and may take for childish. And, like the interest in knowledge, the interest in intellectual activity, *e.g.* in working out problems, is only for those who have learnt the requisite skill. An interest in knowledge and in thinking, when there is little knowledge and skill for its base, is neither deep nor lasting. XVI. 2.

But knowledge and skill may fail to give the interest. There are two cases: one with respect (*a*) to familiar knowledge and problems, the second with respect (*β*) to new knowledge and problems.

(*a*) Our interest declines in the knowledge that we have already learnt, and in any exercise that has the ease of a habit, and requires no exertion. This, however, does not qualify what I have said about the dependence of our interest on knowledge and skill. On the contrary, the fact that our interest is not in such truth as we have already learnt, but in what we have still to learn, is part of the fact that our cognitive interest is not in a truth on its own account, but in it as member of a system; it is our interest in whatever helps to complete the system as we already know it. Our interest in a new truth, or a new question, is based not on it apart, nor on its novelty, but on the mass of old thought that demands and supports, or that conflicts with it. And our interest in solving new and unfamiliar problems depends on our power with old and familiar problems allied to them. That the familiar in our knowledge and intellectual exercise falls in interest opens a general question to which I shall return at the end of the lecture (§ 9).

But (*β*) we also find that ability does not always guarantee interest even in regard to new knowledge and problems. This, unlike the other, which is universal, points to a defect, and always it is because the ability is one-sided: there is knowledge without skill, or there is skill without

XVI. 2. knowledge. Such a condition is common enough, and is due to the exaggeration of one aim and means of education over another, which ought to be its complement. One aim of education is to give knowledge, and it may be done without calling for much effort from the learner. Though he may sometimes learn to understand a subject as well as one whose mind has been disciplined in it, he has not the same interest in attacking new problems, nor even in adding to his knowledge. With the opposite mistake there is the same defect of interest. It is the mistake of those who think little of knowledge as an aim in education, and much of 'training the mind,' or 'sharpening wits.' They emphasise the formal studies—mathematics and language—as disciplines for the purpose; I have even seen the claims of chess recommended for a place in a school curriculum. This aim of skill or cleverness can also be realised, though not as if one kind of mental gymnastic gave skill in all thinking (xvii.), nor as if cleverness can be very clever without material, that is to say, without knowledge.

§ 3. (ii.) After dealing with our æsthetic sense or æsthetic understanding, I mentioned the defect that is commonly denounced under the name of intellectualism (viii. 11). It is with this that I shall preface the consideration of our disposition or emotional character. The defect belongs equally to our moral sense. It occurs when our sense of beauty, or our sense of right conduct, rests on rule, type, or other product of mere understanding, and not on the experience from which the truth of this knowledge must profess to be derived. So far as our sense of beauty and our sense of right pass judgment in this way, they are merely intellectual. They are intellectual *senses* when they judge without thought of rule or type.

There is a special reason for intellectual stupidity in their judgments. In judging conduct that affects us, and more especially our own conduct, we are notoriously liable to prejudice, and to be both stupidly docile and stupidly indocile. The history of art is strewn with the débris of obsolete rules; and of fickleness in standard or type there is a constant example in every change of fashion in dress, furniture, and ornament of all kinds. For these must be

thought by most to be beautiful in their day, and by most to be ugly, or at least inferior, when their day is past. The greater part of such appreciations must be due less to a feeling of beauty than to a feeling of conformity to a standard, though there may be little thought of the standard. There is the stupid docility of those who adopt and approve any mode because it is the mode, and who honestly feel aversion from what is not; and there is the stupid indocility of those whose devotion to old rules and types makes them intolerant, and incapable of appreciating what is new. XVI. 3.

But also when our moral and æsthetic judgments are perfectly right, our sense may be merely intellectual. One may know the right without doing it, being insensible to its attractions, having no sufficient pleasure in it; and one may do it but with little feeling. Our language about others' wickedness is often more violent than our emotion; and regret about our own conduct may not all be the remorse that we think it. In the same way our taste may be correct, and yet merely formal, incapable of great satisfaction. Our obtuseness, our want of sensibility, is easily hidden in a more or less unconscious hypocrisy of appearing to feel what we only know we ought to feel. Thus it is that mean men are able to live on good terms with themselves, and all of us to think better of our motives than they always deserve. But especially it is so in respect of our taste. It is sometimes ludicrous, and always pitiful, to see people struggling to feel that they are enjoying what they think they ought to enjoy; whereas the satisfaction that really sustains them is the sense of their worth, and especially of their superiority. I do not say that people should only seek to enjoy what they can already enjoy. But it is not often that real progress can be made by self-deception, and very often progress is prevented. The moral, of course, is education for the young, and wherever else it is worth while.

But in education itself the error is present, the error of confounding knowledge or intellectual interest with feeling, sensibility, moral or æsthetic interest. It is in this connection, indeed, that it is usually called intellectualism; and I am afraid that few of the charges that people will always bring against the education of their own country can so well be

XVI. 3. made out. One would give more ear to the charge, if they did not also think that the cure is to starve intelligence a little. They would have it not so keen on the collar; they think it should come back to the idle pace which is thought appropriate to the growth of taste and moral sense. But that is a poor notion of the connection of taste and conscience with knowledge. The fault of intellectualism is not in pulling too hard, but in having nothing to pull; it is not in explaining, but in the want of matter to explain. The matter is our experience. The laws of taste and conduct are not drawn from the air, but in answer to a question about matter of fact in our experience; and the error is in learning the laws without the facts for which they account. The question is, Why is it that we feel greater satisfaction in one kind of conduct than another, and in one object in which we can absorb ourselves and not in another? There is no rule of life nor of art but must first of all be in answer to this question of fact. It is true that rules of art can also be justified, or at least expected, from more elementary preferences, such as psychology discovers; and still more that the laws of conduct can also be inferred from the necessities of the case. But what we ought to find beautiful, and what we ought to find right, are ultimately the things that actually satisfy us better than what they exclude. Otherwise we cannot say that they ought. It is as in matters of mere understanding; with the advance of knowledge it becomes more and more possible to infer theories that discover facts to our senses; but the theories are only true if the facts are there when we go to perceive them. The defect in one who apes a good taste or a right moral attitude, in which he finds little intrinsic delight, is that he is yet incapable of the facts, the experience, on which they are grounded as good and right. And hence the error of intellectualism is in substituting a knowledge about good conduct, and about beauty, for a subject-experience of them. In education it is again the error of instructing without the proper discipline. The discipline of æsthetic sense is by absorbing oneself in the appropriate objects; and, though a kind of indulgence, it needs training, as we saw, and is so uncommon that it has been taken for genius. The discipline

of moral sense requires more; its special stupidity, as distinguished from that of the other two, is in being merely intellectual and emotional. We shall come to it after examining the structure and growth of our disposition or emotional character, to which we now proceed. And I shall begin with the further classification of our experience of interest, which we postponed (iii. 6). XVI. 3.

§ 4. From the multitude of names for our emotions, and their seeming independence of one another, they look at first a mere collection; and the mental organs to which they are assigned appear so many organs of sense. When we speak of a sense of sorrow, a sense of fear, of admiration, of humour, of surprise, of beauty, of boredom, we very likely have no better notion than this in our mind; and the need of a better appears, immediately we ask about their growth. We see their system and their growth, if we follow out our definition of them as our attitude towards things, viz. as our interest in things. We have first to classify the objects of our interest, and then to classify our emotions as the variety of our interest in them. So far as I shall deal with it, the task is simpler than classifying knowledge and following the development of the forms in which we think the knowledge. But it is complex enough to make it advisable to begin by neglecting our merely intellectual and our æsthetic emotions, and to include them afterwards.

For the division of the objects of our interest, we may follow the familiar division into material, social, moral, and religious interests. Our material interests are in the things demanded by our physical appetites and senses, and in the means for satisfying the demand. From the simple likes and amusements of childhood, they develop into all those interests in food, health, work, leisure, sport, travel, wealth, in which we find our physical welfare, or the means of maintaining it. Our social interests are in our fellow-creatures. They begin with a child's sense of dependence on those about it, and develop into a strong feeling for those near and dear, and a less ardent feeling for those not so near, for acquaintances, for people of the same occupation, for fellow-townsmen and countrymen, for customs and institutions; and they may go the length of including mankind,

XVI. 4. and all living things. The object of our moral interest is character and conduct, especially our own, together with the ideals and standards of life, and the institutions that render them possible. Our interest in our character and conduct begins with the reflections that others make on us, and our first interest in ideals, or standards of manners or morals, with those that others follow and prescribe. But this deference to an external authority becomes an interest in what is right for its own reason. It passes in respect of morals to all that we make matters of conscience; in respect of manners, from ceremony to our whole mental deportment; and it expands from our present cares to the whole conduct of our life, and from the manners of people about us to missionary enterprises. The object of our religious interest is God, who at first is formed in the image of man, a father of unlimited power and knowledge, giving and withholding, claiming obedience, rewarding the good, and punishing the disobedient. The notion of God develops with our religious beliefs, and, whatever direction these take, He is thought not in this external and visible form, but as the source of the soul, where its aspirations are realised, and whence it may have strength to realise them. The development of any one of these four spheres of interest depends more or less on the development in the others, and as there must be a single universe of knowledge, so there is the idea of a single universe of interests. The thought of a kingdom of God within and about us organises our moral interests in the thought of a full individual life; such a life is the ideal of our social system, and this, in turn, undertakes the direction of our economic or material interests.

The objects of our emotion affect or excite us in different ways according to our thought of them. Always they are objects that please or displease us, and so the commonest emotion, and a factor in all emotions, is like or dislike. Towards every object that we like or dislike we have a variety of emotions according to the particular aspect that presents itself. And in all the spheres of interest there is the same variety of emotions so far as their objects present the same aspects. Often this likeness is not shown by the names of the emotions, for these follow the difference

in the objects, just as do the names of our thoughts. Seeing, for example, is the same sort of thought as hearing, and measuring is a species of comparing; but the words do not mark the likeness. Very frequently we find the same in the names for our emotions. But we are able to group and define all our emotions by taking advantage of the two facts I have mentioned. To repeat them: our emotions are towards objects that we like or dislike, and the variety of our emotions towards any one object is according to the variety of aspects in which we may think it. XVI. 4.

With reference to things that we like, we have delight in their presence and in the corresponding thought of them when they are absent. We specify the delight according to the object. In the material sphere, for example, we have the enjoyment of meats and drinks (when this is an emotion, and not merely the pleasure of eating and drinking), we have rejoicing in the freshness of a morning, and a chaster joy in the calm of an evening, we have enthusiasm for whatever we want to accomplish, and satisfaction in seeing it done, and in the thought of leisure. With reference to the objects of our interest in the other three spheres, with reference, for example, to friends, to ourselves, and to God, we specify the delight as love, tenderness, heart-melting, and have milder words for a slighter emotion. Towards an object that feels, we have sympathy, viz. joy in its joy and pity for its sorrow; and it is towards the objects of our sympathy that we may have a sense of humour. When we have thought of an excellence in the object we have respect, admiration, reverence, and when the excellence is thought as our own, there is pride or vanity. When the thought is of our relation to others, we have emotions like shyness and gratitude; when it is of our relation to God, we have devotion and aspiration; when of our relation to ideals, we have a sense of duty, of honour, of dignity. These emotions are all, you observe, with reference to objects that delight us. When such an object has been in danger, or we have thought ourselves in danger of losing it, but have won, we have rejoicing, exultation, elation, ecstasy. When there is still the danger of losing it, we have hope and fear, despair and despondency, anxiety and worry. When it is lost, the

XVI. 4. thought of the loss becomes the base of disappointment, regret, sorrow, anguish, melancholy, and, if the loss is of an excellence in ourselves, shame and remorse. Finally, when our thought is not so much of the loss of good as of the presence of ill, we define our emotions in a similar way round the objects of our dislike. Instead of love we have hate, instead of enthusiasm ennui, instead of admiration contempt, instead of humour ridicule, and instead of sympathy we have envy, jealousy, anger, a pain in the pleasure of others, and a pleasure in their pain.

The four spheres comprise what are sometimes called our real spheres of interest. Our interest in their objects may be intrinsic or extrinsic, and we saw that extrinsic interests may become intrinsic. The æsthetic interest of things is all intrinsic, whether they are things of nature, or works of art, or merely momentary objects of our own imagining. We saw the nature of the æsthetic sphere of interest, how it widens and deepens with the development of intelligence in all our interests, and why it may fail to develop. Our æsthetic emotions can obviously be grouped like the others. Beauty pleases, and ugliness displeases, in various respects; the words that denote the variety of our emotions mean species of like and dislike; and, except that some of the words are more characteristic than others, *e.g.* being charmed and revolted, they are the same words that denote emotion towards things in their real capacity.

The sphere of our intellectual emotions is knowledge or truth, and its interest may be extrinsic or intrinsic. It is extrinsic when not merely in the truth but in the use that may be made of it, or in its consequences. Then our cognitive interest, our interest in the fact that things are as they are, is according to our interest in what they are. And so there is a corresponding grouping of our emotions; we delight, fear, hope, and so forth, that things are as we think them. Our interest in a truth is also extrinsic, if due to our having discovered it, or to its agreeing or disagreeing with a theory that we hold; and again the emotions have the same names and grouping as before.

It is somewhat different with the intrinsic interest of a truth. The interest is twofold. (*a*) There is our interest

in a thought as claiming to be true. We are satisfied that it is true, or we are not, and, if we take thought of the claim, we feel the satisfaction or the dissatisfaction. This is emotion, and it presents a parallel with the general heads of emotion in all the other spheres of interest, viz. with being pleased or displeased, liking or disliking; though when we use these words about a truth, we mean an extrinsic interest in it. (β) So far our intrinsic interest in a truth depends on whether we think it satisfies the conditions of the system to which it claims to belong. But we also have interest in knowing this system, and thus may have another interest in the single truth according to the degree in which it contributes to our knowledge of the system. If there is nothing fresh nor important in it, we have no emotion, being indifferent to it; but, if we think it important, we value it and may have the same emotions about it as about means of any kind. XVI. 4.

The names of emotions frequently name other experiences as well. We should expect this considering especially that every desire involves emotion. Hence the error is in the question when we ask whether vanity, ambition, courage, and others are emotions, or whether they are vices and virtues. It is also an error to object that, if the feeling of confidence is an emotion, so must in some degree be every feeling of belief. Of most of our beliefs from moment to moment we are so certain that we do not need to feel certain or confident; only when a claim to be true has met some kind of challenge do we set it before us, and feel confident or doubtful. Nowhere is it more necessary than in dealing with emotions that we should be independent of the mere difference of name; we have to translate the names into the common scheme, and to find the real connection of their meanings according as they are generic or specific, and according to the aspects of things that are their object and base. And observe that different words may stand merely for different intensities and durations of emotion. The types are the words passion and mood. When an emotion is intense it is called a passion, and when prolonged it is called a mood. A mood weakens if there is no change of thought, but it becomes passionate as it finds objects about which to indulge

XVI. 4. it. You have noticed, for example, how easily a mood finds fuel for itself; in extreme cases—*e.g.* an irritable, an affectionate, a hopeful, a despondent mood—the ease is astonishing, and it is pitiable in disease.

Our emotional character, our faculty for emotion, is in whole or part called our disposition. The word is used sometimes, and by psychologists very frequently, to denote any faculty and character (ii. 11); but just as by character we ordinarily refer to moral character, so by disposition we ordinarily refer to emotional character. When we speak of a person as being well or ill disposed, we may refer to his conduct, but primarily to his emotion, viz. to his like or dislike of an object, to the feeling with which an object affects him. And most of the adjectives that we use with disposition have this reference, *e.g.* gentle, passionate, irritable, sanguine, phlegmatic, benevolent, malignant. A disposition that is deep-seated is called a temperament, and the same adjectives are applied to it according to the kind of interest or emotion that we commonly or markedly feel in situations that present themselves. On meeting with a disaster, for example, or on seeing or hearing of another's, the man of melancholy temperament selects and indulges in the woeful aspects of it, the phlegmatic man takes his satisfaction in the thought that such things must happen, the sanguine man his in hopes of repairing it, and the irascible man his in anger with the cause of it.

§ 5. All dispositions are defined by the kind, the duration, and the intensity of our emotions on different occasions. They are merely descriptive units named after the experience which they are said to produce. Since the objects and spheres of our interest form a coherent and growing system, the same is to be said of the dispositions that give them their interest. And our disposition towards any object produces a variety of emotions about it according to the aspect presented. The disposition changes and grows according to our experience of the object, in a manner that we saw in the case of our æsthetic disposition; and I shall return to it in a moment. Any change in respect of one emotion about an object affects our whole disposition towards it; and often we are not aware of the change that is taking place, till a critical

occasion reveals it in a feeling, or want of feeling, that is some- XVI. 5.
times a tragic surprise. And our dispositions towards different objects and spheres of interest have not only each a coherence within itself, they have coherence with one another, forming an emotional character that is more or less interdependent and consistent with itself, as our other characters are. Though the objects of our interest are in very different spheres, we have seen that our emotions about all are so far alike that they have the same or similar names. And though our likes and dislikes, our sympathies, angers, and admirations, are not always consistent with one another, they tend to be. Just as a change of feeling towards some aspect of an object affects our whole disposition towards it, so the change in this disposition affects to some extent our whole disposition or emotional character. It is a slow process, but there is to be seen in every one, and especially in ourselves, a gradual assimilation of the whole to the part that we most indulge, whether it be good, or whether it be bad. And again the result, though gradual, may be tragic, and surprise even ourselves.

The growth of our disposition, the widening and deepening of our interests, may be likened to the growth of our intellect. And the comparison is useful, not merely in order to bring together our results, but in order to observe three things in the relation of higher to lower interests about which there is little or no confusion in dealing with our interest in knowledge, but much in dealing with our other interests. The three are (*a*) the independence of our higher interests, (*b*) their strength, and (*c*) the elevation of our lower interests by connection with higher.

(*a*) Perception is developed in the interest of sensory problems, and conception or thinking in the interest of perceptual problems. But the higher forms take an interest of their own as well. When we turn to our other interests, however, there is one development, and it is the most important, where the independence has frequently been grudged, and even denied, by writers on human nature. I mean the development from feeling for self to feeling for others. Our earliest care about others being for our own sake, it has been thought that, growing from this, our care for others must

XVI. 5. remain selfish. Some have thought pity, benevolence, and love to be a species of cunning, by which we accumulate praise, power, and other advantages for ourselves. More have thought that the cunning is not ours but nature's, and that we are blinded, and defrauded of something, in our passion and our sacrifice for them. Some have thought that justice, and all the social virtues, are the trick of the many weak against the strong; and that in the sense of honour, in love of country, in devotion to any social good, we are the dupes of popular applause, and deceived about its value. Such opinions are largely due to the confusion that, since we do what pleases us, we must aim at our own pleasure, even when we think our care is for the pleasure of others. Among other deceptions would be the curious one that we must forget the truth, and think we are really caring for others and not ourselves, in order to have the pleasure or the pain. And to this objection one might add that of the moral consequences. But our concern is with the source of the error. It springs from a superficial, but confusing, analysis of experience and faculty; and we can best examine it by taking the question as an exercise in analysis. Let us look (α) at the object in the experience, viz. at what the subject sets before him that pleases him, (β) at the subject that is pleased, and (γ) at the subject experience.

(α) The object in which I delight may be the happiness of others, as when I like to see people enjoying themselves; or it may be their happiness as wrought by me; or it may be their happiness as a means to my own, as when I think they will deal leniently with me in consequence. These three objects are different, and no one would say that the first and second are really the third put shortly and deceptively.

(β) But while they are each a base and occasion of emotion, none of them, not even the third, is the sole cause; for experience, we saw, is never the sole cause of experience (v. 3). The other factor which we call I, the subject, or self, and specify according to its reaction on the occasion, is my disposition towards the wellbeing of others. My disposition may be selfish, yielding little or no delight in another's good, unless I think his good is my doing, or that it will bring me advantage. But the more things in which

one can consistently delight, the better; so much the worse, then, if I cannot delight in them except under infrequent conditions, as when they promise me certain other delights. We should have a poor life of it if we had to be selfish, and poorer if we knew it. But there is no more reason why I should not delight in another's happiness than why I should not in the tale of his adventures. There is a double misunderstanding on this score, and we have already seen it with respect to knowledge. First there is the confusion regarding what we can and what we cannot answer to the question about the development of interest. We saw with respect to cognitive interest that there is nothing in the lower interest, so far as it is felt, from which the higher is bound to grow. And so it is with respect to other interests: we can only say how higher grow from lower, not that they must. But the more fatal cause of the misunderstanding is the error about the selfishness of our early interests. When considering the transition from sensory to perceptual knowledge, we saw the error of asking how a knowledge of what is within our mind can become a knowledge of things outside it. It is the same error to ask how selfishness becomes unselfishness in children, as if, again, the transition could only be due to a lucky mistake. But just as at the sensory stage a child does not know objects as within its mind, so neither at the early stage does it know itself for selfish. And the critic is wrong who thinks the child merely in ignorance. The sensory objects that it knows in sensation are real objects, and similarly its delight is in objects that please it. In passing to a higher stage of thought it knows the real objects better, and in passing to a higher stage of interest it has delight in aspects of them for which it had no feeling before; it has delight, for example, in the pleasure of others. As the higher cognitive interest may become intrinsic or independent, so may any interest. At the same time, of the three bases of my delight in the happiness of others, the first that I mentioned is probably also the first in time. A child has pleasure in the glee of others before it is capable of the more specific and difficult thought of itself as cause of the glee, or of the glee as an advantage to it. XVI. 5.

XVI. 5. (γ) An emotion is a subject experience; it is a pleasure or displeasure about an object without itself being object. To make it object and to be pleased or displeased with it is an additional experience. A good man must delight in his goodness, but if he has to think of his goodness in order to taste the delight, we do not think much of either his delight or his taste. And we think less of them if what he likes is to feel the pleasant sense of his power. Yet this is a frequent reading of the unselfish emotions; it is the modern refinement on the doctrine of Hobbes that pity, love, all feeling for others, is selfish except in people who "lose their wits," because it is only an example of the "perpetual and restless desire of power after power that ceaseth only after death," which he says, "I put for a general inclination of all mankind."[1] "To be useful to others serves to increase the feeling of power, and consequently is a pleasant thing in itself; it is better to give than to receive. Some people show a decided preference for those who are willing to ask their help; they are thankful to them for the occasion of giving, and so of displaying their power."[2] Hence, it is said, "the egoistic origin of altruism." But, on the contrary, that is a growth to the most unpleasant form of egoism. To like to help others, and even to like others because they depend on our help, that is one thing; it is a thing that they would like one to feel, for it blunts the sting of dependence. But to delight in helping others in order to feel that "our power is at least relatively greater" than theirs is to take delight in a very different thing, and is properly resented even by those who are low enough to give it occasion.

(*b*) Our higher emotions grow in strength as well as independence. This also needs observing if we would avoid confusion; and again we get a lead from our cognitive interest. Sensory and perceptual beliefs are more vivid and compelling than conceptual beliefs; but, when there is competition between them, the latter usually prevail, and the others are taken for illusory, however compelling. The strength of a conceptual belief is great or small according

[1] *Leviathan*, chap. xi.
[2] Féré, *Sensation et Mouvement*, p. 70.

to the mass of belief that is challenged with it. We can apply this directly with regard to the strength of our other interests. If we compare our pleasure or pain in any object, *e.g.* in a taste, a colour, or in cold, according as our thought of it is sensory, perceptual, imaginative, or conceptual, we find that the first is more intense than the second, the second than the third, and the third than the last. And we usually esteem a present good more highly than the same good in the future. But so far we are comparing the differences of our interest in thoughts of the same object, and it does not follow at all that the interest in a conceptual object must be less than the interest in an imaginative one, this less than the interest in a perceptual object, and so on. We have seen the reason. A perceptual or an imaginative thought means many sensory objects, and a conceptual thought means many perceptual or imaginative objects; for, if it is the thought of a general object, it means the cases of it, and, if it is the thought of an individual object, it means the multitude of its qualities and relations. Our interest in such an object is not a collection of interest, not the sum of the pleasures and pains we can have in the various aspects of it. But it has this multitude of interest at command, and we may proceed to realise it if it is challenged by a competing interest. Hence our feeling for home or country, our sense of honour, or of duty, though slight feelings as a rule, have the strength of our whole disposition, our capacity for feeling, regarding them. It is just as we repel an adverse opinion about them, without having to think of the reasons that we know. XVI. 5.

The strength of our emotions towards things that have to be sought accords with the strength of our desires and aversions, for these are according as the things please or displease us. And what we saw about measuring the strength of desires (iii. 11) we may extend to our dispositions and emotions about things that have not to be sought. Their strength also is revealed in our preferences. But it is a common error to suppose that we can abstract the pleasure and pain—the pleasantness and unpleasantness—and measure them apart against one another, and add and subtract them. A great part of our moral training is that

XVI. 5. it shall please us to encounter pain, and do things that we don't like. When we do them, we cannot say that our degree of emotion or excitement is that of the pleasure minus that of the pain; neither is it their sum, nor their product; there is no counting them in abstraction. When it pleases us to mourn with others, how should we count the pleasure and the pain? And how in a luxury of our own woes? How again when danger attracts us in sport or occupation?[1] And in our emotions towards things that displease us, viz. in hate, or anger, or contempt? "An emotion may be very subtle and at the same time very intense, as a fine cloth may be stronger than a coarse one."[2] We saw this when dealing with æsthetic interest (viii. 9); and you may remember a saying at the end of *Romola* about "the highest sort of happiness" that it "often brings so much pain with it, that we can only tell it from pain by its being what we should choose before everything else."

(*c*) To call interests higher and lower is apt to suggest a prejudice against the lower, and also a notion that the two are bound to conflict. But there is no more reason for thinking so than when we speak of higher and lower cognitive interests, and say that perceptual beliefs are inferior to those founded on reasons. By higher is meant more highly organised, and it holds of all interests, as we found it hold of knowledge and intellectual interest, that the lower grades are indispensable to the existence of the higher, and that the lower do not stand outside the higher, but are organised as part of them. We saw this especially with regard to æsthetic interest. It is essential to all our interests that our organic appetites be satisfied, and on the state of our health depend especially the character of our moods, and thus the quality and the strength of our interest on any occasion. Not only so, but every emotion has its group of organic changes. This is a matter, however, that we can

[1] "Nervousness wakes a person up and makes him alive and alert and heightens the thrill of a new and doubtful experience. The car could easily jump the track, of course, . . . and standing there looking down upon the Indian Empire from the airy altitude of 7000 feet, it seemed unpleasantly far, dangerously far, to be flung from a hand-car. . . . That was the most enjoyable day I have spent in the earth" (Mark Twain, *More Tramps Abroad*, chap. lix.).

[2] Stumpf, *Zeitschr. f. Psychologie*, xxi. p. 86.

more conveniently discuss in connection with the indirect explanation of experience (xviii. 18). xvi. 5.

§ 6. (iii.) Besides the defect of intellectualism to which the moral, like the æsthetic sense, is prone, our moral sense has the defect of sentimentalism, when it is not distinguished from the æsthetic sense by a quality of its own, viz. its practical quality, as shown in conduct. I am speaking of the thing, of course, and not of what the name 'moral sense' ought to mean. It does sometimes include the reference to one's will, as when describing a man's conduct we say that he has no moral sense. But usually the name refers only to thought and feeling, viz. to the knowledge of right and wrong, and to the pleasure and displeasure with which we regard them. Whether it should also include the third reference, namely, to will or conduct, is a matter of small importance, provided we are told whether it does or not. But doubtless the vagueness is due to confounding thought, feeling, and will; and it encourages the error that knowledge guarantees feeling, and feeling will. As knowledge and a power of understanding may be learnt, and yet give little intellectual interest; as knowledge and correct taste may be learnt that give little æsthetic enjoyment; so a weak will may go not only with a knowledge of what is right, but with great emotion in the thought of ideals, deep sympathy with suffering, much resolving, and great remorse. And one may be very well disposed, and act very properly, who has little initiative and is incapable of much enthusiasm and active endurance. As before, the one-sidedness of the learning is due to want of practice or discipline, the discipline now of absorbing oneself not with problems to be solved, nor in things to be enjoyed, but with decisions of our own taking and executing. The defect is not peculiar to the moral character and the sphere of moral interest, but to our whole active or practical character; and to this wider field we may now proceed.

I may add a remark, however, on the word conscience. It is a synonym of 'moral sense,' referring especially to our power of knowing the right, less perhaps to the source of our feeling, though always to the source of remorse, and hardly at all to the source of conduct, except when conduct is

XVI. 6. thought to follow from knowledge and feeling. In view of an old controversy as to whether conscience can err and be educated, it should be observed that the word is used in two senses, whose confusion was really the cause of the controversy. It sometimes means the conscience that any one actually has, a power that has grown in him, and that differs to some extent according to his country and generation, his years and upbringing. And it may mean the ideal of conscience, which, of course, is the same for all, and can have no defect. The two meanings are familiar in our use of the word reason. We say that a man's reason may be feeble, prejudiced, and otherwise defective; on the other hand, we speak of reason as the permanent, unerring, final court of appeal. It is the same with the word conscience, for which, indeed, the term practical reason has sometimes been made a synonym.

§ 7. In considering the structure and growth of our practical character, I need dwell on neither the knowledge nor the character that we ought to have. These present no peculiar problem that we have not considered, and we saw the nature and the importance of self-reflection. Nor need we follow the growth of our feeling towards objects and a self, that we know to be desirable. It is enough to take the essential question. It is the question of desire or will as distinguished from knowledge and feeling, the question of our seeking an end, as distinguished from knowing it, and from delighting in the thought of it. The difference from knowledge, and the connection with it, are clear enough; but not, we saw, the difference of seeking from liking, and their connection. It is here that we find most confusion, and not only in theory, but in estimating our own character. We examined the difference and connection when defining the nature and the strength of desire and will (iii. 11). And, applying that analysis, we shall now look at the structure and growth of a strong, active character by contrast with characters that act weakly in the same situation.

The question is not to be confounded with that of the contrast between a practical character on the one hand, and an intellectual and an emotional character on the other. A man may develop his experience of a given situation in a

theoretical or an emotional direction, and so far he does not seek to alter it. But we are dealing only with desires that seek to alter things, and that are therefore called practical. And we are not yet concerning ourselves with any conflict among these three interests, or among desires to realise them; our present concern is with practical desires, and their strength against one another. XVI. 7

Let me repeat the connection between liking a thing and desiring it. Every desire is for a change that we like; and in any conflict the prevailing desire, called our will or choice, is for the change that at the time we like best. In desiring a thing, besides liking it, we give ourselves to realising it. When the thing exists already, there can only be liking, of course, because there is nothing to desire. And when the thing does not exist, it may be liked without being desired. Of this there are two cases, viz. when the desire would be futile because nothing can be done, and when our liking for an alternative good is so superior that it alone is desired. In order to see on what the strength of our will depends, and how it grows in strength, we may group the facts by considering (*a*) our futile desiring, and then (*β*) the less futile, but more or less ineffective desiring that we have in a conflict of desires.

(*a*) It may seem no serious defect to wish for what one knows to be impossible whether in circumstances or oneself, but, since it is common in feckless, and rare in practical people, it is a symptom of defect. And it is also a cause of defect; for, first, it weakens the attractiveness of what we *can* achieve; and, in the second place, it offers an easy conquest and satisfaction in idea, which are adverse to the struggle, and the liking, for a real achieving. Of the first, there is a typical example when admiration turns to envy. When this becomes habitual, its effect is seen in a querulous discontent, in the common meanness of striving for what others are expected to envy, and in the loss of desire and appreciation for an excellence of any other sort. Of the second, the typical example is when aspiration turns to building castles in the air; there is more pleasure in achieving great deeds in idea than common things in reality. The greater the adventures, the greater the satisfaction; and, so

XVI. 7. far from the aspiring being an inspiration, there is the more distaste for the pains, and the dust and heat, of all real achieving. Both types of example are forms of a selfishness to which emotional and imaginative people may be more liable than others, but to neither inevitably, to the second no more than to the first. On the contrary, it is essential to an emotional life that a man should be taken out of himself in idea, just as it is essential to a practical life that he should be taken out of himself in reality. Futile desiring may not be so selfish that the desire is for our own good, and yet it may have something of the same effect. Every one has known people whose enthusiasm for the welfare of others is more an indulgence of idea and feeling than a spur to even trifling sacrifices. But I am not mentioning anything to condemn it; and I need not say that there is futile desiring that no Job would condemn, nor any one, till the world is quit of disappointment. Our concern is with the conditions on which depend the strength and the growth of our will; and what we have seen is that the habit of futile wishing limits and weakens our desires, instead of multiplying and organising them to a greater strength.

(β) Desires may be immediate and single, as in appetite, or comprehensive, as in pursuing ideals. But even the man who has reflected little on his present or future has so far a knowledge of the system of his wants that the thought of them rises against a conflicting want, just as he may reject an opinion without rule, and for no weightier reason than the bulk of belief that he would have to sacrifice if he entertained it. Above this, there are all degrees of conscious organisation in the system of our wants and our knowledge of it For every small sphere of them we have some system and ideal, some object of general desire, and together these have some degree of system also, and form more general ideals. An ideal, whether of the whole system or part of it, is not a real purpose, not an object of effective desire, except as it creates or affects one's particular desires on a present occasion. And its use is rather to create, develop, or intensify desires than merely to maintain a harmony. The practical, like the intellectual and the emotional character, is stronger the more it seeks its own expansion, but also the

more it is capable of acting without conflict and a need to reflect. If the present particular desire is supported by the whole, or is not at enmity with it, there is no need to think of the whole, or of any ideal, or of ourselves at all. And it is a weakness to do so, as it would be in matters of knowledge or taste, if we had to think of rules or of the course of our understanding or feeling. This is not always observed by those who urge the importance of knowing oneself. And there is a special reason for observing it in respect of our practical character, and of our strength of will in any interest, as we are now to see. XVI. 7.

We have little or no trouble as a rule in knowing what it is best to do. We have a little more trouble in saying what we should like best to find ourselves doing, and to have done. But when we are quite clear in both knowledge and feeling, we frequently find that we do not desire the thing they commend. We may not only delight in the thought of desiring it, so that we resolve on it for the future, but, even at the very moment for action, we may wish that we desired it enough, and yet fail to act. We like the desire in every way as an object experience, but not as a subject experience at the only time when the desire can be effective. And simply, as we saw, because we then like something better; we prefer to do nothing, for example, or to take the easy course of our habit, or we are averse to the consequences when they are imminent. It is then that we frequently seek to strengthen ourselves by ideals and considerations, whereas the only appropriate consideration is that there is nothing to prevent our acting but our thinking about it. Even if all our thoughts went in the direction of strengthening the better side in the conflict, the mere delay is a risk; and, if the thinking is long, there begins the indulgence of a futile bemoaning and desiring, like Hamlet's. You will find it a useful exercise in analysis, and enlightening in many ways, to follow the course of the conflict in order to assign the origin of the 'fiats of will,' arbitrary and reasonable, in which the conflict ends, and to see why the fight may fizzle out. As regards the point that concerns us, it is obvious that any success or strength that is got by brooding on ideals, deliberating and making resolves at the moment for action,

XVI. 7. is like that of the weak and timid, who cannot do what they want till they whip themselves into a passion. It is a better strength than none, but it is not the best form of inspiration that has to work like liquor, or a war-dance, in face of the enemy.

§ 8. In this quality of strength or weakness our practical character is always under training, and the result is seen even less in the training of the young than in that of older people, according to the demands of their occupation. But the result is apparent everywhere. The lesson to be learnt is the habit of acting up to one's resolves, and of seeking to act in whatever interest one has adopted. It is not equally easy at all times; but even fatigue and ill-health may come to be taken for obstacles to overcome instead of excuses, as they are by stubborn and fiery spirits. Like all learning, it depends on native capacity. It is an easier lesson to persistent, bold, and stirring natures than to the impressionable, timorous, and easy-going. The former easily learn a self-respect in the matter of their will; but, if it is harder for the latter to learn, the result again may be better in being respect for a better will or self. But they can only learn the habit if they stake their self-respect on maintaining it; and if the stake grows with every win, it also lessens with every loss; and then severe measures have to be taken, if it is to be restored, not in our opinion merely, but in effectiveness.

Our bad habits do not work blindly and against our will. The desires, of which they consist when challenged, we *seek* to realise, as we do those that we approve. When young, we have too high a notion of ourselves, and set too high an ideal of ourselves before us, to regard them as part of our permanent selves; and we underestimate their strength. When we are older, our ideal and our notion of ourselves are more accommodating, and, though we condemn our bad habits, we feel at home in them. We regard them as we do our prejudices; we do not defend ourselves for entertaining them, but we should hardly know ourselves, or what to do, without them; we hesitate to give them up, even if it were easy, and we either overestimate their strength, or fear that we have nothing so good to put in their place.

But neither is it difficult to understand a revulsion against the tyranny of habit, and against a low level of satisfaction. A man of luxurious habits may turn with zest not merely to the thought of a hard and simple life, but to its actual enjoyment. The joy of a whole-hearted devotion to any one, or any cause, may laugh effectually at habits. And there is the freedom that comes by religious enlightenment. One may rise above the very need to engage in a struggle by the delight in emancipation, and in the invigorating atmosphere of a new world in which one seems to be reborn. Instead of parleying and a conflict of desires, we see our habits as when children we saw them in our elders with amazement and disgust. They have no power over us except we like. But, of course, it is to behave as children to think that we cannot like to act on their level again; and it is ignorance, and not merely arrogance, to suppose that we can never like again the object of our present disgust, and that we can regain our devotion, enthusiasm, self-respect, by recalling them and the thoughts which have been their base in the past. They are no more certain to come with a kindling thought than appetite with an appetising meal. XVI. 8.

To expect otherwise is the erroneous view of 'the freedom of the will' in practice. We are free against any of our likes, if we like to do something better, just as we are free against error and prejudice, if we know better. But the better liking, like the better knowledge, needs learning, and under as definite though different conditions. I have spoken of one condition, viz. the actual seeking, or giving ourselves to realising what we desire, instead of thinking about it, wishing that we did, and assuring ourselves that we shall. It is the characteristic factor in our practical as distinguished from our intellectual and our emotional character. And since thinking and feeling take interest on their own account, so must our will and action. It is the more necessary in civilised life, where the spur of necessity is seldom applied. Neither periods of enlightenment nor periods of emotional indulgence have been special periods of a strenuous life. Lower grades of mind act according to their lights and delights; but if our intellect needs the schooling of science, and our disposition the schooling of art, it is not to be

XVI. 8. expected that the pressure of daily life is enough to harden our will to the decision and energy demanded by purposes to which there is nothing to compel us but our own desire. And it is important in theory, as it is in practice, not to confound our experience of seeking an end with our experience of liking it, nor with delight in the thought of our seeking it. So we shall find when we take the question of the freedom of the will.

§ 9. (iv.) I shall take this question under our fourth head, passing now from our different characters to our self as a whole. It might have been taken under the heading we have left, but it is well to be reminded that, instead of freedom of the will, we may say freedom of self. The question is about our freedom in seeking ends of any description, our freedom in any character.

The question must occupy some time, but the less may be given to the general question about the development of our self. I need hardly say that no question arises as to how our three characters come to be connected in or by our self; they simply define directions in which every self must grow. In the fifth lecture we saw the relation of self to its faculties and characters; we saw what is meant by its having and producing experience, and its growing by means of experience; and we saw that there is no way of understanding the structure of the mind but by following this growth. It is the growth of our power to experience, beginning with the purely instinctive power of which experience is the growing point. We have seen that the growth is in both the subject and the object of experience. The latter is the development of our environment, and not merely of our physical environment (ii. 9), into spheres of inexhaustible interest. The development of our subject experience is the development of our power to seek and realise their interest.

Our progress in all three characters is seen in our power to achieve ends immediately, that at first had to be sought, and with effort. But a power of easy satisfaction is also a power of little satisfaction. If we were to begin as before with the characteristic defect or stupidity, I should give the neglect of this rather than the want of balance or harmony.

It is not as with our physical appetites, which also lessen the more they are satisfied; for they revive in much the same form as before. And among them we may include not merely the appetite for physical, but that for mental exertion, so far as it depends on our health and vigour. But our mental appetites are altered with their satisfaction, and demand a different meal. Our intellectual appetite is starved if presented always with the same kind of problem, and we have no longer taste for what we know already. The same thing is seen in our practical life, whenever an occupation becomes monotonous, so that we are held to it by force of habit. Habit gives a new interest in place of the original one, but the strength of habitual interest is less in the pleasure of it than in the pain of thwarting it, and the fear of having nothing better to do. And, finally, it is the same even in the opposite case—the case of our intrinsic interests —where we want the objects in which we absorb ourselves to remain unchanged, and where we seek no economy of experience; for again we cannot indulge our appetite, and still keep it quite as before. We saw how the interest is maintained by working out, and working up, an intensive thought of the object; there is no resting nor mere repetition. "Beauty is a bread of the soul for which the hunger is continual," but, like truth and conduct, of which the same may be said, it grows stale if merely repeated. In order to revive our appetite, it is not always enough to rest and forget. It is the same real object that absorbs us, but we alter; our appetite gives and requires a deeper interest according to our history in the interval (p. 190). XVI. 9.

Hence it is that while life is interesting enough in youth by reason of appetites so instinctive that they need little or no learning, and by the novelty and promise of everything, the promise must fail in later years, if the instinctive appetite does not develop new demands and a world to satisfy them. It is a world to which there is no other entrance; and demand and world are the work of all real education from whatever source. The failure is seen in the fall of so many of us to the low satisfaction of habit and an effortless content. It is quite as apparent in people—their number is growing with the lightening of muscular toil, and with the

XVI. 9. increase of leisure and means of amusement—who rely on novelty, and are bored if they are not distracted. We cannot expect to enjoy life as well as ever, especially if we think about it, unless we live for something, and for something of our own achieving, for which we can thereby have a deepening interest.

A life devoted to one pursuit may not merely feel a deeper interest, but find a greater variety of interest within its pale, than many a life that looks many-sided. It is so in regard both to serious interests and to amusements. If an appetite does not crave, but must always be tempted, it may lay the whole world under contribution and find it insipid, for all its variety. It is only depth that commands variety in the long-run.

§ 10. We should see the practical importance of this, if we entered on the question to what a self or mind may and ought to grow. It is a prominent question in theories of morals, of education, and even of politics and economics ; and in all without dispute, so far as the general idea or ideal is concerned. Among ethical disputes there is really none about the end which is taken to justify and organise the rules of right conduct. It is true that ethical theories are usually named according to their statement of the end, but their disputes are really about the means of attaining it. Whether it be called virtue, one's own happiness, the happiness of the greatest number, a *summum bonum* in which worth and pleasure are coincident, the conciliation of egoism and altruism, complete living, the health of society, God-likeness, self-realisation, or the realisation of personality or freedom, every one of these is found to include the meaning of all the rest, when it is expanded into the description of an ideal character, whether in an ideal state of society or in the present. And always the defects are held to be two: a want of harmony or system in the character, and few or meagre interests, so that there is little to harmonise. But by a harmonious life is not meant a judicial balancing of interests, nor by a full life a catholic taste for everything. If the progress of knowledge must increase the need for specialising, neither is economic progress likely to involve less division and organisation of labour. It is by concentration

and depth of interest that we are able to demand, and find, the real wealth of life. Hence there is the best of reasons why individuality should increase, while mere simplicity tends to disappear. And, as opposing schools of moralists agree about the end, so do opposite schools in politics. Socialists believe with individualists that the best economic and social system is that which affords the fullest individual life. And in the chapter on desires, or the consumption of wealth, that has been added to modern economics, and made its core, nothing is more emphatic than that the desires that are most wasteful of wealth and labour are superficial, giving small return in the way of happiness, while desires that go deeper, though they need wealth and labour to produce them, consume but little afterwards, and more than support themselves. Finally, since they are ethical and economic reasons that control educational values, the central idea her too is depth of interest, and ability to achieve it. True, we do not find it in the conventional notion of accomplishments, of being well educated, and of cultivating one's mind. It is more especially absent from the common notion of a general education; and if it is present in the common notion that education should be according to the faculties that take it best, one can usually bring doubt by asking whether education must not also be for faculties that need it most. But, as among moralists and economists, so among those who deal with education, there is complete agreement regarding the end, and far more agreement about the means than appears, because the points in dispute are always more in evidence. XVI. 10.

§ 11. We may leave all these practical questions for that of the freedom of the will, self, or mind. We have already had all the matter for an answer; and we have seen in what special sense the human will is free, and capable of morality (xii. 9).

Although it cannot be said that this old question has been answered to the satisfaction of every one, it must be said that far the greater part of the controversy is seen to have been aside from any real point of dispute, and to have been due to confusion about the meaning of the will, and of its freedom. The confusion about the meaning of will

XVI. 11. was the more serious, because it was a confusion about the thing, especially about its relation to desire, about the relation of desire to pleasure, and even about the relation of will to self, and of both to experience. I shall not recall any of these matters. But a good deal of confusion has also been due to cross-purposes about what is meant in saying that the will is free. The word is quite commonly used of it in not fewer than five senses, the context showing which of them we mean. There is nothing unusual in this. Simply there are five respects in which we may speak of the will as free from something. It is only in regard to one of the five that there is dispute about the fact.

The first meaning is distinguished from all the others by referring to the worth or value of our will. It measures our volitions by a standard or ideal of what they ought to be; and according as they conform or not, we are said to be free, or else to be enslaved by passion. In this sense we are sometimes free, sometimes not; we should like to have the freedom always; but it is a thing to achieve. This meaning is very common in both general and philosophical literature, and in both it is often spoken of as 'real freedom'; but it does not concern any question in dispute.

From this meaning all the others are distinguished by referring to our will as fact, and not as having worth. The second meaning speaks, not of our willing, but of our power to do what we have willed. It is in this sense that a prisoner who wants to get out, a paralysed man who wants to walk, and a student who seeks to remember or to solve a problem, and fails, are not free. In this sense, as in the last, we are sometimes free and sometimes not. It refers to more of our active self than the part we call our will; and I should not have troubled you with it, except that, since Hume, it is frequently mentioned as one of two senses in which we, or our will, can be called free or at liberty. The other is our next meaning.

The meanings that remain speak of our willing, and it is with them, therefore, that we are really concerned. The third speaks of nothing specific, but of a property included in the very definition of will; for to will is to seek to do what we like best to do. In this sense not only every

human being is free, but every creature that can seek. Two contrasts are intended by saying that all seeking is free. Every creature in seeking acts (*a*) according to its own nature, and (*β*) as it likes. (*a*) The former seems a needless thing to say, for nothing acts except according to its own nature, no matter what the external force; but this is not always remembered in speaking about ourselves as play-things of chance and creatures of circumstances. (*β*) And seeking is free of external compulsion, not merely in being action according to one's nature, but in its being action according to one's liking. This distinguishes it from the action of lower natures, and from our own action when it is not voluntary. Things lifeless and living have different grades of organisation, independence, and spontaneity. There is the series of mechanical structures from sandstone to machines, and of chemical structures according to their degrees of complexity and stability. And against the low spontaneity of inorganic bodies there is the spontaneity of living beings on behalf of themselves and their offspring; it is greater when they are not merely living but conscious; and it is greatest when they seek, doing what they like. XVI. 11.

The fourth meaning specifies the still higher type of nature where there is the power to make itself an object of thought and interest. It is this, I have repeated, which distinguishes our will as rational and moral. Merely impulsive beings are free in the sense that they do what they like best to do, but they cannot make their character the object of their like or dislike. At the higher stage, freedom means not merely that our nature is more spontaneous, independent, complex, and individual, but that it is this by being free from a certain limitation in lower natures. To express the contrast it is said that we possess our character instead of being possessed by it, or that we have it instead of being it. The language leads to error, however, if it suggests that we are one thing, and our character another; it would be the same sort of error as taking our will to be one thing and our desires another. Our will, our desire to do what we like best to do, is free against other desires to do what we like, but do not like so well. And when it is said that we are free against our character, it is meant

XVI. 11. that our character is free against taking itself as it is, if it does not like its present, so well as another state of itself. In this sense every normal human being after infancy is free, whether he be saint or sinner. Again, of course, there is no dispute about the fact of this property of our self or will. And as the property distinguishes responsible men from irresponsible, and from the lower animals, it has the best right to be called our freedom, and to be meant when we speak of the freedom of the will without specifying in what respect. But there is a fifth meaning, which, though an error, is so familiar, that every other use is ambiguous. Hence, instead of the fourth meaning being called the freedom of our will, character, or self, it is frequently called our self-determination. This means more than the determination of our conduct according to our likes and dislikes. The third sense of freedom says so much; but the fourth means the determination of our likes and dislikes. It means not merely the determination of our conduct by our self, but of our self by itself. The third meaning put freedom in contrast with external compulsion, the fourth puts it in contrast with the tyranny of habit, and with anything in oneself that one does not sufficiently like.

The next and the final sense in which the will is said to be free claims to assign it a still higher nature and degree of freedom. It regards two conditions in self-determination to be limitations that we can over-ride. One is that we do not seek to act otherwise than we do, unless we have a stronger liking for the other way. The second is that we can only achieve an improvement in our liking, if we take the proper means. It regards these as defects.

Let us look at them in practice. Wishing does no more to give us a good will, or a good heart, than a good head. As a strong, or a pure, or a kindly man stands but a poor chance of ever liking to be the opposite, so men may become weak, vile, or selfish, to an extent that gives little chance of their being disgusted enough with themselves to reform of their own accord. Neither the good nor the bad are fixed in their courses because they are in the grip of old habits compelling their conduct without their will or liking. They do what they continue to like best to do. In the good it is

owing to the absence of the first condition: they have no sort of liking to possess the opposite character. The bad are seldom in this position, because their character is more or less at war and dissatisfied with itself. Hence they usually wish a better in one or more respects, but the wish is futile, by reason of the second condition: they jib at the means. They may fall still lower, ceasing even to wish for what they know to be better; then they voluntarily degrade or demoralise themselves from the grade of freedom on which they may claim to be treated as moral or human beings. But it is usually in defect not of wishing but of working that their character gets no better. A man of weak will would rather be strong, but he is less averse to acting weakly than he is to taking the necessary steps; they are the steps necessary to make him prefer strength to weakness in acting, and not merely in thinking about it. It is no easy learning to delight in strength as one's subject experience; it is very easy to delight in it as object experience. He knows, however, that there is nothing to prevent his effort but himself, and that there is nothing in himself that prevents him except his preference for another course. XVI. 11.

You may be surprised that this freedom should be thought an inadequate basis for a moral life. But so it is by those who give the fifth meaning of freedom to the will. Certainly the twofold fact is plain enough: we only will what we like, and we cannot always bring ourselves to like what we ought by means of thinking and emotion, but have often to take more difficult and unpleasant steps as well. It is on this account, of course, that there are degrees of responsibility according to health, heredity, environment, and upbringing. But why should it be said that no real responsibility is possible at all, if this is the whole fact? It is answered that so far freedom is still bound by those conditions to the ordinary law of causality, viz. that the same cause has always the same effect. That is true, and it makes no difference that our experience in willing is never the whole cause of our decision (v. 3), and that we may not always get the same result for the same conscious effort. That is within the truth of the law, and it has to be considered when we measure the degree of our responsibility for the result. But

XVI. 11. it is contended that, if the work of our will were entirely subject to the law, then our sense of responsibility, of duty, of remorse, would be no better than a useful deception. The contention is wrong, we shall see, but you will be less surprised at it when I add that, if our will is subject to the law, we cannot look back on our voluntary actions and say that they might have been other than they were. We cannot say this of the part of our lives for which we are most responsible, any more than of the part for which we acknowledge no responsibility at all. And it must be the same with our present and our future conduct as with our past. Therefore it is not a view that, at first sight, one is willing to take; but we are to see that it is the only view consistent with responsibility, and with the demands of a moral and a strenuous life. For what professes to be a higher grade of freedom would be no freedom at all, but the rule of chance.

This, the fifth and last meaning of freedom, still regards our will as cause, but gives it the property of being free from the condition that the same cause has always the same effect. Unlike the other meanings, it names a property which is disputed. Common opinion may be said to believe in it, not clearly enough, perhaps, to deny its opposite, but clearly enough to be ready with the two arguments for it when it is challenged. One is the moral argument, the other our feeling of freedom in choosing. The objection usually taken against the existence of such a property is that it contradicts the principle of causality, which must be assumed in all our knowledge of a real world. The objection is met by confessing to a mystery, or by pointing to other contradictions of the kind in our beliefs, and either attacking the foundations of our ordinary logic, or giving them a further foundation that would make them a little more flexible. We may the more readily neglect both objection and defence because the two arguments, on whose account alone this kind of freedom is maintained, do not bear examination.

§ 12. (*a*) First there is the argument from our feeling free when making a choice. Before asking whether this feeling of indifference gives any ground for the theory, let us look (*a*) at the occasions of the feeling and (*β*) at its use.

(*a*) A brave man feels no more free to do what he despises

than a man, who knows the truth, can believe what he knows to be false; and not because there is anything too strong for their will and intellect. Far the greater part of our seeking is in this condition: we know what we want, and we want it, without even the thought of an alternative, far less a feeling of freedom to adopt it. And if we did challenge ourselves, and so make all this willing a choosing, we should seldom feel free, I hope, to take the alternative. But sometimes we have so little preference that anything may turn the scale either way. We may not know what we like best to do in a situation; we may not after deliberating, nor even after resolving. A weak man may find himself sporting with Amaryllis, when he was quite decided to take the uphill road. People too, who have learnt with ease, or with sweat, to have an iron will, who are certain in deed, as well as sure in opinion, may not know the scale of their likes: they may not know what to will, nor what they are going to will. And there are occasions when the right thing is to take any alternative without thinking about it, and when a better knowledge would spoil the situation, *e.g.* in calling head or tail at the spin of a coin. And to these various occasions when we feel indifferent or free in the choice of alternatives, we may add all situations in which there is any conflict of desire; for the conflict is proof of some degree of dilemma. All the occasions of the feeling are occasions of seeking, and finding ourselves in a dilemma. XVI. 12.

(β) If we only have the feeling when we are in a dilemma, it can hardly be taken for a power that we carry in conscious dignity and defiance of our nature and our preferences. In deliberating we seek to be rid of the feeling, and in deciding we succeed and take a side. If we continued in the feeling, we should do nothing: we should be like Buridan's ass, which starved with two bundles of hay before it, because it was equally attracted to both. At the same time, the use of the feeling is an even more adverse witness to the view that our will is determined from without, and to the view that it is determined from within, but only by impulse. We saw that the former view is at variance with the third as well as the fourth meaning of freedom, and that the latter view fails to distinguish the fourth from the third meaning. The

XVI. 12. errors are illustrated in the problem of the ass and its extension to man. If the ass died in face of plenty, Spinoza supposes some one to object, a man would also die; and 'yes,' he answers, 'if he were an ass.' The answer is to the point if the ass were really paralysed by conflicting desires, and could not diagnose his dilemma, as a man would. But, in the first place, the ass is not torn in two, and thus paralysed. He wants to eat, and can only starve if this desire is met by an ungovernable aversion to the hay, and there is nothing else to eat. In the problem, however, his desire meets nothing but a difficulty, and one that cannot lessen his hunger in the least. Secondly, even to observe the difficulty so far as to make a dilemma of it, and indulge a sense of freedom, needs a better head than his. He may see the bundles to be equally attractive, as we doubtless do the morsels on our plate, but he does not develop this thought of the situation, any more than we. It would need not only less hunger, but a higher curiosity than he has; for every perceptual or impulsive intelligence solves its problems by movement and not by thinking (xi. 2). It is a human prerogative to develop difficulties of choice. Sometimes we should be wiser to take the way of an ass, and not ponder the alternatives at all; and always we end by taking his way whether we find a difference, or whether we find the alternatives equally attractive, and ourselves therefore free or perfectly indifferent. We no longer stop the action till we have altered ourselves in certain particulars, or till we know ourselves more fully, and what we shall do; we let ourselves go. Finally, if the mechanical theory that gave rise to the problem were true, our difficulty should be greatest when the alternatives are felt to be equal. But, on the contrary, it is then that our exit is most easy. For then every means of deciding is a good means. We sometimes introduce an omen or other means to decide for us, but usually it is enough to let ourselves go.

The facts about the feeling of freedom and its use give no ground for the notion that the same total cause may have one effect at one time, another at another. Like every other cause, I, or my will, may produce very different effects; and if the stimulus or occasion is the same, it is because the

difference is in me. The nature of the difference may be revealed to me in my subject experience, *e.g.* in a difference of desire; or I may have to examine my self as revealed in my conduct before I find the change in me. My self at the moment of desiring is as individual and complex a matter of fact as any other, and is far from being all revealed in the experience which it gives me at the moment. It does not matter that I feel myself to be the same person at all times (v. 2); nor does it follow that I am equally ready to say 'heads' or 'tails' because I feel no preference. What I am aware of is what I hold myself responsible for, and this is clear enough; it is for seeking to say one or other, for holding it a matter of indifference which I say, and for letting myself go so that I decide without a reason. So far as I know myself, I am perfectly free to take either alternative, and so far I take neither; but I also know that if I let myself go, I shall add a factor that makes me say one and not the other. It is more or less a revelation to me which of them I say, and what made me select it. I had no reason, but who would say that there was no cause in me because I did not know it? XVI. 12.

§ 13. (*b*) The fact of a moral life involves our feeling free to take a wrong course or a right, without supposing a freedom of indifference. For in such a life, as distinguished from a perfect one, there is always conflict. There would be no conflict in a good man, if he did not feel inclined and free to do ill; nor in a bad man, if he did not feel inclined and free to do well. They are and feel no freer than they are inclined, but just as free.

The freedom of indifference is thought necessary, however, in order to justify the sense of responsibility and remorse, the praise of well-doing, and the punishment of wrong. The alternative is thought to be fatalism; and the opposing doctrines were called the libertarian and the necessitarian theories.

But the former is the more fatalistic of the two. For on the necessitarian doctrine, though we could not be responsible, we should know what we were going to do, but on the other doctrine we could not: there would be nothing but chance. It would be basing responsibility not

XVI. 13. on what we know, but on what we do not know. It does not matter whether I am the whole cause or only part of it; if the same total cause of my action were to produce one action at one time, another at another, I should not know which action was coming from me, far less be responsible for it. If the same resolve succeeds at one time and not at another, one factor in the cause, viz. the experience, is the same, but the other factors must be different. Or, instead merely of our experience being the same, suppose our self also to be the same. Then the difference of result must be due to something that we do not include in our self, to a difference in the stimulus, for example, or in the weather. How far we are responsible for the failure depends on how much we ought to have known and done about the unconscious factors, and how far our past conduct has made us responsible for them. But certainly we could not be responsible at all if the difference in the result were due to no difference in the cause.

The only freedom that can make us responsible is one that secures us against a mere chance, including a chance liking, or caprice. And again we may make comparison with our power to think; for it is the same kind of freedom to desire and will as to think and understand, and we accept responsibility for our opinions not otherwise than for our actions. As even animal beliefs have a certain system or structure, though it is not thought about, so have their desires. And as our beliefs form a self-developing system, justifying itself by a logic or ideal, and able to reject old habitual opinions and fresh illusions if they are inconsistent with it, but liable to error and inconsistency as well as ignorance, so it is with the system of our desires.

We have all longed on occasion for a freedom where our mere wishing should be more effective than it is, and where our will, our head, and our heart were less liable to accident and fatigue. We should like to live more by sight and less by faith, and to take all responsibility if our task were easier. But, on the one hand, this is not a longing for more, but for less responsibility than we have. And, on the other hand, to think this responsibility so great that we have none is to repeat the old logical fallacy of the sick man who

is made to say "I shall not follow the doctor's advice, for it is fated that I shall either die or recover, and so I must die or recover whatever I do." The answer is that he is fated to follow the advice or not, and the fate is thus in his own hands, if only he wants to live. So it is with our whole responsibility, if only we want to live well. If we do not, we degrade ourselves from the grade of freedom on which we can claim our independence. XVI. 13.

The right understanding of our freedom must make us more honest with ourselves (p. 82). Nor is there any loss if it makes us less busy to judge people, and more willing to fit punishment to their cure than their crime. Above all, if you think of the faith in our self that it needs, and the ground of our faith, you will see that it makes religion the root, and not merely the prop, nor even the flower merely, of a moral life.

PART IV. — EXTENSION OF THE DIRECT EXPLANATION; AND THE INDIRECT EXPLANATION

LECTURE XVII

EXTENSION OF THE DIRECT EXPLANATION

XVII. 1. § 1. THE general explanation of the structure and growth of the mind is extended to particular problems by a closer study of the facts of experience and mental growth. In the present lecture I shall speak of the exact determination of the facts, including the facts that I mentioned and postponed, viz. the growth and decay of the mind apart from experience. Our primary concern is not with the facts, nor even with the methods of determining them, but with understanding how the direct account, which we have followed, can be carried into detail by their means. In next lecture I shall take the indirect or physiological explanation.

In both we are brought back to the discussion in the first division of these lectures, and, as a preliminary, we must be clear about the direct explanation as set out in the fifth lecture, and see that the intervening lectures are in answer to its question. Also, on account of their common confusion, it is well to remind ourselves of the difference between the mind and experience, and especially that it is a difference between inference and fact. Introspection discovers facts, including the fact that we have certain beliefs about ourselves, but it is no ground of their truth or error. On the other hand, inference, including the direct

explanation of the mind, must not profess to discover the particular facts. The better it is the better it guides not merely in analysing and describing the facts, but in forecasting them, just as we are able to forecast the course of physical events. Hence, if we are wrong, it is always the inference that is wrong. But the confusion between experience and the mind, and between introspection and inference, prevents us from seeing this. We have had examples enough of forecasting what must be felt, and of the addition that it must be felt unconsciously when we do not find it. XVII. I.

It is also well to recall what was said in the second lecture about erroneous methods of explanation. For erroneous methods lead to erroneous questions, which prevent the understanding of questions that are legitimate though hard to answer. It is quite usual to blame the weakness of human reason for not answering a question, when the proper answer is to challenge what the question takes for granted. And there cannot but be confusion if we set out to explain, without considering where we want to go, and what would satisfy us. I spoke of the endless discussions about one kind of experience causing or depending on another kind, and how the discussions are endless for want of a clear notion of an experience as a cause at all. This is a fault in the question to which I also referred later when speaking of the definition of sensation (ix.), viz. how the elements of an experience combine or fuse together so as to make a single experience having a character of its own.

This question illustrates a still more radical error—the error of trying to explain how any kind of experience feels as it does, or is what it is. It is the sort of error that we may make, and deny that we make it. There is illustration of it in the notion that our simple sensations must be copies of their stimuli. We readily agree that there is no saying why a sensation has the quality it has from any possible knowledge of its physical conditions, nor from supposing a more primitive sensation. But there is exactly the same reason for not asking about any higher quality of experience how it is what it is. Though we knew everything about

XVII. 1. the cause of it, there could be no saying why it should feel as it does. Strictly speaking, we might as well ask why the world looks as it does, and contains what it does, and not something else. But, apart from that, the error in the question is plain enough by the mere fact that there is no common kind of experience. It does not help in the least that probably there is or was a primitive kind of experience, and that our organs of special sense are modifications of a primitive one that may be called a sense of touch.

§ 2. From merely ignorant questions we have to distinguish those that are legitimate, though they are beyond our question. Such is the question of the origin of instinctive interests; we found them to be unaccountable, merely because there is no past experience of the individual to which they can be traced. Certain things chance to please us, others to pain us, and both to hold our attention. Other things and occupations become of interest from connection with them, and this borrowed interest may became independent. It may become so independent as to supersede the interests which need no learning, and from which they grow. From attending to simple objects of sense, we proceed to qualities and relations of things that at first we neglected, and then to objects of a still higher rank—to mere laws of nature, for example, to the long past, the distant heavens, and to other matters in which our interest is quite disinterested, but none the less absorbing.

Now, in accounting for the development to higher objects of attention and to the higher interest, intellectual, æsthetic, and practical, that we may take in them, there is one question that we did not answer, viz. how it is that some of us make the course and others fail, and how some learn fast and others slowly, and the same person faster at one time than another. And there is the same question about the minds of animals compared with one another and with ours. Our question has only been about the steps they take if they make the course, and what exactly they fail to do if they do not or cannot make it. Whether it is easy, or hard, or hopeless to bring them on there is nothing in the explanation to say. There is nothing to say why, with the

same opportunities, one creature is either slower, or less persistent, in learning than another, and nothing to say why all of them are satisfied with a low level of understanding. In regard to children there is nothing in the explanation to say why one's capacity is in one direction, another's in another. It is as impossible to tell without trying whether one has a good head, as whether one has a good ear. And as the answer to our question does not account for instinctive interests and powers, not for those that arrive in infancy, nor for those that are deferred but need no learning, so it does not account for the inborn power of learning, nor for differences in the rate of learning in different individuals, nor in the same individual at different periods in his life, at different hours of the day, and in different states of his health. XVII. 2.

Nor, therefore, does it account for the growth of the mind without learning. Of the fact itself there is witness in a better power as we grow older, of grasping sensory wholes like rhythms and designs, in a greater scope of imagination and attention, in an easier and a more retentive memory, in a greater facility in handling abstract objects, and in the advance in æsthetic and moral sense that comes with the approach of puberty. They require, indeed, as we shall see, a certain learning, a nurture, or training through experience; but new interests appear, and a new rate of growth, that are no more due to learning than are the disappearance of interest, and the decline in capacity, that come with the decline of life.

What is the relation of these important facts to the direct explanation which thus far has ignored them? In explaining a complex result it is necessary to take a point of view by selecting certain factors to the exclusion of others. When the others are afterwards taken into the account (as after simplifying a mechanical problem), or when the accounts from different points of view are taken together (*e.g.* the economic and the moral advantages of a public policy), a correction may have to be made. If it should, and is not, there is the familiar conflict between theory and fact. But the direct explanation of the mind is not in this position. There would be conflict with fact, it is true,

XVII. 2. if we said that mental action on any occasion is due to nothing but the frequency, recency, and other character of certain past experiences, or, again, that all growth of the mind is through experience. But not only is there no correction when the explanation is confined to its own problem, the point to observe is that there is no correction when the entire fact of mental action and growth is taken into the account. There is no correction from the fact that the hundred occasional changes in the nutrition and stimulation of the nervous system make a difference for the time being to our interests and our power of learning. There is none from the fact that some abilities refuse to be hurried, and that all of them have their periods in our lives, whereby the rate of their growth is not in any constant proportion to the degree of our efforts, or to the degree of interest and ability that we have already acquired. Nor, finally, is the truth of the direct explanation qualified by the fact that some people are born to stupidity and some to genius, and that some are naturally restless, eager, persistent, while others are easy-going, and easily driven from any desire by any difficulty. On the contrary, it does matter to see that the explanation applies equally to all these varieties. So far from ignoring them, it enables us to determine them exactly, and to incorporate them in itself; the more specific our knowledge of them, the more specific the explanation. There is so common a confusion, however, in this connection, and especially in regard to the spontaneous and the periodic growth of the mind, and in regard to the contrast between its growth by nature and by nurture, that we must look at these matters individually. I shall return to them (§ 6) when I have spoken of the exact study of mental facts.

§ 3. The study is sometimes called physiological psychology, sometimes psycho-physics, but these words refer better to parts of it; and no narrower word than exact or experimental can include all the methods employed, or show their purpose, or prevent the suggestion that they are contrasted with the direct explanation of the mind. The direct explanation is contrasted only with the indirect explanation, which aims, and rightly aims, at giving the immediate physical correlates of experience. But the exact experi-

mental study of the facts is all equally demanded by both of these explanations. Its contrast is with the method which is satisfied with unassisted introspection. Not that it dispenses with introspection ; quite the contrary. " Instead of being satisfied with indefinite quantitive expressions, *e.g.* that a property of sensation, or direction of association, of feeling, or willing, appears seldom, often, habitually, or almost without exception, that a result of memory comes with amazing certainty, that a certain emotion increases the frequency of the pulse, or drives the blood to the head, we seek to count and measure wherever possible. . . . And, though measuring has its limits, statistics, at least, are everywhere possible." [1] The purpose of the experimental method is nothing but " to complete introspection by repeating, by keeping constant, and by altering as we like, the conditions of experience." [2] " The whole work of our modern psychological laboratories must be characterised as essentially introspective, but introspection under artificial conditions." [3] The main task of modern psychology has been the closer determination of the facts of experience, and, from them, of mental growth ; and there is no longer the notion of soon reaping all the facts that are of value, and bringing psychology to an end. There is the prospect of an unlimited field to explore in the ordinary laborious way of experiment and statistics. For introspection, viz. the observing and dissecting of experience, is quite like observing the things of sense ; there is no more virtue in it, but also no less. It is not for introspection to make explanations, but to discern particular facts—among them the fact that we have made a common-sense explanation of the facts. And introspection, like sense-observation, needs the help of theory and instrument, in order to learn the facts that are necessary for a better explanation. But the help is not a substitution. There is no knowledge of nature except through sense, and, instead of replacing observation, experiment calls for better. So it is with introspection and our knowledge of the mind. XVII. 3.

Let me repeat, then, because confusion in these matters is so fatal, though so easily avoided. There is a direct and

[1] Stumpf, *Leib und Seele*, p. 13. [2] Wundt, *Phil. Stud.* x. p. 122.
[3] Münsterberg, *Psychology and Life*, p. 124.

XVII. 3. an indirect explanation of experience and the mind, the one in mental, the other in physical terms. And there is a direct and an indirect way of securing the facts, the one introspection, which is confined to our individual experience, whereas the indirect method includes all other facts, and they, of course, are inferred from physical data. Both explanations claim to be true of all the facts, and in the sense that is required of every explanation, viz. by discovering their system or connection. Hence three errors. It is an error to suppose that the direct explanation is confined to the direct way of getting the facts, and the physical to the physical; both require both. It is an error to suppose that the physical way dispenses with introspection, for it only discovers the signs, and introspection alone discovers what they signify. And the most fatal error is to suppose that introspection makes, or is responsible for, any explanation or inference. Introspection is observation only, and of experience only. To say that it is also observation of the mind or its faculties is inference, just as it is inference to say I see an orange.

§ 4. Let me enumerate the ways of examining the facts (A) directly, and (B) indirectly, before looking more nearly at the reasons for this close examination.

(A) Introspection, like the examination of anything, is not a vacant watching but an interrogation, and its thoroughness and value depend greatly on the questions that are put. They may be put to ourselves or to others, and they may be put in two ways: (1) they may be literally questions, or (2) they may consist in setting up experimental conditions and observing, or getting others to observe, the responding experience.

(1) The former of the two ways has developed into a distinctive method, often associated with the name of Mr. Galton, who was the first to show its possibilities in psychology. You will understand its nature if I quote part of one of his series of questions on mental imagery. "Think of some definite object—suppose it is your breakfast-table as you sat down to it this morning—and consider carefully the picture that rises before your mind's eye. 1. *Illumination.*—Is the image dim or fairly clear? Is

its brightness comparable to that of the actual scene? XVII. 4.
2. *Definition.*—Are all the objects pretty well defined at the same time, or is the place of sharpest definition at any one moment more contracted than it is in a real scene? 3. *Colouring.*—Are the colours of the china, of the toast, bread-crust, mustard, meat, parsley, or whatever may have been on the table, quite distinct and natural?" "To my astonishment," he says, "I found that the great majority of the men of science to whom I first applied protested that mental imagery was unknown to them. . . . They had a natural deficiency of which they were unaware, and naturally enough supposed that those who affirmed they possessed it were romancing. . . . Much the same result followed inquiries made for me by a friend among members of the French Institute. On the other hand, when I spoke to persons whom I met in general society, I found an entirely different disposition to prevail. . . . The more I pressed and cross-questioned them, professing myself to be incredulous, the more obvious was the truth of their first assertions. They described their imagery in minute detail, and they spoke in a tone of surprise at my apparent hesitation in accepting what they said. . . . I recommenced to inquire among scientific men, and soon found scattered instances of what I sought, though in by no means the same abundance as elsewhere. I then circulated my questions more generally. . . . The conformity of replies from so many different sources which was clear from the first, the fact of their apparent trustworthiness being on the whole much increased by cross-examination (though I could give one or two amusing instances of breakdown), and the evident effort made to give accurate answers, have convinced me that it is a much easier matter than I had anticipated to obtain trustworthy replies to psychological questions," and to get "statistical insight into the processes of other people's minds."[1]

(2) The other direct examination consists in setting up experimental conditions of experience, and observing the

[1] F. Galton, *Inquiries into Human Faculty*, pp. 84-87. On the limitations, as well as for the literature, of the method see Titchener, *Experimental Psychology, Instructor's Manual*, chap. xii.

XVII. 4. response to them. The conditions may be organic, as in examining the mental effects of food, poisons, atmospheres, or they may be stimuli of special sense. Experiment may be made on oneself, or on other persons expert or inexpert, who may or may not be kept in ignorance of the purpose of the inquiry when observing or recording their experience.

(B) The indirect methods examine the physical associates of experience, and seek to correlate them with experience. We may divide the methods according to the subjects on whom they are used; and so (1) according as the direct methods can or (2) cannot also be used on the same subjects for the same investigation.

(1) (*a*) One use of the two in conjunction has been in the investigation of emotion, of preferences, and pleasant or painful feeling generally. In this connection the direct is called the impression-method, and the indirect the expression-method. It has to be said, however, that the hope of correlating differences of breathing, circulation, and other organic changes, with differences of feeling, has become far more difficult to realise than was thought (xviii. 18). But (*b*) as data for the indirect method we may include not merely these involuntary but voluntary reactions, and then we have two familiar applications of it. The subject may be required to react, *e.g.* to press the button of a recording instrument, when he has made a certain mental reaction on a given stimulus. The record of his physical reactions, taken with the record of his experience, makes it possible to estimate the times taken for different mental operations, and to see the effects of familiarity, expectation, practice, and fatigue. And, secondly, there are all the exercises by which minds can be tested and their faculty measured: tests for all factors of sensation (such as those for the sense of colour), exercises that test mental alertness (*e.g.* in detecting errors), the rapidity and faithfulness of memories in different people for different kinds of matter, and wherever, inside or outside a laboratory, there is any careful application of the rule that by their works ye shall know them. (*c*) Finally, there are all clinical cases where the physician correlates his physical diagnoses with what patients can tell him of their experience.

(2) The other group of data for the indirect method contains those from minds on which the direct method cannot be used. They include, besides pathological cases, the facts that are dealt with in infant, animal, and ethnic psychology. (*a*) Infant psychology has developed a literature of its own.[1] (*b*) The psychology of animals has gone beyond arguing from anecdotes about rare achievements, to observation of their learning in experimental and also in natural conditions. No more significant facts have been added to the direct explanation of the mind than have been yielded by these observations on animal learning from the simplest creatures to monkeys; and they also promise to be significant for the indirect explanation (p. 449). (*c*) Ethnic psychology deals with experience as it is revealed in language, custom, and belief, and especially in those of primitive peoples. Here, too, a closer acquaintance with fact has reversed not a few inferences. It has been found, for example, that a seemingly small vocabulary for colour does not argue colour-blindness, that the possession of few numerals does not argue inability to count, and in general that the backwardness of a race is due more to want of inducement than to any inherent incapacity to learn. XVII. 4.

§ 5. One reason for the close study of mental facts is their individual interest. I suppose we all take more interest in minds and their experience, our own and others, than in anything else; but it is seldom the interest of a student, and what we have of it is given to the values and the explanations, rather than to the mere facts of experience. We do not set them before us for the interest of examining

[1] Some American books of the past year or two give the best idea of its contents and value up to the present. Two digests are Kirkpatrick, *Essentials of Child Study*, and Tracy, *The Psychology of Childhood*; and the former is a convenient guide to the periodical as well as other literature. Chamberlain, *The Child*, "a study of the child in the light of the literature of evolution," contains a bibliography of that literature; and Thorndike, *Educational Psychology*, collects statistical data about the mental traits of children, and is written to show the methods of dealing with such data, and their value for education. It concludes, not without the arrogance of a reforming faith, even a faith in figures: "We ruminate over the ideas of Pestalozzi, or Herbart, or Froebel. . . . We are like chemists who should quarrel over the views of Paracelsus. . . . In education everything is said and nothing proved. . . . The science of education, when it develops, will, like other sciences, rest upon direct observations of, and experiments on, the influence of educational institutions and methods made and reported with quantitative precision."

XVII. 5. them in the manner, let us say, of a conchologist. He is distinguished from his boatman who sees nothing in a find but ordinary or else curious cockles, and from the philosopher with him who sees nothing but in illustration or disproof of an explanation. And it is not their want of will that makes them blind. For a student of experience there is nothing more necessary than to examine his own as so much matter of fact. But his goodwill is not enough. He comes to it with notions of what must be there; at first he will see nothing that he cannot name, and only so far as he names it; and the name is usually functional and always general. He does not know the difference between having an experience and attending to it, and is thus liable to many confusions. He will very likely begin by regarding his experience as merely occurring in him, and even as a series of pictures thrown before him as on a screen. And for that reason he will turn general thoughts like the meaning of words into images, he will overlook the feeling of belief in his thoughts, will read will as thought or belief, and commit the psychologist's fallacy. Hence the chief purpose of laboratory exercises in the modern study of psychology is to compel him to a closer acquaintance with his own experience.

The second reason for a close study of the facts is in order to correlate experience with its conditions. These may be divided into external, organic, and mental. It is necessary, in order to correlate sensation with factors in the external stimulus, and often the necessary experimenting is more psychological than physical. It is so, to take our old illustrations, in examining the sense of time, the sight of distance and solidity, all illusions, and the connection between change in the intensity of a stimulus, and of the corresponding sensation. It is the same regarding the correlation of experience with organic conditions generally; and, as we saw, a minute dissection of experience is especially necessary in order to correlate it with neural conditions normal and diseased. Finally, it is only by experiment that the effects of one experience on another can be estimated. Such are the effects of suggestion on perception, of associations on æsthetic preferences, of atten-

tion on the clearness and steadiness, vividness and force of the objects that we keep before us in any interest. XVII. 5.

The third purpose in a close study of the facts is in order to follow in detail the growth of the mind. Those of association and memory lend themselves the most readily to experiment and calculation. There is the time taken to associate objects according to their number, their sensory quality, their intensity, their mutual dependence, and there is the effect of attention and distraction. There is the rate of decay, and the kind of decay, that takes place in what has been learnt. There is the suppression of details and links that have become unnecessary; and on that account there is the greater adaptability of our memories on any subject in supplying what we require for thinking. The transition from memory to thought is begun in experiments on suggestion and the direction of association. There is the question what associates of an object in a given course of past experience are more frequently suggested by it now, and whence their relative strength. And there is the question in what respect the learning of one thing makes another easier; how, and how far, practice with the right hand makes it easier to learn the same thing with the left; how and how far practice in one mental occupation, *e.g.* in analysing and attending to one kind of object, extends to the same dealing with a different kind; and how, and how far, a general education is possible, that is to say, a training that produces general and effective intelligence, interest, and will. In addition to experimental results there is the increasing body of physical and mental measurements of school-children; and there are the facts of all sorts that have been adduced in answer to the question how far different kinds of study and work may rightly claim to give a general education. These facts are open to different readings, but they are better than the general impressions of value, not to say the merely personal experience, upon which we otherwise rest.

The growth of mind by nature, apart from nurture, is determined in the same way, since all growth must be revealed in experience. But it is in this connection that there are certain misunderstandings at which, as I said, we must now look. There is, however, one reason more to mention

XVII. 5. for a close study of the facts, viz. in order to determine mental types and norms. Differences of type in faculty and character are often plain enough, and so are differences that we distinguish as normal and abnormal. But many differences do not appear on the surface; those that do have deeper roots and symptoms, and every one knows how difficult it is to define what is normal or average, and what is out of the common, in capacity and rate of growth. Individual differences are brought out by both the direct and the indirect methods; they can be arranged into types in which the differences are grouped; and, when taken in connection with the circumstances in which they appear, the question can be raised how far the type is native and how far due to upbringing, occupation, and other environment. And still more necessary is it to discover standards of reference and means of measurement if we pass from type to norm, and are to be exact in saying what is normal, average, in or out of the way.

§ 6. The first of the misunderstandings is in regard to the contrast between growth by nature and by nurture; the second is in connection with the notion of a natural and periodic development; and the third is in the use of indirect methods in order to determine the facts of this development. We should have to add a fourth, if we cared to count so rudimentary a confusion as appears sometimes in the notion of the mind acting and growing spontaneously. When anything is said to act or grow spontaneously, it is not properly meant that the act or the growth takes place without a stimulus or occasion, but that the stimulus is developed within the thing itself. We may not know what it is, *e.g.* in a spontaneous combustion, but we know that something must have taken place to bring the action about at this moment and not before. Nothing acts more spontaneously than a living organism. An animal develops, has needs, and goes about to satisfy them, without having to wait for an external stimulus, and it even develops a need and a liking for mere action. But though nothing acts more spontaneously, nothing is less independent of environment for the coming of its needs, as well as for the means to satisfy them. The same is to be said of spontaneous growth, which is nothing but

the cumulative result of the action of the organism on itself as a whole, or in any part. It is not otherwise with the actions of the mind. If any of them were spontaneous in the sense that no occasion was necessary to produce them, there would be no occasion for them; they would be mere chance work, and no dignity or responsibility could attach to them. It is often hard to predict what one will feel or do on a given occasion, but it would be absurd to ask what one will feel or do without stating the occasion; and if the occasion is self-made, it is made on one occasion and not on another (p. 108). Hence the spontaneous growth of the mind by means of experience is not *in vacuo*; and if we supposed that it grows *in vacuo* without experience, we should be adopting the confusion of the popular notion, which does not see that seeds and plants grow by robbing the earth and the air in which they live. But the other three misunderstandings are not so rudimentary. XVII. 6.

(*a*) When we say of an ability in some one that it is due to nature and not to nurture, or more to nature than to nurture, we may merely be contrasting two ways of learning: we may mean that the ability has been learnt, but without effort or in the ordinary course of experience. Or we may intend the deeper contrast with which we are now concerned, viz. the contrast between growth without learning, such as there is while we sleep, and growth by means of learning. We may speak of the one as an unconscious, the other as a conscious growth, provided we remember that this is what we mean; for in another sense all growth is unconscious. It is usual, no doubt because the words are striking, to call it a contrast between growth by nature and by nurture, but it is essential to remember that we then intend a contrast that is more specific than the words alone imply. The power to grow by experience, *i.e.* by nurture, is a power of nature; it is the power of taking structure according to function. Hence the contrast is really between one means of natural organic growth and another. To be clear about this is to remove a common root of confusion.

So far from being rival means, they are mutually dependent. That is why the facts of growth by nature apart from use, exercise, nurture, cannot be told off-hand. They

XVII. 6. are given in experience, but in combination with the effects of the other means of growth. I need hardly say that, however the mind grows without experience, it does not so grow in knowledge: there is no unconscious gathering of knowledge. But even when the results of growth without learning stand out most clear of the results that come by learning, they are not quite clear. Such are the organic interests that come with the natural growth of the body. They not only affect, but are affected by the variety of interests that have already been learnt; and so far, therefore, they share in the general statement that interest flows from interest, and does not enter our life as an utter surprise. And if this is the case with the coming of new occasions and demands into a life, still more must it be with the growth of the power to realise the interest of the occasion or demand, and with the growth of the power to learn. It is always necessary to consider what the previous nurture has been before saying what is due to merely organic development—to mere years, or sex, or temperament, or vigour. Popularly, for example, it is thought that sex makes an infinite difference; the same is thought on general biological grounds; and of speculative writers and novelists it is believed that he must come nearest the truth who multiplies and magnifies most the mental differences inherited with sex. Yet the facts have not been sufficiently sifted to enable us to say, even of the young, how much is due to sex and how much to nurture. And in a recent investigation, in which the minds of twenty-five men and twenty-five women students of the University of Chicago were chosen for comparison because of the similarity in their upbringing, practically no difference was found by experiment or question that one would not expect from the inevitable difference in their upbringing alone.[1]

In our mental life during a day we have illustration of quite the same kind of fact as the facts in our life-history from which we infer the growth of our mind apart from experience. At one time of the day our physical condition

[1] Miss H. B. Thompson, *The Mental Traits of Sex* (1905). "The outcome of this study is that, according to our present light, the psychological differences of sex seem to be largely due, not to differences of average capacity, nor to differences in type of mental activity, but to differences in the social influences brought to bear on the developing individual from early infancy to adult years" (p. 182).

gives us one interest, at another time another; at one time our thinking is more to the point than at another, our effort less laborious, we have a greater span of attention, we can be more completely absorbed in the same object or in the same task, and our rate of learning is more rapid. And as the daily facts are determined by taking mental reactions in the different circumstances of a day, so the corresponding facts in our life-history may be determined. And, considering the mystery that is made about the mere discovery of the facts of mental development and decay apart from learning (§ 8), it is well to observe that similar facts are in our daily life without recourse to any theory from which to infer them. XVII. 6.

But it is harder to distinguish in our life-history than in our daily history between the effects of the two means of growth. The chief difficulty is that the growth by learning is not itself continuous, nor in proportion to our effort. Hence it is an error to put down every acceleration in the rate of growth to nature as distinguished from nurture. So long as a terminology, a way of thinking, a study, or indeed any occupation is unfamiliar, progress is slow, and everything new seems completely new; whereas once we are well entered everything new arranges itself. This later rate of progress is the reward of our earlier effort, and even when it does not come for a year or two, it may still be the earning of nurture, and none of it the free gift of our years. Hence the figures are not so easy to read as those that tell the difference between a mind at night and in the morning, because they represent our earning in the interval as well as the free gift. And especially there is the earning in mental habit both general and special. As special there is the familiarity or habitual interest that is learnt, whereby one man grasps a mass of mere figures easily and remembers them, while another is good with verse only. But, above all, there is the general habit, the growing facility, that we saw in the development of appreciation and intelligence. We have it in the power of being absorbed, in the systematic way of proceeding to attack a problem, in our content or discontent with the thoughts we make, and with our efforts and their results, not to speak of the power of unexpected suggestion and courses of thought that do not seem to be our own

xvii. 6. doing at all. The fact that one man is so rewarded for a zeal which brings to another little or no reward, makes no difference to the fact that it is a reward. Nor is this altered by the fact that another may earn it with so little trouble that it is less his reward than a free gift.

Even the decay of mental interest and power is not to be forthwith ascribed to nature as distinguished from nurture or experience. When our interest is exhausted by having been realised, its decay is due, of course, to nurture. A general interest like curiosity may decay in this way, if the realising of it does not at the same time give occasion or stimulus to further inquiry. When a higher level of interest is gained, the lower may be superseded and decay, except as means to the higher. And an interest may be well or ill lost by the cultivation of interests with which it conflicts. The decay of power as distinguished from interest, the decay not merely of vigour and endurance, but of the power to remember, the power to learn, and the power to realise any interest, may be due to want of higher nurture or exercise, as well as it may be due to nature—to injury or to years—in spite of nurture.

§ 7. (*b*) Any confusion about the contrast between growth by nature and by nurture infects the notion that the mind has, or should have, a growth according to its nature. The growth of a mind is said to be natural if it follows a certain order, and unnatural if it does not. But partly because of the words, and partly because there are stages, seasons, or periods in the growth, it is assumed that experience is a subordinate matter, and that the essential thing in growth according to nature is the growth without experience. The assumption is due to a confusion that need not detain us longer. The word natural is contrasted only with unnatural, and the two refer both to growth by nature and to growth by nurture: there is a natural, and there is an unnatural growth by means of nurture. And not only have we seen throughout that nurture has an order to follow, we have just seen that its order has periods or seasons. Even if after infancy there were no growths of nature except by nurture, we should still have the question about the natural and periodic growth of the mind.

It is a question of fact that cannot be answered as an inference from the direct explanation of the mind. But in this connection there is a misunderstanding apart from any confusion about the two kinds of growth. It comes from not understanding how the explanation does determine the facts, and specify itself by means of them. It does so by systematising the facts under the general one that higher developments depend on lower and therefore earlier. The mind has an inherent order of development, higher intelligence requiring lower, interest growing from interest, will from will. This is the general fact, and so far there is thus the same course for all minds that can take it. The difference is in the rate of progress both as between different minds and for the same mind in different states of health, at different times of the day, and at different periods of life. The general fact is specified in these differences, and it, in turn, is necessary in order to discover and specify them. They are all differences of rate in a common course. XVII. 7

I need not say how important it is to be able to read differences in growth as differences of rate in a course that is known. The differences include not merely those due to nurture or experience, but those that grow without experience, together with differences of faculty that are inherited. For differences of inheritance and growth are all revealed as affecting the course of experience. They come to light as difference of interest, as difference in the power of realising an interest, and as difference in the power of learning.

When, however, it is sought to determine the order and periods of development without knowledge of its inherent order, the result must be superficial. The life-history of a mind then appears to be a serial emergence of one faculty after another in its season, as if first the blade, then the ear, and after that the full corn in the ear. Every faculty is taken to begin in a feeble way, gradually to reach its full strength by nature and nurture, and then to decline. The chief service of psychology to education is said to be the discovery of those periods, because a teacher's labour is lost, or will do harm, if he seeks to exercise faculties before their time, or if he lets pass their period of full strength. In

XVII. 7. Rousseau's *Émile*, which gave the notion most emphatically to education, youth is divided into four or five periods, each characterised by the appearance of its own special faculties and having its own proper curriculum. The second period, which lasts from the age of five till the age of twelve, is the time for training the senses, but memory may be neglected because "it is not worth calling memory" yet, and reason has not appeared. They come in the next three years, and then is the time for teaching the boy a knowledge of nature, or rather how to think and get the knowledge for himself. At fifteen, his body, his senses, and his judgment having been formed, he is now to be given a heart. As yet he does not know that he has a soul, and at eighteen it is still too soon for him to learn this; but religion is now required for regulating the new passions. Rousseau doubtless exaggerated in order to put his admirable idea in more effectual contrast with the education of his time. His plan is usually corrected by saying that memory and taste appear much earlier, and reason a little earlier, and by finding corresponding grounds for teaching history, poetry, duty, and religion before fifteen. But its real error is in setting out the order of development as if it were an accumulating series, and not a development. I hope this is obvious enough from the direct explanation as we have followed it. Reason or thinking, for example, is not very effective till late, but for no mysterious reason. It begins as early as conceiving and the intelligent use of words, and has everything prepared for it by experience before that. It is then, as we saw, and not long after, that intellectual interest takes a new direction, concerning itself with relations and other abstract objects. But abstractions are only to be handled effectively after much practice in analysis, and in the knowledge that they take for granted. If, for example, a boy in his twelfth year can learn in a third of the time the grammar that he has been learning with much trouble and evasion of difficulties for four years before, it is far more, if not entirely, because of his experience in the interval, and because he can now take more for granted, than because his brain has developed without experience. His new rate of understanding is simply a power of following more general ex-

planations than before, and we have seen how it grows. To call it the growth of reason is to name it in the most abstract manner, and, if this is not understood, there is sure to be error. There is the error, for example, of supposing that the growth of reason for one kind of matter is equally the growth of reason for other kinds. And I am not sure that we always mean more than the literal metaphor when we speak of a growing keenness of intellect, and a sharpening of the wits. We saw at length how a general intelligence grows from particular exercises. No matter of thought is absolutely new or merely particular, and no thinking is unique. Thinking about one thing is practice in thinking about other things, so far as they are like it; it is at the same time a gathering of knowledge, whereby thinking becomes more effective; and, when the knowledge has become well organised and familiar, it can be taken for granted, and then the effective thinking becomes more rapid as well; the same ground can be covered in one stride that would have taken a dozen before. xvii. 7.

It is due to reading the organic development as a merely serial one, that the familiar rule in education about following nature is useless except against obvious errors. And when it is added that nature is different in different children, and that education should have regard to this their individuality, the rule about following nature becomes only the more empty and negative. A child is thought to be like a plant which somehow needs nothing but freedom to grow, in order to grow its best. Parents and teachers must be careful not to interfere; they must not force the growth, but place the proper nutriment within reach, and lie in wait for powers to appear like appetites in due season. Apart from that they are merely to ward off danger, and to use the pruning knife now and then against original sinfulness, and especially against excrescences that have grown by an invasion of evil influences always too many to prevent at their entrance. This negative attitude can have no other reason to commend it than ignorance of the growth of the mind, and especially of individual minds. The only positive notion in it is good, viz. that spontaneous interest and action are the best revelation of the growing points of the mind;

XVII. 7. but, beyond that, it is negative. It may easily be a wrong attitude on that account. For not only is nature in the young not always in the right, but merely to follow when it is in the right, falls easily to a mere let alone. There never was a nature, I should think, that did not need the spur, and a driving from good to better. Every one has read how the parents of certain great artists tried to turn them to other occupations; but the cases are infinitely more numerous of people who regret that their early tastes were taken too seriously, and that they were given an essentially ignorant choice. To use the follow-nature rule with profit, it is necessary to distinguish the nature which the child may attain from the nature that it now has wherewith to attain, for both have to be followed. And by following there cannot be meant a lying in wait, till spontaneity go before and show the way. It is for parent or teacher to go before the nature that the youth already possesses. The rule must mean: follow the course that the given nature of a youth must take, if he is to reach his ideal nature in the best way. In order to do this, his teacher must know beforehand the common course, viz. the course that has to be pursued whatever the inherited nature, and whatever the nature that we should consider its ideal. But these two he need not know beforehand: neither the difference in inherited capacity among his pupils nor the difference in the results to which they may attain. If he knows their present attainments, and that is not a difficult matter, it is enough; for their further development follows the same general course in dullard, genius, and ordinary youth. Whatever the kind of learning, whether in knowledge or in skill, in appreciation or in conduct, and in coming to a bad character or to a good one in any of these respects, the differences reveal themselves in different rates of learning; it is a very slow rate or none in the abnormal cases at one end, and an exceedingly fast rate at the other. The unknown potentialities have not to be discovered and then educated; they are discovered in the educating.

This procedure is essentially the same as in the more special methods by question and experiment. The particular facts yield general facts, including types and norms, about

the order and periods of development. These are not only necessary in order to judge what is ordinary and what not, they are also useful as guides in the discovery of the particular facts. XVII. 7.

§ 8. (*c*) Besides being found in this direct manner, the facts of individual mental development may be inferred indirectly. They may be inferred (*α*) from the course of physical development generally, (*β*) from mental development in the race, and in one's more immediate ancestors, (*γ*) from the development of the brain. General facts or laws that are inferred by these means have all to be verified by the direct interrogation of the course of experience. But this may be overlooked, and the inferences given an independent and even a superior authority.

(*α*) Arguments by analogy comparing physical with mental development are very convincing to common belief about the growth of the mind. But the reason is not to seek: it is because argument by analogy is always for want of a better, or of knowledge to appreciate a better. When a better is to be had, the value of analogy is entirely in making suggestions for investigation. It may be the fact, for instance, that mental precocity is at the expense of health, or of the development of other organs. But it has to be proved, and, the facts being quite accessible, the argument has no claim if they do not support it. They appear to support the opposite, as it happens, provided the body is not deprived of its proper food and exercise. Again, as our bodily organs do not all grow in size or structure at the same time, but have their periods, and these more or less independent of their previous functioning, it is a good suggestion that our mental powers do likewise; but it would be wrong to suppose that this reason for the view is more than a reason for examining the facts to see whether it is true. It is quite another argument, for example, no longer an argument by analogy, if different areas and paths in the brain are found to have such periods. Finally, it is a common view that the special periods for body-growth are those in which the mind seeks rest and should be allowed to rest. It is very likely true, but again the facts are accessible, and should in time render the argument by analogy

XVII. 8. unnecessary. Direct investigation has found that there are periods of growth when physical fatigue sets in rapidly; one of them appears to be about the years from seven to nine, and another about the time of puberty;[1] and there are more general observations that place periods of rapid mental fatigue about the same times. I am thinking of the statement of a schoolmaster who claims to speak for other schoolmasters as well: children about the age of nine, and again about twelve, "are desultory, languid, stupid, inaccurate in things outer and inner, in moral and other mental things, as well as sleepy of body."[2]

(β) The other indirect ways of determining the facts are not based on mere analogy: they do not merely suggest that a cause in one development is very likely present in another. They are based on the assumption of a causal connection between the two. This is obvious when it is the development of the brain with which that of the mind is compared, but also when the comparison is with the development of mind in the race. There is again, however, the same misunderstanding, if it is thought that the facts of individual development can be determined by a study of those two better than in the direct manner that we have seen. And with respect to the second—the inference from heredity—there is further confusion. I do not refer merely to the common error that children inherit the good or bad characters which their parents have acquired in intellect, taste, or conduct. And though calculations of mental pedigree give definite expectations about individuals, no one thinks them a substitute for direct observation.

But I refer to the theory, frequently called the recapitulation theory, which asserts that the mental history of the individual follows the mental history of the race, being somehow due to it. It was with reference to the growth of the

[1] "The child of seven fatigues less readily than the child of six, but the child of eight fatigues more readily than the child of either six or seven. The child of nine fatigues less readily than the child of eight, but has a fatigue limit about equal to that of a child of seven. As the years advance the readiness of fatigue diminishes materially until the period of puberty is reached, when again fatigue more readily occurs than in the years immediately preceding" (Dr. W. S. Christopher, from experiments in motor voluntary ability and muscle strength in 32,800 school children; quoted in Chamberlain, *The Child*, p. 74).

[2] Siegert, *Die Periodicität in der Entwickelung der Kindesnatur*, p. 31.

mind that the theory began, and in this reference it is found in writers of all kinds throughout the whole of last century, and a little before. But it became far more prominent during the last third of the century when, as the law of biogenesis, it was found to give meaning to the maze of fact in embryonic development. For then it seemed that the correspondence between the individual mental development and the historical development is due not to the nature of the task before experience, but to the nature of the mind by reason of heredity. From the inheritance of our environment the law was extended to the inheritance of our brain. This new and more comprehensive point of view should have included the other, viz. the growth of the mind through an improving environment and nurture. But that has frequently been forgotten, with the result that the growth of the mind in both race and individual has been represented as a serial emergence of faculties. And without a better understanding than this, the use of the law of biogenesis can hardly fail to go wrong, as well as to be superficial. XVII. 8.

A recent example[1] will explain this better than a description, and will, I hope, criticise itself. Every faculty is assumed to have definitely established itself at an adult stage of mind, and then to have come earlier and earlier in the mental history of individuals, keeping, however, the original order of emergence. Thus during the first year of our life the stages in our individual mental history are taken to represent the racial mental history up to the emergence of the faculty for using tools. The two histories are thought to be parallel, and to be paralleled by a third, viz. the stages of development that are found in the adult minds of animals from the lowest to the highest, the use of tools not being found, it is said, in animals below the monkeys. At fifteen months there come to us "shame, remorse, and a sense of the ludicrous," a stage that may be reached by anthropoid apes and dogs. Beyond that the parallel between our minds and those of animals goes only a little way. But the other two parallels are continued. At the end of our second year we have advanced beyond the highest animal to a stage which the race must have taken more than a hundred

[1] R. M. Bucke, *British Medical Journal*, 1897, ii. p. 643.

XVII. 8. thousand years to reach—the stage of the *alalus homo*, when man as yet had not hit on the faculty of speech. At the end of our third year we come to self-consciousness, and within the year have done the racial work of "perhaps a hundred thousand years." The colour sense, which is taken to be thirty thousand years old, is said to appear in us at the age of five or six, and the "sense of fragrance" still later. "As our human moral nature cannot be more than ten thousand years old," for "as we go back the faculty tapers down to the vanishing point," it does not appear in us till about the age of fifteen. And because the musical sense "is almost certainly less than five thousand years old in the race . . . it is not usually born in the individual before adolescence." Finally, new faculties like telepathy are beginning to appear in adults, but especially there is coming one so fundamental that it is compared in importance with the emergence of self-consciousness. "Superimposed upon self-consciousness as is that faculty upon simple consciousness, a third and higher form of consciousness is at present making its appearance in our race. This higher form of consciousness, when it appears, occurs, as it must, at the full maturity of the individual, at about the age of thirty-five, but almost always between the ages of thirty and forty. . . . It has been my privilege to know personally, and to have had the opportunity of studying, several men and women who have possessed it." And so, not only "in this idea of evolution lies enfolded the mystery of the past," but also "the explanation of the present, and the sure prescience of the future." Apart from any question of the facts, the best criticism of this reasonless superimposing of one faculty on another would be found in any description of the great one coming. And a description of it must be possible, for the author could not have studied it, if it produced quite a unique experience, and without an occasion or any warning; and he could not have come to such a conclusion if it had merely baffled him. It is because of this external way of looking at the growth or evolution of the mind that people easily believe that it may grow to anything. For when the faculties, or units of structure in mind or brain, are taken for so many sense-organs, the higher fed by lower or needing

nothing, there is plenty of room to suppose that there are still other faculties to come out of the air. XVII. 8.

The law of biogenesis is not a means of inferring present facts from past, but past from present. As in embryology, and in following the later development of an organ or an organism, so in following the development of a mind, the facts offer themselves directly: they need no deducing. And having found that there is a regular order, and what it is, we have a general fact for norm or standard in the manner we have seen. The law of biogenesis has its place and use when we pass from the determining of this present fact to ask why it is what it is. It turns us to the past by way of answer.

But no one would use the law for inferring the racial history of an organism or any of its organs in so naïve a manner as we have just seen it used about the past of the mind. The naïveté is twofold. First there is the omission of a qualification to the law which, in the opinion of the best-known biologist of heredity, has to be made in every case. "Ontogeny is not an actual unaltered recapitulation of the phylogeny, but an abridged, and in most cases—in my own belief in all cases—a greatly modified recapitulation."[1] The modifications include not merely the blurring of different stages, but the omission of many, even the reversal of the historical order, and the interpolation of stages, *e.g.* that of the resting and fasting pupa, which were not in the original. But even more naïve is the notion of the law as a kind of rule which nature has laid down for herself and must obey. The growth of the embryo takes place in a very different environment from that which met the bygone adult, and it must adapt itself or perish. So far from its ideal being to recapitulate, it is to reach the end in another and more direct way, as in fact is done when lost parts are regenerated. "The history of development in different animals or groups of animals offers to us a series of ingenious, determined, varied, but more or less unsuccessful efforts to escape from the necessity of recapitulating, and to substitute

[1] Weismann, *The Evolution Theory*, vol. ii. p. 172. And Haeckel, who, if not the parent of the law, has always been its chief guardian, divides it into two, calls one (the direct recapitulation) palingenesis, and the other (the qualification) kenogenesis.

XVII. 8. for the ancestral process a more direct method."[1] Now the nervous system, and especially the part that develops by means of experience, is precisely the organ that is under least obligation to repeat the past, being charged with the responsibility of modifying the organism to meet the changing conditions of a life.

If we turn to the original form of the recapitulation theory with respect to the mind, it is apparent that this aspect of the case is the only one. Higher stages require lower, which are therefore earlier, and if these are taken in a perfunctory way the defect is carried forward. As Rousseau put it, a boy must be completely a boy if he is ever to be completely a man. But there is no other reason. There is no reason why the history of culture should be followed by the individual if there is a more direct way; on the contrary, there is every reason to prevent knowledge, interest, and conduct that would otherwise be natural, if they are injurious to a better development. It is natural enough for a child to become inaccurate, boastful, and cruel, if he is left to himself, that is to say, if he is left to nothing but the environment that he is capable of appreciating without interference. It is frequently given as the reason that his brain is still only at the stage of an adult savage; and in a sense that is true, but not in the sense that appears to be meant. It is a question of nurture. It is because his conscious environment is the same—his environment as he is able to think it and adjust himself to it—that, when left to it, his mind or brain is also much the same. Nor is it to be assumed that the growth of culture in the race has had any direct effect on the inheritance of brain. It may not even have required, much less produced, the birth of a superior or a new type of brain. The brain that is born in modern civilised communities is better than it was born in the dawn of culture, and than it is born among wild peoples, so far only as the increasing demand of a civilised environment has distinguished better between lives that are fit and that are unfit, and has not, on the other hand, given far greater freedom for the unfit to multiply. Who would say that the pioneers of culture, whether in knowledge, art, or law,

[1] Prof. Milnes Marshall, *Report of British Association*, 1890, p. 849.

had inferior brains, because their work seems childish to us? XVII. 8.

This criticism applies directly to the culture-epoch theory of the Herbartian writers on education. It is the notion that the school curriculum should follow the history of culture because that is the natural order of interest in knowledge, taste, and conduct. The attractive part of their doctrine is that the culture attained in the historical epochs is expressed in its own literature, and that it is better to give this to the young than literature that seeks to come down to their level. Especially there is the notion of Herbart himself—for the rest is not his—that in this way teachers can have interest in the literature and an honest enthusiasm; he had the *Odyssey* in mind. But there is no reason at all for the general theory on the ground that the history of knowledge, taste, and conduct must be the same in the individual as in the race. Nor is there on the ground that we cannot determine, except in this indirect way, what is the best growing order of interest. Besides, the historical interest in truth and right requires the history of error and wrong, and no one would dream of giving such importance to them in education. Imperfect notions have to be taught, though with as little error as may be, and every teacher will frequently let his pupils feel their own errors. But the sight of errors, and still more of bad taste and evil, has to be controlled till these can be mastered and are no longer natural. It is doubtless wrong to begin formal apart from material studies, viz. language apart from literature, and mathematics apart from things, and to begin the study of nature from the point of view of any of the sciences (xiv. 9); and the shortest way is not always the best for knowledge and interest, let alone for mental discipline. But none of all these things compels the exaggeration of making a course of study follow its history. Nor, as we have seen, is it 'according to nature.' It is better according to nature that the present should avoid repeating the past, and should seek a more direct way. When the young follow history they should be spectators of the drama, aware of the plot from the start, and not puppets who are put through it.

(γ) Teachers will doubtless continue to be lectured from

XVII. 8. every little hill of knowledge, but when they are invited to occupy other points of view in preference to their own, it can only be that they may return and see more from their own. Their own as regards both the aim of education, and the work of teaching, must be a direct view of the minds in their charge. Indirect views of the mind have to be translated into this. And much of it, of the greatest importance in its own kind, turns out to be commonplace in the translation. At first sight no point of view is likely to offer so many valuable secrets for education as that of the growth of the brain. There is a book on it "in relation to education" by an eminent neurologist,[1] which every student of the growth of the mind should read, and it can be read without previous knowledge of the nervous system. But this is what it comes to in the chapter of application and advice (chap. xviii.). "Education consists in modifications of the central nervous system. . . . Connections between the exercises of formal education and brain change have not been demonstrated. . . . The aim at the moment, therefore, is to determine what limitations anatomy places to the educational process, and thus to obtain a rational basis from which to attack many of the pedagogical problems. It appears probable that the education of the schools is but one, and that, too, rather an insignificant one, of many surrounding conditions, influencing growth. The average individual is first subjected to some formal training when about three years of age. At this time the number of cell elements is complete, and the history of future organisation has been in its broad outlines determined by their first arrangement. . . . Education must fail to produce any fundamental changes in the nervous organisation, but to some extent it can strengthen formed structures by exercise, and in part waken into activity the unorganised remnant of the dormant cells. No amount of cultivation will give good growth where the nerve-cells are few and ill-nourished, but careful culture can do much where there are those with strong inherent impulses towards development. On neurological grounds, therefore, nurture is to be considered of much less importance than nature. . . . Without question there is something very fatalistic in this.

[1] Donaldson, *The Growth of the Brain.*

No amount of education will cause enlargement or organisation where the rough material, the cells, are wanting; and, on the other hand, where these materials are present they will, in some degree, become evident, whether purposely educated or not. . . . In any special case it is hardly possible to predict what capabilities may be latent, and earlier education thus resolves itself into a reconnaissance among the nerve-centres for the purpose of finding those that will best act together.' Thus anatomy translated into the "rational basis of education" turns out to be nothing but commonplace. "Without question there is something very fatalistic" in the fact that there is no silk purse from a sow's ear. What difference can it make to a teacher if he knows that the number of nerve-cells does not increase after birth? Might he not as well take this fatal fact as the hint for hope?[1] Nor is there advantage in the mere translation into neural language of the facts he knows as mental. The new language would provide him with a more comforting speech about his failures. Instead of saying as now, 'It is not in the boy,' he may say, 'The cell processes here are not grown enough,' or 'There are not even cells enough.' But when he proceeds with his reconnaissance and asks whether the boy cannot be brought by shorter steps or other measures, there is nothing in the new reading to help. It does not say whether the short steps ought to be taken, or whether it would be better to wait. Everything has to be found by the direct method, and whatever is suspected from other discovery must be verified by it. XVII. 8.

To forget this is to make the third of the three misunderstandings connected with the three indirect methods of determining the facts of mental growth. There is their inferring, first, by analogy with development in general; secondly, from the development of mind in the race; and now we have their inferring from the growth of the nervous system. As I pointed out in the first lecture, the inference is always from what the mind can do to what the brain can

[1] "Shut off from all opportunity of reproducing itself and adding to its numbers by mitosis or otherwise, the nerve-cell directs its pent-up energy towards amplifying its connections with its fellows, in response to the events which stir it up. Hence it is capable of an education unknown to other tissues" (Foster, *Text-book of Physiology*, p. 1117).

XVII. 8. do, and never, in the first place, to what the mind can do from what we find the brain doing, or think it possible for the brain to do. "The physiological psychologist must recognise that all the objective methods of psychological study presuppose the results of the subjective or introspective method, and can only be fruitful in so far as they are based upon an accurate introspective analysis of mental processes. He must recognise too that introspective psychology is in a much more advanced condition than neurology."[1] And this contrast is far greater if, instead of introspective psychology, we take the direct study of the mind. It includes the facts that are gathered by observation of the growth of other minds, as witnessed in their learning. And so it includes all that at present is understood by comparative psychology as contrasted with the comparative physiology of the nervous system. The connection of the two can be seen from an example which I give, however, on its own account.

With regard to the growth of the brain a fruitful line of discovery has been the order in which the nerve-fibres of the central nervous system acquire their myelin or medullary sheath. The sheath is merely nutritive, but its appearance is taken to mark the time when the fibre is coming to its functional maturity. Different tracts, or bundles of nerve-fibres, in the spinal cord and the brain have their own times at which the sheath begins to appear, and during which the growth continues till complete. In the cord it begins after a few weeks of fœtal life, and has completed itself before birth in all the tracts except the pyramidal tracts, where it began last. These are the spinal continuation of the pyramidal system of efferent fibres which we saw to be characteristic of the higher mammals, and especially of man. In the brain the fibres connecting the sub-cortical centres with the periphery take their sheath before those connecting them with the cortex. Of the latter the first are the afferent fibres to the projection areas, first the cutaneous fibres, then those of smell, of sight, and of sound. The efferent fibres from the same areas take their sheaths a little later in each case; and the process is said to be completed in the first

[1] M'Dougall, *Physiological Psychology*, p. 13.

month after birth in all the projection systems of fibres. XVII. 8.
But it is the beginning of the second month before the association fibres begin to take their sheath, and the process now continues throughout adult life. The well-known tracts are first equipped, those "strikingly early" which unite sensory areas in one hemisphere with the corresponding areas in the other. "Sensations of the left and right areas of touch are associated earlier than, for example, those of the left areas of touch and sight, or of the right areas of sight and sound."[1] At this point, however, inference helps out the facts. Still the method can be extended to any degree of development. Flechsig, to whom it is due, has mapped out a long order of development, but his results require corroboration. So does his and every interpretation of them as parallel with the development of experience and the mind. It is apparent how the method may promise to answer such questions as we have been considering — the periods of mental growth, the differences of rate, and the effect of nurture — as well as those of comparative psychology. Equal promise has recently been claimed for a study of the order in which the different layers of the cortex develop and degenerate in different regions.[2] There is no answer, of course, from these facts, except by comparison with the facts of experience as they are directly observed. Such a comparison was recently made the purpose of an investigation into the mental development of the white rat, and with negative results.[3] It was found that at thirteen days of age the rats had sensations and formed associations by means of nerves whose fibres were not yet medullated. And the rats were found to reach mental maturity long before medullation was complete. "At twenty-four days of age the rat has the capacity to learn anything (so far as our experiments in the laboratory went) that a rat at maturity can learn," and at that time "only one-fifth of the total number of fibres in the cortex are medullated."

[1] Flechsig, *Gehirn und Seele*, p. 86.

[2] Bolton, *The Functions of the Frontal Lobes* (*Brain*, 1903).

[3] Watson, *Animal Education: An Experimental Study on the Psychical Development of the White Rat, correlated with the Growth of its Nervous System* (Chicago University Press).

LECTURE XVIII

THE INDIRECT EXPLANATION

XVIII. 1. § 1. I SHALL devote this lecture to the indirect explanation of experience and the mind, that is to say, to their immediate physical correlates. We have seen that if they had none, and we had only the direct account, there is no discovery about the nervous system that does not have its place and full value in the direct account. But the question forces itself upon us owing not merely to the idea of completing the physical account, but because every one does complete or tend to complete it in his own way. For having followed a physical stimulus to a region in the cortex where it begins a course of experience, we think of the experience as continuing the physical course. And again, when we think of the mind except as a power to experience, we have to think of it as a possible object of sense. We are not bound to take this tangible view of experience and the mind. I hope the course we have gone makes it unnecessary to discuss the contention of Münsterberg that all direct explanations and descriptions are impossible and unintelligible. And, as a rule, we deceive ourselves in thinking the tangible view a better one. We do so if we have no better reason than that it lets us see our mind as we see physical individuals or things. But we saw how the sight and other perception of their individuality is taken from experience of our own (vii. 5), how the physical account, even if we had it completely, must be the more abstract of the two (i. 6), and what a distance there is yet from nervous action to a mechanical reading of it, and from experience to nervous action (ii. 3). We are about to see that the physical account is mainly a

translation of the mental account; and we shall have to see when and how the translation is legitimate or not. XVIII. 1.

If this is realised, a student will avoid, and not encourage, the habit of turning his thoughts of the mind into diagram; but also he will not approach the cerebral cortex as merely the place for his diagrams. Just as it is necessary to study the mind without thought of how it will fit the brain, so he has to leave his question of the brain as a correlate, and study it on its own account as the highest and centralising part of the nervous system, and thus of the whole body. He must, in any case, begin with a general knowledge of physiology if he would extend his direct account of the mind beyond the obvious facts. The text-books of physiology usually include some account of the structure and the embryonic development of the nervous system, and from the smaller of them he can easily proceed to books dealing with the special question.[1] He has to thank certain general results for smoothing his course, viz. the neurone theory, the reflex-arc theory, and the phylogenetic theory of the development of a nervous system. But if he makes them a substitute for the course instead of a help, his picture must be very vague, and very likely it becomes erroneous when he crowns it with a map of the cortex divided into mental areas.

There may seem more reason to ignore the working than the structure of the nervous system. I have mentioned our ignorance of the nature of nervous energy, and of the difference between that which is correlative with experience and that which is not. Hence the specific changes within the neurones, and between them, during the course of an impulse may be ignored, and the action represented as mechanical. This lightens the work of our student, while it must also prevent any notion of correlating the differences of quality in experience with differences of nervous action. Nowhere is it more necessary to remember that he is confining himself to one part and aspect of the work of the brain, and to general views about its action. If he

[1] A simple and admirable introduction will be found in a primer by W. M'Dougall: *Physiological Psychology* (Dent and Co.). The fullest exposition is Wundt, *Physiological Psychology* (5th ed.), now being translated.

XVIII. 1. ignores, he should not forget the constant work that has to be done by the nervous system, and especially how action at every part of the whole is affected by the action at any and every part. To work, to carry out its function, is necessary to the health of a neurone; efferent neurones have to maintain the tonus of muscles; in order to this they require their own stimulation by afferent neurones; and the cortex, besides its conscious functions, regulates the nutrition of the whole body.[1] Experiments in reflex action, and other facts concerning the summation of stimuli, show that the whole system is somehow affected by stimulation at any part. "All parts of the nervous system hold each other in mutual tension, and the passage of an impulse, afferent or efferent, is better represented as a disturbance of equilibrium than as a transmission of energy."[2]

One aspect of this general effect is inhibition, *i.e.* the control of one part of the nervous system over the action of another. We are to look at the course of a stimulus so far only as it affects the immediate correlate of experience; but, in order to this, it has a twofold inhibitory action, little of which we ever feel. There is the general fact that, when we are interested in one direction, antagonistic or distracting stimuli do not have the effect that they otherwise would. But more especially there is the inhibition necessary to the action of a stimulus, from centre or periphery, within its own sphere of action. In order to take its proper or useful course, the excitement has to pick its way among a vast number of courses which, anatomically speaking, are open to it. We cannot make the simple assumption that only one

[1] "The brain, which formerly had only been credited with the possession of relations with the muscular tissue, is now seen to extend its action to the other tissues. . . . This relationship cannot be interpreted in so clear a manner as can that existing between the brain and ordinary movement. Experimentally and logically, the intermediaries are unknown to us" (Morat, *Physiology of the Nervous System*, p. 483). "In the case of the dogs referred to (p. 42, above), from which nearly the whole of the hemispheres had been removed piecemeal, the daily meal had to be largely, one might almost say enormously, increased, in order to keep the animal in health, or even alive; in fact, a great increase in bodily metabolism seemed to be as notable, or even a more notable effect of the loss of the cerebral cortex than the modifications of sensation or movement which were observed. The histories of these dogs leave on the reader the impression that the great use of the cerebral cortex is to regulate the nutrition of the body" (Foster, *Physiology*, pp. 1215-6).

[2] Broadbent, *Brain*, vol. xxvi. pp. 324-5.

course from neurone to neurone is ever open to a stimulus at any time, nor that the taking of one precludes the taking of others. But we must assume that the paths, both native and acquired, have various degrees of openness, and that the excitement along the more open paths somehow prevents a diffusion of the excitement through others. In this general form the assumption applies to all forms of inhibition without saying by what mechanism, or by what state of energy, the path-opening and the path-closing are effected. It applies to the cases where there is no consciousness (viz. to inhibition of the action of the nerve-fibres controlling organic and skeletal muscles through stimulation of certain other fibres at the same lowest or spinal level, and to the inhibition of all spinal reflexes by their connection with the brain), as well as to all those cases where we speak of a loss of inhibition as a loss of mental control, whether it be over our movements, or our emotions, or a course of thought that we intend, or whether it be in dreams, or in a hypnotic, or other abnormal condition. Because the assumption is so general, I need hardly say that it must be taken as general, and read as saying not as much, but as little, as possible (ii. 3). XVIII. 1.

With this warning of what is necessary to a proper understanding and estimation of any physical explanation of experience and the mind, I proceed to a programme that may be followed with only an elementary knowledge of the nervous system. We are to consider how it has been proposed to represent the heads of our direct account: first thought, then will, and then feeling. The positive result must be meagre, but we shall be able to see the nature of the problems, what is demanded for their fuller solution, on what grounds we can infer the structure of the brain from that of the mind, and what order of theories must fail. This last, though negative, is of value on its own account, because the theories include those that naturally suggest themselves, and that we follow more or less dimly when first we picture the mind as the brain, and experience as its action.

§ 2. (A) The simplest thought is that whose object is all matter of present sensation; and, before looking at its character as a thought, let us take it as merely sensation. We can best arrange the question by looking at it from

XVIII. 2. the extreme statement of Exner,[1] viz. "Every sensory fibre, however stimulated, brings a sensation to consciousness which is different from every sensation that any other such fibre can bring." This is the extreme to which Müller's law of specific energies has been carried regarding the peripheral afferent nerves.

The words 'however stimulated' refer to the fact on which the law was originally based—the remarkable fact that, however sensory nerves are stimulated, they give the same kind of sensation. The optic nerve, for example, always gives light, and the auditory nerve always sound, whether they are excited through eye and ear by their appropriate stimuli, or by electrical or mechanical stimulation applied directly to the nerves. The law has been extended from different senses to different qualities within the same sense; in other words, from nerves to nerve-fibres. But the extension has been more as an assumption than as something that is proved. Especially it has to be shown that the fibres can always be excited otherwise than through the peripheral organ, and give their specific quality of sensation. To Müller the significant part of the law was the subordinate function of the peripheral organs of sense; but it is not so now for several reasons. One reason is taken from the history of the development of special senses. The specific energy of a nerve-fibre has developed in connection with the peripheral organ; and it would be a disadvantage if the fibre were liable to excitement by all kinds of stimulus. Then there is the fact that direct stimulation of the fibres (instead of through the end-organ) is more or less inadequate; and this is also the rule for all means of stimulation compared with the normal one. And especially there is the fact that if the peripheral end-organ is defective, or if it has never been in use, it is not possible by stimulation of the nerve, or of its cerebral ending, to give the sensation. This is specially striking if we compare the blind or deaf who have once seen and heard, with those who have not, or only in infancy. When the injury is in the peripheral organ, the former can imagine sights and sounds, whereas the born-blind or deaf cannot imagine or be made to feel any, even when there is

[1] *Entwurf zu einer physiol. Erklärung.* p. 172.

not yet any degeneration of the nervous tissue from want of use. XVIII. 2.

We may, therefore, omit the words 'however stimulated,' and consider the rest of the statement that every fibre from an organ of sense produces a different sensation, or "element of sensation," from every other. It is an opinion that people are ready to believe, because it goes with the notion by which they overcome their ignorance of the relation between the sensory areas of the brain and the sensory surfaces at the periphery; they overcome it by assuming that the peripheral sensory surfaces are copied or projected on the brain. Omitting this more general notion for the moment, we may ask what ground there is for the view that every peripheral fibre gives a different sensation from every other.

One ground is taken by extending to the utmost the law of specific energies in regard to the peripheral sensory nerves. It is the notion that every end-organ of sense is a collection of end-organs, each of which can be adequately stimulated in one or more ways, but can only give the same distinctive quality of sensation. The best example is the assigning of the thousands of simple tones to as many different parts of the basilar membrane, each of which picks out its own. But while this piano theory is generally accepted for the ear, the opposite course is taken for the retina. Instead of assigning the simple qualities of colour to as many different kinds of structure in the retina, all the theories agree in making as few kinds as possible, viz. three, four, or six. And it is the same with the other senses. It has been found that the different kinds of cutaneous sensation come from different spots on the skin, and are probably carried by different fibres or fibrils. The sensation of contact appears to be common to them all, but the spots which give the sensation of pressure are different from those giving the sensations of heat and cold, and those giving heat different from those giving cold; there is even a sensation of cold when a 'cold spot' in the skin is touched by a hot wire. There is a corresponding difference in the end-organs of taste for sweet, salt, bitter, and acid. But "the very uniform appearance of the olfactory end-organs indicates that they are all concerned in the reception of all the stimuli

XVIII. 2. which produce olfactory sensations; and we may at any rate conclude that the neo-Müllerian law requires, in the case of smell, additional evidence before its acceptance can be granted." [1] Other sensations, viz. those of movement and position and some of those grouped as organic, have been analysed, and brought so far under the same law. But it is obvious that none but sensations of hearing are brought farther than the threshold. The facts do not allow us to say that all differences of simple quality in sensation are mediated by specific end-organs and nerve-fibres. And, if they did, we cannot convert this into saying that every afferent fibre with its end-organ gives a different quality of sensation, or even a different element, from every other.

The ground for the view becomes firmer when we include the local quality that is felt in the sensations from skin, retina, and joints—in the sensations, namely, from which we develop our sense of space. For, speaking generally, our local discrimination is most acute where those sensory surfaces have the best nerve-supply. But this does not help the case of the other senses. And, in the senses for space themselves, the facts go beyond the argument; there is a better differentiation in the visual area of the cortex than if there were merely a projection there of the nerve-endings at the periphery. For, close packed and in contact though the cones are in the retinal spot of clearest vision, "our discrimination seems about four times as fine as it ought to be, if the merely anatomical measurements of the rods and cones in the eye determined its limit." [2] This of itself suggests a central means of differentiation, as does also the improvement in our power with practice. And that the brain does not merely add to the peripheral differentiation is seen from the fact that local signs may gradually alter from one meaning to another, when the other has become the right one. This occurs when, for example, a piece of skin is transplanted from forehead to nose. And it has been noticed in the eye [3] when displacements—contractions and expansions—occur in portions of the retina from choroiditis,

[1] Haycraft in Schaefer's *Text-book of Physiology*, ii. 1254.

[2] Stratton, *Experimental Psychology and Culture*, p. 126.

[3] Wundt, *Philosophische Studien*, xiv. pp. 7, 10; Stratton, *ibid.* chap. vii.; Kassowitz, *Allgemeine Biologie*, iv. pp. 328, 508.

sometimes also when one is getting accustomed to spectacles ; and again in connection with squinting. Two inferences are obvious. One is that the local quality of a sensation depends on the whole sensation of which it is a part ; and the other is that there must be as many sensory differences as there are local qualities or differences. Neither inference can be taken without the other. On the one hand, the sense of space is not merely a sum of contributions, as if every fibre brought its own little area with the power of adding itself to the others, and also of distinguishing its size, position, and distance from theirs. But, on the other hand, we cannot distinguish more points in any area than we have differences of sensation to distinguish. XVIII. 2.

§ 3. We can reconcile these two inferences about the local quality of sensations, and we can find a better ground for supposing that every peripheral sensory fibre may give a different sensation from every other, if we turn to the path that its impulse must travel. It must traverse at least two, and usually three or four neurones in succession, in order to reach the cerebral cortex by the nearest route ; and indirect routes are made of many more relays. Impulses from the same sense-organ reach the same region in the cortex. The regions for mere sensation—the arrival-platforms as they have been called—have each a well-marked central part, beyond which they extend to an indefinite border. The visual centre lies round the calcarine fissure in the occipital lobe, that for sound in part of the temporal lobe bordering on the Sylvian fissure, that for touch and common sensation in the Rolandic area, that for smell in the olfactory bulb and part of the great limbic lobe, and that for taste probably in the same neighbourhood. Except in the case of smell and taste a cortical arrangement corresponding to that in the peripheral organs has to some small extent been made out in the various areas. But beyond this it is not possible at present to localise sensation. It is claimed that these areas are distinguished from all others by "elements of an outstanding nature, differing in some striking manner from those found in what one may call the general or common type of cortex ; thus, some of the nerve-fibres which they harbour strike the eye on account of their great size and

XVIII. 3. unusual arrangement, while the nerve-cells to which we suppose these fibres to proceed are curious either on account of their great size, their vocation to various stains, or their conformation."[1] But the common shapes of cell are far more frequent, and at present it is usually held that the incoming fibres may penetrate to any layer, and end without seeking any special type of cell. But without saying where or how different qualities of sensation are produced in different areas, and within the same one, we may suppose that they are due to different cells or groups of cells, and so are differently localised the one from every other. In this sense it may be said that every peripheral fibre excites a somewhat different group, though again the converse does not follow. For when two sensations feel quite the same, they may be due to different cells at the centre, just as the stimulus of one affects a different point at the periphery from that of the other. The taste of sweet from one part of the tongue may feel quite the same as it does from another, but it is not due to stimulation of the same cortical cells as the other.

While we have to assign difference of quality to mere difference of locality, there is good reason to believe that the central, as well as the peripheral organs of different sensations have a native difference of structure or constitution to account for their difference of function. The chief reason is in the fact of central stimulation, by which, *e.g.* in dreams and hallucinations, we get the same sort of sensation as if the stimulus had been external. Two views appear to be against the inference, but they may be regarded as modifications of it. One is the view that the processes immediately correlative with experience do not occur in nerve-cells. But, as we are about to see, we have to take not a single cell but a group or area for our unit, and so we include in it their connections, and anything yet undiscovered in the ground substance of the same group and area. The other contention is, that the different sensory areas in the cortex acquire their specific function, and have to acquire it, by stimulation from the periphery. In proof of this there is, first, the fact that the born-blind and the born-deaf, when

[1] Campbell, *Localisation of Cerebral Function*, p. 100.

their brains are normal, and their defect entirely at the periphery, never know light or sound; and yet they have the same central stimulation from organic disturbances, brain tumours, and other injuries, from which other people have dreams and hallucinations of light and sound. And there is, secondly, the fact of substitution: an area may assume a function that it would not, if the normal area had not failed, as when a speech-centre begins to develop, or develops better, in the right hemisphere when the left has been destroyed. It is true that areas which are not used for their specific purpose do not develop so well as in normal persons, but there are difficulties to saying that they do nothing, and especially to supposing that nature has been so lavish as to supply understudies that have nothing to do unless their principals are injured. The facts tell against the notion of a rigid fixity of function, but they do not say that the nervous matter giving sight, for example, is exactly like that giving sound, or was like it at first until stimulation from the eyes decided its future character. They point to a high degree of plasticity; but the plasticity is defined in degree and direction by native tendencies; it is not a mere indifference. Doubtless the plasticity is least in the correlatives of the lowest and oldest forms of experience, as it is greatest where most may be learnt. With these modifications, then, there can be no objection to applying Müller's law within the cerebral cortex, as well as between it and the periphery. XVIII. 3.

And also, while we have to assign difference of sensation to mere difference of locality, we must avoid the common error of regarding the central organ as if it were a duplicate —a literal projection—of the peripheral organ of sense. I need hardly remind you that it is not the external stimulus that is conveyed to the cortex. Light and sound, as physics deals with them, do not impinge on the brain, but on eye and ear, where they are converted into a nervous stimulation, which varies with them but is quite unlike them. And if it would be ludicrous to suppose that a pinch of the skin pinches the brain and makes it sore, it is quite as wrong to suppose that the mechanical stimulation of a free-ending fibre in the skin is transmitted in that form to the brain.

XVIII. 3. But there is a more common error of the same kind when it is assumed that the peripheral sensory surface is copied in the cortex. That would not follow even if every peripheral fibre stimulated only a single cell in the cortex, so that there was some kind of point-to-point correspondence; for the cortical points are not arranged in patterns at all, let alone as patterns of the peripheral surfaces. When you dive, and feel the cold water all over you, your skin does not outline anything like the shape of a mannikin in your brain, as it must on this theory. And likewise in the hearing area: there is no piano arrangement there as in the internal ear, though there is proof of an order of localisation according to pitch. It may seem otherwise with vision; it is quite commonly assumed that the retinal pictures are repeated on the brain, but there is no better reason than the metaphor of a mirror. When there seems another reason in the decussation of the optic fibres, and in the need for a reversal of the retinal pictures in the cortex, it is because there is added to the notion of the cortex mirroring the periphery this further notion, viz. that consciousness is a self-mirroring by the cortex. I shall speak of that when we consider the correlate of our sense of time.

§ 4. It is not even to be supposed that a peripheral sensory fibre can excite only one cell in the sensory cortex. Between periphery and cortex the stimulus is conveyed by relays of neurones. Every next one carries it to a stage which is called a higher level in the nervous system, because the efferent connections command a more complex motor reaction than those at the lower level. But the neurones are not connected one and one like a single line of rails; every station is a junction. The stimulus carried by one fibre from the periphery excites more than one at the next level, and each of these in turn is represented by several at the next higher level, till, at the arrival-platform in the cortex, the peripheral fibre is represented by many, and is thus able to excite not one but a group of cells. Now a neighbouring peripheral fibre must excite very much, though not exactly, the same group; and so we may very well understand why movement between neighbouring points of the skin should give so remarkable an increase to our power

of discrimination, why practice should have a similar result, and why in some people more than others, and why for some senses, and some parts of the same sensory surface, more than for others. We can also understand how an indefinite sensory whole becomes definite, and how the whole gives value and prominence to some parts, ignoring others, as we saw in the direct account. And it helps us to understand how very different qualities from the same sense-organ feel alike, while those from different sense-organs do not. XVIII. 4.

The opposite notion of an isolated conduction along a single track to a single cortical cell would leave the other anatomical routes meaningless. We should only add to this objection, if we again went against the anatomical evidence, and supposed that the fibrils in the fibre gave isolated conduction. It would be better to suppose that the opening of one route closes the others. But first, the objection remains; for such a power would require a difference of stimulation to work it. And, secondly, the power is only to be assumed where it is seen to be necessary; it cannot be assigned to every cell-body, though it may be demanded in some, *e.g.* for the working of the motor system. On the other hand, the only objection to the simple view is that it does not anticipate difficulties elsewhere; and the answer may very well be that it does not create them, and that it gives elbow-room for alternatives, where our ignorance is so great.

It follows that we cannot suppose any peripheral surface, *e.g.* the retina, to be projected like a copy on the cortex. When there is an order of parts at the centre, like that at the periphery, as there is in the visual and the Rolandic areas, we must suppose that it is for the convenience of despatch to motor lines. That appears to be the idea of the arrangement at the lower platforms or junctions. But even if we supposed a single cell in the cortex for every sensory point at the periphery, how could we suppose a copy possible in so different a structure? And, in regard to the retina, we should have to ask what points were meant, for there is not a point-to-point correspondence in the retina between the rods or cones, the bipolar cells, and the ganglion cells.

As the opposite view is so common, and an indispens-

XVIII. 4. able support of the common psychological error, let me quote two accounts, the first about the neurones in the retina, the other about their continuation to the occipital cortex. "We cannot attribute definite functions to the several elements; but one fact may be pointed out which shows how complex may be the relations of these elements. It seems probable that each ganglionic cell forms synapses with several cone-bipolar cells or with several rod-bipolar cells, or even with the bipolars of both cones and rods. Again, there is little doubt that each cone-bipolar cell forms synapses with several cone fibres, and that one rod-bipolar cell may communicate with many rod fibres, so that each ganglionic cell is in direct functional continuity with many cones or rods or with both cones and rods. The cells with horizontal processes lying in the outer part of the inner nuclear layer probably form another means by which different cells of the retina (possibly cones and rods) are brought into relation with one another. Of the nature of the changes taking place in this complicated structure we know nothing; it can only be suggested that the primary changes set up by light in the rods and cones undergo repeated differentiation and elaboration in passing from unit to unit."[1] And we may suppose that it is through the same arrangement that we have our extraordinary keenness for spatial differences. There is, besides, the other possibility I have mentioned, whereby there may be an increasing differentiation at all levels on to the sensory level of the cortex. This would hold for all sensation and not merely for vision; but I quote about vision because the author is a well-known anatomist of the nervous system whose notion of the decussation of the optic fibres would be more easily served by the opposite and the common view. "The impression taken up at the periphery by a single sensory cell spreads like an avalanche through an increasing number of cells up to the brain. . . . In the fovea centralis a cone meeting a ray of light transfers the stimulation to a bipolar cell; this conducts it farther to a ganglion cell (a cell of the ganglion layer), whose nerve process, branching richly in the fore-quadrigeminum, spreads the excitement over a consider-

[1] Foster, *Text-book of Physiology*, p. 1316.

able group of cells; and, finally, the axis-cylinders of these groups end in the occipital cortex of the brain, where by means of their branching they come in contact with the arborising terminals of countless pyramid cells. . . . Thus the unit-impression taken up by a single cone can communicate itself to hundreds or thousands of the nerve-cells of a cortical centre."[1] XVIII. 4.

The notion of a group, and not a single cell, as the correlate of a unit of sensation leaves quite open the question of the site and the nature of the cortical process immediately correlative with the sensation. The usual view is that it takes place in the cell-bodies, though nothing is found in those of the cortex that does not occur in nerve-cells giving no experience. While this view is not excluded, neither are other views of the site of experience. Some of them look to the nerve-fibre, or to the whole neurone. In connection with the common belief that even the simplest experience requires the combined action of many neurones, there are all varieties of view as to whether the action giving the experience is concentrated at a point, or is spread through the whole, including the sub-cortical reflexes. Some, again, believe that the system of neurones is only a conducting system. There is the view, especially of Nissl, that the methods of staining, by whose means the neurone theory has been developed, have caused an important part of the nervous system to be overlooked, viz. the grey matter in which the bodies of the neurones are embedded, and with which they have some kind of intimate connection. And there is the view of Mr. M'Dougall, who looks to the synapses, *i.e.* the intervals across which neurones have to excite one another, and not the bodies of the neurones, as the likeliest seat of experience.[2]

[1] Ramon y Cajal, *Archiv fur Anatomie*, 1895, p. 368.

[2] The arguments for this view are summarised in his *Physiological Psychology*, p. 31, and set out fully, together with objections, in *Brain*, vol. xxiv. A theory begun in the early nineties, and frequently found in popular books, offered an easy picture of nervous action by supposing amœboid movements at the synapses; but for want of evidence it may be said to have been disproved. It was thought that functional connection was established between neurones by the approach of their processes to one another. Retraction was thought to break or prevent functional connection, and thus to account for sleep, temporary loss of memory, all effects of fatigue, anæsthesia, and other abnormal phenomena like double personality.

XVIII. 5. § 5. Since it would be useless to try and decide among these theories, we must pay the more heed to the ground of our going. For this reason we shall not go beyond the arrival-platform till we see what is demanded of it. And this will take some time, because it presents in a simpler form certain of the problems that appear when we seek the correlates of experience at a higher level. Not that they can be solved in the simple case, but we shall see what exactly they are, what knowledge is wanted, and how they are commonly evaded. They are evaded by supposing the mental and the cortical events to be duplicates, the one conscious, the other unconscious. Error is added to this by the notion of a mirroring, or self-reflecting of the brain in the mind, and of brain process in experience. And when it is also thought that there must be a mirroring of the mind in the brain, and of experience in the action of the brain, we shall see that the whole question is made impossible.

Different qualities of sensation from the same sense-organ, as well as from different senses, we have assigned to different localities or groups of neurones in the cortex. There is no difficulty in adding degrees of intensity, nor in supposing that, *e.g.* in smell and colour, the quality may alter with the intensity of the stimulus. But there are also the vividness of a sensation, its interest, its extensity and local quality, its duration, and the feeling of sensory vividness; and there is the conversion of a mere sensation into a thought, the experience of self being differentiated from the sensory object.

I shall speak of the correlate of interest under that of pain and pleasure. The vividness of sensation, because it distinguishes a sensation from an image of the same real object, has usually been taken as due to peripheral as against central stimulation. But the vividness of dreams and illusions of all kinds requires at least a further reason; and probably the main consideration is the correlate of belief or expectation.

The local qualities of sensations from skin and joint have probably some connection with the motor mechanism to the same parts. The lowest beginning of a nervous system is concerned with localising the points of peripheral

stimulation, so that movement is made with reference xviii. 5.
to them. In higher animals and ourselves reflex actions have a definite reference to the point whence their stimulus has come; and, while it is true that a stimulus from different parts of the skin may produce the same general movement, involving the same system of muscles, the actual movement is slightly different, according to the point of stimulation. We can say the same thing about the eye, though it would be rash to say what is the correlate of the local qualities of visual sensations (ix. 7).

But it is a more fundamental question for us to ask about the correlate of the mere sensation of extensity before we thus turn it into our sense of extension or space. It may seem at first that we have its correlate in the extent of cortex directly affected from skin, joint, or retina. Such a view illustrates the most common of all errors about the immediate correlate of experience. We shall consider it rather in regard to the sense of time, where it seems more inevitable. In regard to the sense of space there is a more obvious line of objection. It is that the stimulation of all sense-organs excites a cortical area, and yet there is not always a sensation of area. Even if it is claimed that there is always a sense of extensity, I think no one would say that this varies with the extent of area affected. No one can have courage enough to say that when a hole in a tooth appears one size to the tip of the tongue, another to the tip of the finger, and a third in a mirror, the differences are according to the three extents of area giving the three sensations. The most we can say, or rather suppose, is that one factor is the number of nerve-cells excited in the cortex from the same kind of sensory surface. And we can no more say why they should give the sensation of extensity than why they also give a sense of contact or of light.

§ 6. Finally, among the aspects of mere sensation there is the temporal aspect. If we seek its correlate, the answer at first appears inevitable. Since there is no sense of empty time, but only of the duration or change of an experience, what can be the correlate of our sense of time but the very time of the cortical events of which we have experience?

xviii. 6. This view must delay us not merely on its own account, but more because the error is typical.

The error is in identifying the correlate with the content of an experience, and because there is now a special temptation. Our sensations of colour, contact, shape, distance, are not like their correlates; it does not matter, you will observe, whether the sensation is of primary or secondary qualities. But it is otherwise in regard to the sense of time: the time that we feel is that of the cortex. This is emphasised by the fact that the peripheral and the cortical orders of time do not correspond. Apart from all pathological causes of delay on the road, simultaneous peripheral stimuli do not arrive simultaneously at their centres in the cortex. The order of their arrival depends partly on the different lengths of the route that they have to travel from the periphery, and especially on the number of neurones forming the different routes. In the sense of time, then, we feel the very time of the cortical events. And this may seem to offer the most satisfactory kind of correlation; for now the experience and the correlate seem as if mirrored in each other.

The error is twofold. (*a*) It is an example of the final and most favourable case in which sensation and knowledge are taken for a mirroring or impression of their objects, for now the old obvious objection does not apply. Our sense of the qualities of things cannot be an impress of them, for they do not produce an impress of their like on the brain; in their case, as we saw (vii. 4), the stimulus is one thing, and the sensory object another. But as a last foothold for the common notion of mirroring, it may seem that our sense of time, of number, of connection, of identity, of likeness, of difference, and of difficulty, conflict, or calm, is the reflection of corresponding occurrences in the brain. The physical events are thought to give experience of themselves without an intervening stimulus. The time, the identity, the conflict, all those real objects of experience, are thought to be themselves the stimulus.

I may remind you that even if this were so, the experience and its correlate being the same, the one a mental, the other a physical object, it could not be said that the mental

one is copied from the physical one. I hope it was made clear in the last part of the first, and especially the last half of seventh lecture, that this is the same notion as that which a man has when he thinks he is copying his own actions, which he sees in a glass. But we may waive this general though fundamental objection and confine ourselves to the present case. XVIII. 6.

Our brain is thought to tell off the moments as they pass, so that we feel each as it comes. (*a*) And, first, it may seem that no question need arise about the length of the present moment; there is simply the fact that a physical process in the brain, or anywhere else, can only be at one stage and not yet at the next. But suppose sensation were possible in such a moment; it would include no sense of process nor, therefore, of time. This might be thought to come with a second stage in the process, but then the first one is no more, and can no longer mirror itself nor do anything else. And, in the absence of the first, the second stage is in the same plight as the first was. Nor is there hope of extracting a sense of duration from the fact that the first sensation does not disappear with the first moment, but continues; it continues in the same form if the stimulus lasts, and in a fading form if the stimulus is lost. But there is no sense of time in the knowledge that two successive sensations are alike, or one lively, the other fading; and we merely beg the question if we suppose that the two are felt to be successive, or to be stages in the course of the same sensation. From so fatal an objection it has frequently been inferred that experience must be 'out of time' and not confined to the present moment, since it is able to fuse the moments into a sense of duration, and to add to the succession of feelings a feeling of their succession. But that is to pour out the baby with the bath: it denies the possibility of a correlate, and does not merely reject the idea that an experience is an impression, or is mirrored, or copied in any manner, from its immediate correlate.

(*β*) Secondly, it has been thought to escape the difficulty by taking a different view of the present moment. Instead of taking a cross-section of time or the course of things, where they are at one stage and not yet at the next, a small

XVIII. 6. length is taken. And certainly a present without length is no time at all, being exactly the same sort of abstraction, and for the same purpose, as a point of space without magnitude. The addition of such moments to one another would give no more duration than one of them; nor can one nor all of them hold the smallest part of any process, physical or mental. Hence we are right in taking a piece of actual time as the present moment; but we introduce fresh trouble for the notion of mirroring.

For there can be no absolute unit of time any more than of space. To be time at all every smallest part must be a stretch of time containing beginning, middle, and end. And, since we cannot say that the smallest length of time as we feel it is the smallest that exists, how can we say that the actual time of a physical process in the brain or anywhere must be just the length of time that we feel, and that it could not be felt as longer or shorter? The speculations about a moment feeling like an age, and a thousand years as one day, are quite as legitimate about time as a microscope makes the corresponding truth about space. And so it is meaningless to say that a second as we feel it is a copy of a second as it is, even if we felt and measured it more exactly than any instrument can do.

But (*b*) we have even to give up the very idea that the time of a cortical process is the immediate correlate to the feeling of time. The time of a cortical process corresponds with the time of the experience, but that is a different matter. In the first place, they would correspond if the experience included little sense of time, or a quite wrong one, or none at all. In the second place, every sensation must have its object present so long as the sensation lasts; but till now we have found the object to be one thing, and the immediate neural correlate another. And so we shall find it here; the object of the sense of time is a time, but the correlate is not. Finally, it may be thought to meet the objection if we suppose a correlate, *e.g.* an organic rhythm, for our subjective measurement of time, and still regard the actual time as correlate of our sense of time. It may be thought that the crude sensation of time, *e.g.* the mere feeling of change or duration in an experience, has its correlate in the mere

change or persistence of the cortical processes giving the experience. If, however, the mere lapse of time in the process were all that is necessary for this sense of time, we should have a piece of experience paralleled by no expenditure of physical energy. And I think few would be willing to say that that is ever the case. KVIII. 6.

§ 7. Collecting the positive parts of these criticisms we can arrange the problem and its answer in the same manner as for the sense of space. For illustration we may have in mind the example I took to illustrate the constructive work of the mind in mere sensation (vii. 4). In hearing a series of four sounds in the course of a second 'we carry forward not merely the sounds but their temporal order, so that, though in the last quarter of a second they are all felt simultaneously, they are felt at the same time as in succession.' The second with its filling is a temporal field corresponding to the retinal field of vision—I mean the expanse not of the retina, but of light that we have by the retina. We can increase the retinal field or diminish it by opening our eyes wider, or not so wide, according usually to the interest of the field. Similarly, the length of the sensory or specious present (p. 238 *n.*) is different for different creatures, and in ourselves according to age, power of attending, and the interest of the field. The field at any time is bounded on the past side by the earliest sensation that has not yet disappeared, and on the future side by the expectation of a last coming sensation (as when we see a knife about to cut, and expect a series of consequences). And the field has a spot, which we may call the specific present, where the order of events may be most minutely and clearly distinguished. In the course of five minutes the extent of our retinal field varies every time we wink our eyes; and, no doubt, during the same time there is variation in the extent of our present temporal field. But, for convenience, let us suppose that they both remain constant during the five minutes. Slowly moving our eyes we shut off part of the old field, and admit an equivalent stretch of light; we may proceed to an entirely new field, or come back to the old; the place of clearest and most vivid seeing has always the same position as regards the rest of the field; and yet (though now it needs purpose, effort, and so a higher level of

XVIII. 7. intelligence than mere sensation) we may attend to a different point in the field. This can all be transferred to the sense of time. Throughout the five minutes we may have always the same specious present—say two seconds—before us, with a continuous alteration of their filling. But now the spot of clearest observing—the specific present, about half a second—advances without rest and always in one direction. It is usually in the middle of the two seconds, but sometimes at the beginning, as when starting a familiar rhythm, and sometimes at the end, as when we come to an end and have not yet an outlook. Finally, while the order of events that are dated in and about the spot can be most fully and easily determined, they may not be ; we may with an effort, as in seeing, attend to the outlying parts of the field that are not within the spot. We may observe the vagueness of their order when they are past or not yet come, compared with the minuteness and exactness of their order when they were, or will be, in the specific or more immediate present.

The correlate of (*α*) the extent of the retinal field of vision is the greater or less portion of the cortex excited by the whole or part of the retina exposed to the light ; and (*β*) the place of clearest vision has for correlate a more adequate structure and stimulation than the rest. But (*γ*) we do not at present know how certain sensations get the sense of area from their area, while others do not get it from theirs. And (*δ*) we can never say why part of the cortex should give the sensation of extent, any more than we can say why it gives colour or any sensation. Again, these statements can be transferred to the sense of time. (*α*) The field of time is not of empty time but of sensation, and so it involves the action of the parts of the brain giving the sensation. When the field narrows, as when we have no outlook, or when the sensation of a second ago is blotted out by a present shock, there is an obvious parallel to the effect of half-closing our eyes when falling asleep, and of narrowing them for a better look. (*β*) The specific present is the clearest and fullest part of the field, because in the rest of it stimulation is past or merely expected, so that it is filled with only after or fore effects.

But again (*γ*), we cannot answer the essential question

from our present knowledge. We feel the extent of time at one of its moments; we feel the successive order of sensations at a single moment when, therefore, their correlate is not successive but simultaneous. We have to correlate the feeling of two seconds, which we have at every moment of them, with some factor in the brain process, which is also present at each and every moment of them. Neither the feeling nor its correlate can exist in more than one moment at one moment. And so it is obvious that just as the correlate of the feeling of cold is not cold, nor of space a space, so the correlate of the sense of time is not a time. It is not something unknowable, but only something not yet known, as is the immediate correlate of every experience. Because it is not a sense of empty time but of the order of events, we have to connect its correlate, like that of extensity, with our sensation of what fills it. There is at every moment of the two seconds a simultaneous experience of the sounds and other sensory material that succeed one another during the two seconds. It is the same if a single quality of sensation fills the two seconds, *e.g.* a drawn-out note. After-sensation of its earlier stages must be carried forward to its later, and felt there, not as an added intensity or variation in the note, but simply as a sense of its being drawn-out. It is no doubt difficult to imagine a correlate for this in the same nervous matter which yet continues to give the sensation. Some have thought that the result may be achieved by subsidiary processes, *e.g.* those connected with the effort of attending, because the sensation from them varies with the time by reason of fatigue. But, if the burden must be shifted from any experience to a particular kind, there are more likely bearers unconnected with the sense of fatigue: there are the organic rhythms, and especially the pulsations in all experience to which I referred when speaking of the subjective measurement of time (p. 210). If we knew more, however, there would probably be no need to suppose any special shifting. And, of course, whatever sensations we use to measure time have themselves to be set out in temporal order; they account for the measurement, not for the sense of time. Just as sensations of local qualities and movements do not give the sensation of exten- XVIII. 7

XVIII. 7. sity, but require it in order to become local signs, so it is here. The continuous rise and fall in any pulse or rhythm has to be felt as rise and as fall. And no matter how short the specific present in which we feel an order of sensation A and B, A is past when B occurs; the after sensation *a* occurs simultaneously with B; and the two are felt in the temporal order of A and B. The question is, What is the correlate of this feeling of their order? It is doubtless to be found in the most fundamental properties of nervous action, such as are revealed in the tendency to repeat actions that give no sensation as well as those that do, and to repeat them in their original order.

But, lastly (δ), while there is reason for the hope that something of this kind is waiting to be discovered, it has also to be said that, when it shall be found, we cannot tell why it should give the sense of time, any more than we can say of the correlates of the sense of extent, or contact, or cold, why they should give experience at all, let alone those kinds of experience. And this is not to repeat the platitude that everything mental must be quite different from everything physical. We are not comparing the experience of time, space, and cold, with actual time, space, and cold; we are not comparing things as we think them with things as they are; that is a difference which does not concern our present question in the least. We are comparing them with the correlate of our sense of them. We are comparing, for example, the correlate of our feeling of time with time as we feel it, and as it is. And we have this result that, though the correlate of the experience must correspond with the experience, there can be no other likeness between them.

§ 8. We have to examine this result and to ask how then our inference is possible from experience to brain action, and from mind to brain structure. The answer is forecast in the present example, and in all examples of sensation. The correlate must, on the one hand, have a point to point correspondence with the sensation, and yet, on the other hand, it must be a physical action, and in accord with what we know of nervous action.

Our experience begins with a mass of sensation which we learn to differentiate into definite wholes, parts, and

aspects, in the manner that we saw when dealing with sensory intelligence. Such wholes we have in rhythms of sound or movement, in visible forms, and in the sense of the solidity of objects on which, for example, we close our hand. These have each a quality as a whole, which cannot be called a sum of its parts except as the life of a body is the sum of that in its members. We do not feel first the parts and then the whole; we saw how they become definite together and how we feel the whole to be the same though the parts may be very different. Hence its correlate is not simply the correlates of the parts associated with one another. Though the frequent hearing of an air to which we are deaf may cause it gradually to take form so that we hear it, the result is not simply a better welding of what we heard at first. That is all that a desperately unmusical ear may get, and there may be no fault with its keenness of hearing. But I need not repeat the facts. They require us to ask (*a*) What is the correlate of such an organised whole —a body and not a mere mess—of sensation? (*b*) What is the nervous structure engaged in the experience? (*c*) How is it developed? XVIII. 8.

(*a*) If we do not know the correlate of the simplest experience, how can we say anything about that of this whole or body of experience? And yet if we can say nothing there is little to say about the correlate of any intelligence, for it is all of this nature. There is no way open but to infer brain process and brain structure from experience and faculty. We have just seen, however, that the correlate of a sensation is never its like in the brain, not even in the case of time. And suppose we knew the correlate of our experience in recognising an object, in feeling familiar with it, in comparing it with others, what likeness could there be between these feelings and their correlates? And we feel ourselves to be one and the same subject of all our experience, but the brain has no one and the same spot from which to direct its actions, and to be a centre for their organisation.

The commonest argument against assuming a complete correlation has been that it is impossible to suppose either that the brain or any physical thing can be like the mind,

XVIII. 8. or that any action in the brain can be like an experience; and especially that the experience of the unity of self, and others involving it, *e.g.* the experience of comparison, of recognition, of the freedom to think and will, cannot be pictured. But no such picturing or mirroring follows from the assumption, not even when our ignorance puts us to hypotheses, and we have to infer the correlate from the experience. For there need be no more likeness between a feeling and its correlate than between two utterly different languages when they say the same thing, or between one of them and its meaning. Between the vibrations of a string and the hearing of their note there is a series of events, one after the other. Each occurs in a different physical medium, viz. in air, in liquid, and in several different solids, some with mechanical, others with electro-chemical action. The events of the series correspond, but they are very unlike one another; and there is no more reason why the cortical events should be like the note than why either they or the note should be like the vibrations of the string or the air. Only there is a completer correspondence between the note and the cortical events than between the note and the external vibrations.

This being clear, the step we have to take in inferring from mind to brain presents no difficulty. We assume that two empirical series correspond, viz. a brain change for every change in experience. And it follows that there is also a correspondence between the connections in the one and in the other, between the laws or general facts in one and in the other, and between the structures—the mind and the brain—to which we refer the one action and the other. Hence though we do not know what electro-chemical or other action is correlative with an experience, we may suppose it to be a complex of actions, such as all physical actions are. And we may suppose the constituent actions to be mutually dependent, and to be in some cases lost in their resultant, and in others to be distinguishable as factors in it.

(*b*) What is the seat of this complex action? Are we to suppose that the aspects of a sensation have each its own seat? It is so far in favour of this that we can attend to them separately, and that they become factors of different

wholes. The tint of a colour enters into one whole, *e.g.* in a harmony or a clashing of colours; the extent of it into another, *e.g.* in a design; its time into another, *e.g.* in a flicker; and its intensity into still another, *e.g.* in the feeling of its dying away. But against that is the fact that the aspects cannot be felt apart; and the question of the correlate of attention is not really lightened by assuming a specific variety of cell for the several aspects. We may take it, then, that the same cells are capable of a complexity of action corresponding with a complexity in their stimulus. As the extent, the intensity, the rhythm of the stimulus may vary, while its other factors remain the same, so may the factors in the cortical action. We saw that, on anatomical grounds at least, a group and not a single cell is directly excited from a point at the periphery, and that, though the groups are different that are affected from different points, they overlap; the cells in them belong to different groups, so that any one cell may be directly excited from different points at the periphery, and by different structures, *e.g.* by rods and by cones, at those points. This is the simplest way of understanding some facts connected with the summation of stimuli, as when we cannot see the colour of a small spot, but can see it if the spot is large, and cannot see to read with one eye in a bad light when we can see with two. It helps us, as I said, to understand how very different sensations from the same sense-organ are yet felt to have a likeness which we do not have between sensations from different senses (though these may be far more alike in emotional quality, pp. 177-8). And so, finally, when we ask about the seat of the complex action by which we have systematic wholes of sensation, we need not introduce neurones for the whole in addition to those for the parts. We have not to suppose that the parts are 'reflected,' or farther projected, into a combining cell or a group at a higher level, but simply that the mass of peripheral stimulation can now produce a concerted action. XVIII. 8.

(*c*) This view accords very well with the facts of individual development. We are all familiar with the way in which a chaos of sound or light takes form; first a glimpse of the whole, and then an increasing definiteness

XVIII. 8. still all the differences find their place. We cannot have sensation of the whole unless we have sensation of the parts; but we learn to feel it as a whole when the parts are a mere sketch, and in all kinds of variation and complication. We find in ourselves and animals all degrees of native capacity for feeling, and learning to feel, complex bodies of sensation, and we can suppose the correlate of this capacity without introducing nerve cells of a higher order which organise, reflect, or otherwise combine the stimulations occurring at a lower conscious level.

This other view, however, makes a claim when we look beyond the individual development to the phylogenetic development of a nervous system. Higher levels are achieved by the superposition of new systems of neurones, so that the peripheral stimulation is projected from level to level. One view of the levels on the afferent side is that the lower is simply repeated at the higher level, point for point; but this makes it a purposeless arrangement, and no development. Opposed to it are two views which are also the opposite of each other. One is the avalanche view, and we have adopted it so far as it says that a lower neurone may excite a number of neurones at a higher level. The other likens the connection to the organisation of an army, the captain giving unity to his company and receiving reports of them; the colonel representing the captains, and so on. On this view we might suppose that the combination of various aspects in a sensation is effected by a higher neurone to which a variety of lower neurones report themselves, and that the higher neurones in turn report themselves to others of still higher rank, which give us the feeling of complex wholes. The same view is carried to the correlate of different levels of intelligence, because at every higher level a number of lower thoughts are involved in a single one. If this army-view were correct, there ought to be abundant witness of it in the structure of the cortex; there ought, indeed, to be nothing more evident. But there is no evidence. Though there is nothing so evident as the maze of fibres passing in all directions, and following routes that are definite enough to distinguish different regions of the cortex into different types, there is no evidence that fibres

from a group of lower cells seek and discharge into a common superior cell, as the theory requires. There is evidence that, when a mass of sensation is organised, a wider area is engaged than the platform of mere sensation; and it may be assumed that the neurones in the wider area assist in the organising, and are not merely sensory. But, if we supposed them each to receive impulses from a lower group, we should have to fill them with all the complexity that they are there to organise. And since it is quite as easy to suppose a systematic connection and action within the whole group, there is no need, as well as no anatomical evidence, for the existence of those combining cells. XVIII. 8.

When we picture a systematic action, and the formation of systems within the group or area, it is not to be thought that the picture is a copy of the anatomical relations of the neurones, as if the cell-bodies represented units of sensation and their fibres the connections among the units. In case the simplicity of that notion still commends it, consider how many fibres or collaterals a cell would need to have in order to make the infinite number of connections that a unit of sensation can make. We can only say that under a systematic whole of stimulation like a landscape or a melody, the nervous matter affected is able to take a corresponding systematic connection. The blur of an unfamiliar landscape becomes a definite picture, a confusion of sound familiar music, so that a glimpse or a hint can excite the neural systems that are formed to see and hear them, and what is strange, or inconsistent with them, gets the prominence and the irritating quality of an obvious error. The number of such systems that may be formed is so far unlimited that the formation of one does not prevent the formation of others involving the same elements. They are only formed as the result of adequate stimulation; but this, of course, could do nothing unless the central organ were able to respond. It responds not merely to the items in the stimulus, but to its systematic character, and forms a system corresponding to it.

§ 9. I have delayed over the correlate of sensation, and of sensation from a single cortical area, because it raises the essential questions without complication, and the essential

XVIII. 9. manner of answer. I have indicated how the questions and answers concern higher levels of intelligence; and, waiving particular problems, we may extend what I have just said about the organisation in a single area to the organisation of wholes whose parts occupy distant areas. These may be sensory wholes like combinations of colour and smell, and of rhythmical sound and movement; or they may be complex percepts where one sensory area is excited from the periphery, and the others from this one; or they may be ideas, individual or general, where the stimulation is entirely central. In all we have a single thought of a complex object by the excitement of areas distant from one another. And we have no feeling of connection between the areas; there is nothing in an experience to indicate that its parts come from near or far, or that they need connecting. No doubt the connection is effected by the nerve-fibres running from one to the other, with or without the aid of intermediate neurones. And we have to suppose that when two areas, no matter how distant, are excited and give experience together (simultaneously or successively), a path between them is opened by that event alone, and so far remains open that the re-excitement of one tends to pass from it to the other as well.

If this connection of the areas gave merely a larger mass of sensation, merely a blending or a complicating of one sort of sensation with another, it would hardly matter how few or many fibres we supposed to give the connection; a single one might connect the whole of one area with the whole of a distant one. But the usual case requires the connection of a system in the one with a system in the other; and the more definite the systems the more easy and effective their connection. And now the essential question repeats itself. When the horseman in our illustration appeared on the horizon, the visual impression took the general meaning of any solid object, and also, excited, let us say, the words 'something or other.' As the picture grew it took a more definite meaning, and the word became 'living thing,' 'man on horse,' 'trooper.' How are we to understand these connections? It would surely be absurd to suppose that the cells in the visual area, answering to the picture on the

retina, are each of them connected with the cells in other areas that give meaning to the sight. Can we suppose, for example, that every cell engaged in all these groups connects with those that give the words 'something or other'? Nor can the difficulty now be met by supposing that not all the cells in a group send fibres, but a few of them only; as if one of the cells which together give the sound 'horse' were enough to connect the group with the groups in various areas which give its meaning. As well expect a vowel to represent one word to which it belongs, and not another. XVIII. 9.

Hence the same two alternatives as before: first the notion that there are combining cells for the group, and that union with other groups is effected through them. These higher or representative cells need not be thought to have a very different constitution from their subordinates, but to be in a position to receive their joint stimulation. But apart from other difficulties, there is again no evidence for this arrangement, and it should have been very evident. Nor is there anything to justify a view that a single idea must occupy a single cell. With better knowledge "we may suppose ourselves able to distinguish ideas that require a thousand, a hundred thousand, indeed a million cells, but never, in view of the anatomical relations, one-cell ideas."[1]

The other alternative is to keep within our knowledge by speaking only of the connection of areas with one another, and to take the same view of concerted action within the connected areas as within a single one. The question is the same, viz. how the nervous system, which at first presents the world as a blur of sensation, is able under a systematic course of stimulation to take a corresponding system. This system that it takes corresponds also with the intellectual or apperceptive system whose structure, action, and growth we followed in considering the growth of intelligence from mere sensation to a ready comprehension of the system of things. The action within action, the organic connection of the whole movement and its factors, that we pictured as the correlate of a sensory experience, takes an increasing complexity. A mere hint may be

[1] Flechsig, *Gehirn und Seele*, p. 27. "It is beyond me to guess how any one could have taken the notion of such absurd ideas" (p. 98).

XVIII. 9. adequate to put the system in work, for adequacy lies not in the intensity of a stimulus but in its ability to challenge. We saw how the hierarchy of thought and belief may be challenged in a dog, in an educated and an uneducated man, and how adjustment is made. And we may transfer the language from the mental to the neural system. The growth of the system is entirely in making adjustments to the system of things in which we live, as this is represented by a present occasion offering a challenge. The adjustment is to what is new in the occasion. Every occasion is so far new, but the greater part of it is always familiar as well; and this part we have to picture as the occasion of only so much disturbance as corresponds to our immediate thoughts, and to our taking for granted. In every statement about an object, the greater part of the object is taken for granted in the meaning of the grammatical subject, while some part —often quite incidental, but the part of present interest, value, or challenge—is specified in the predicate; and the whole statement, the whole disturbance, is made on its account. And every inference may be pictured as a more complex judgment or statement; it is an explicit adjusting of subordinate systems whose connection is not yet spontaneous enough to allow the complexity, viz. the reasoning, to be taken for granted, and a simple judgment, viz. the conclusion, to suffice. We can translate in the same way into those very general physical terms how a course of thought is determined by an idea, how error is discovered, or how admitted without challenge, how comparing and deliberating are carried out within the system, and how the result is determined by it. And we may represent all kinds of intellectual satisfaction as the system, having been disturbed, coming to equilibrium.

But it is more a game than a hypothesis to picture the complexity of mental structure and action in any detail. Consider only that the game is usually played on wax, or a telephone system, or as the opening up of a new country, and transferred thence to the nervous system. We have simply the notion of a system of forces localised according to our advancing knowledge of the structure and the functions of the brain. And, to repeat, while we may

picture the physical apperceptive system from the mental apperceptive system, it is only because both are systems, and the systematic connections in the one must be the same as those in the other. Apart from that there is no likeness between a mental power and any disposition of physical particles, and none between an experience and a movement. And there is the more subtle error to avoid of which I spoke in connection with the sense of time. The correlate of our sense of the sameness or the likeness of two things is not that the same or that similar parts of the cortex are excited; the correlate of the sense of recognition is not that the old path is now smoother, or otherwise affected by its previous use; the correlate of a belief is not the correlate of the idea of the object in which we believe, nor anything that forces the idea on us, or makes it vivid. These things, like the passage of time, may all occur but without our having the experience. The sense of familiarity, for example, is strongest not in the presence of the familiar things of every day, but when it is unexpected. And indeed we might as well suppose that two simultaneous impressions are the correlate of the thought that they are two. XVIII. 9.

While the translation of the apperceptive into a corresponding nervous system has these limits, it has its use, and partly in consequence of them. It gives room and a potential value to every relevant fact that may be discovered; and, by stating the problem or demand, it prevents a premature satisfaction with easy pictorial solutions. These are frequently found in views (*a*) about the localisation of the higher mental faculties, and (*b*) about the neural action corresponding with theirs.

§ 10. (*a*) The seat of mental faculties is chiefly determined by discovering the mental defects that accompany injury, degeneration, or defective development in different areas. And with this has gone the discovery (by the embryological researches of Flechsig) that the areas between those of projection are areas for associating them, and for elaborating connections between them. They are characteristic of the human brain, occupying, according to Flechsig, two-thirds of the whole cerebral cortex of the human infant, far less in monkeys, and still less in lower mammals. They are

XVIII. 10. divided into three areas or 'centres'—the great anterior, the great posterior, and the middle or insular. Little is known of the functions of the last. The island of Reil is usually thought to share in the work of speech, its anterior part in the use of words, its posterior part in hearing them; but others think this unlikely on various grounds.[1] As an association area it receives bands of fibres from the neighbouring sensory areas, viz. those of hearing, smell, and body-feeling. Of the other two association areas the posterior occupies the great area lying between those of body-feeling, sight, and hearing. Mental defects following injury to it are very various, but always there are loss of memory, especially of sound and sight, and an inability to form concepts, to connect them with words, and to carry out a train of thought. Hence many have considered it the chief centre of intellect. Others agree with the popular notion that the anterior association area—the anterior and greater part of the frontal lobe—has the right to this distinction. Their argument is that the development of this lobe in the mammalian brain appears to coincide with the development of intelligence. But it has been difficult to find other support, for at present quite contrary opinions are held about the significance of all the available data, histological, experimental, and clinical. On the whole, however, partly from its connections with other parts, and partly from the effects of disease and other injury, there is an inclination to regard it as especially the seat of conduct and emotion. This makes it the seat of intelligence where one's own action and feeling are involved, as distinguished from intelligence regarding the world about us, which has its seat in the great posterior area.

What is more important than an opinion on the difference between the two areas is what they have in common; for this is a very different way of localising from that of the older phrenology. We saw how intelligence both as faculty and as experience involves many factors, *e.g.* memory, identification, comparison, inference. These do not occupy separate parts of the areas; the further localisation within the areas is not into them, but according to the origin and

[1] Campbell, *Localisation of Cerebral Function*, pp. 256 ff.

destination of the bands of fibres that form connections in different parts of the areas. XVIII. 10.

Looking, then, to the general question of the localisation of sensation and intelligence, we find, as far as our knowledge goes, that together they are spread over the entire cortex. The arrival-platforms, or projection areas of mere sensation, extend each to an indefinite margin, which includes, without a definite dividing line, the parts that are concerned with organising the sensory elements into definite wholes and parts. Besides the various ways in which the two sides of the cortex are connected—mainly through the corpus callosum—connection is made between the different sensory areas on the same side by bands of fibres running within, but also below, the cortex from one area to another. In man the spaces between these areas are greatly extended, forming association areas for the surrounding projection areas, but also apparently for all areas. The association areas are each continuous with the marginal zones of the projection areas, and again, it would appear, with no dividing line. While there are thus association areas that are not projection areas, it is believed that the latter, and so all areas, contain associating neurones. And this may be taken to justify the expression association centres for the special association areas.

(*b*) If we speak of these centres as the seats of intelligence there are two errors to avoid. One is that the immediate correlate of an idea is the action in the association area, and there in the bodies of the associating neurones. This would repeat that army-model of the hierarchy within the nervous system that we have rejected. On the contrary, we have to suppose a far wider area, and a more complicated action, for general ideas than for sensory wholes, though the action may be far from intense, as when we give meaning to a familiar word. Because a local injury is followed by stupidity, or coarseness, or a deterioration of character, no one supposes that the seat of intelligence or of fine feeling is there. Not the more general, but the more specific a defect, the better it can be localised. "It is about as sensible to localise a complex function in a restricted area of the cerebral cortex as it would be to throw the whole responsi-

XVIII. 10. bility for the movements of walking upon the knee-joint, because they cannot be duly performed if that joint is ankylosed." [1]

Secondly, even if the action corresponding to an idea were confined to an associating centre, or part of it, we are not to suppose that the systematic complexity of an idea, and a course of ideas, can be represented by an association of actions occurring there. Cogitation is not pictured by "a coagitation, as thinking was prophetically called in the Latin tongue," [2] but by some such organisation of the contributing actions as I have indicated. And in this connection, and as preface to considering the correlate of the will, let me conclude by referring to the correlate of our experience of self in thinking.

In the organisation of a thought or a train of thought we have to consider not merely the immanent objects, *i.e.* objects as they are thought; there is also the subject experience. It is not simply a mass of organic sensation, though that enters into it (p. 103). In every experience of an object there is, we saw, a subject experience, an experience of self-activity. It includes not only the emotional attitude and the practical attitude whose correlates we have still to consider; there is also the subject experience of our cognitive attitude itself. It is experience of our various actions in setting our object before us, revolving it, thinking it, attending to it. When, as at present, we take thought of it, and so make it the real object, our thought of it is analysable into this object as we think it, and into a new attending, reflecting, pondering; and these actions we may in turn make object in a new subject-and-object experience.

Hence the fundamental organisation of every thought and course of thought is a polarising of the experience into experience of a thinking subject, and an object as it is thought. The corresponding neural correlate we can picture as a process in which a state of things is being adjusted to the demands of a whole system to which it belongs. The adjusting is felt as well as the state of things that is being adjusted and altered at every stage

[1] Wundt, *Physiological Psychology*, i. p. 294, tr.
[2] Flechsig, *Gehirn und Seele*, p. 24.

of the course. The division can be pictured for a course of thought, for every stage in it, for the final act of thought in the course, and for any isolated thought with which we are satisfied. The action is started by a stimulus at some point of the system, and is directed to the disturbance at the point. The stimulus may present little challenge to the system as a merely understanding or apperceptive system. In looking at a tree we do not have to polarise or objectify the mere sensation till we find its meaning; and, if our glance is casual, there is a meagre subject-feeling as well as a meagre thought of the object. Also a problem may be hard enough, and, like danger to an ignorant man, fail to make any disturbance. But the greater the disturbance, the more need to polarise the object, and with that the subject. In mental terms the more need there is to keep the object before us, comparing, judging, inferring; and the more, therefore, there is of subject-experience. I need hardly add that this notion of a corresponding picture is quite an empty scheme; it is not a physical explanation, but only an indication of the physical explanation that the case requires. XVIII. 10.

§ 11. (B) Our experience of seeking is also a subject-experience, and its correlate must also be found in connection with the process of adjusting ourselves. We do not find it in the fact that the process is self-adjusting. That is necessary: we must be, and feel ourselves to be, the cause of our acts. But a mental system may produce a result that we foresee, *e.g.* a haunting memory, and yet that we do not make our end. The experience of seeking is the experience of giving ourselves to realising an end, of adopting it, or identifying ourselves with it. Hence for its correlate we may suppose an action of the brain as a whole in support of the particular system realising the end. Such an action of whole on part is well known experimentally in the inhibition and the enhancement of reflex actions.

For correlate of the experience of a willing attention we have to suppose an enhancement of the particular action, and an inhibition of responses to other stimulation peripheral and cerebral. We can take this for correlate both when our desire to attend is single, and whether equable or eager, and when there is conflict with other desires, as when curiosity is

XVIII. 11. prevented by fear and a desire to run away, or by ennui and a desire to be at peace. We can also take it for correlate when we attend against our will to an external event, or are held unwillingly to the course of our own unwelcome thoughts; we then feel the defeat of the whole by a part.

By the whole that we thus take for the voluntary self at any time we must mean the whole nervous system under two limitations: it is the whole that has already been active in past experience, and has taken form from it; and it is this whole so far as it is excited from any point by the present occasion. In this way we may suppose differences in the correlate corresponding with differences in our practical attitude: with our different will, for example, about the same occasion at different times, with the difference of our personality in dreams and in more abnormal conditions, and with fickle, obstinate, and other varieties of character. And in this way also we can represent the fact that our earliest experience, beyond mere sensation, is one of seeking, and that the growth of our subject experience from that point onwards is a development of our conscious voluntary self.

If a point or central spot of the brain does not represent the self before which objects present themselves, and by which they are recognised, compared, and pondered, neither is there any such point where desires are made to coalesce when they jump together, and where a choice is made when they meet in conflict. As the self that thinks on any occasion is represented by the nervous system engaged, and its experience of itself by the action of this system on the disturbing condition that has been set up in and by part of it, so we must represent the self that seeks and chooses on any occasion. It is represented by the nervous system engaged, and its experience of itself by the action of this whole in transforming a disturbance to any conformity with itself. We saw that the conflict of thoughts for our belief, and the conflict of desires for our decision, are each carried on within a total system which objectifies or polarises them. And we saw how this system may itself be made object in self-reflection and self-determination, and how in this there lies the freedom of self in thought, belief, and will.

And it is apparent that the self having an idea of a change is part, but only part, of the self having a desire and seeking to realise it. XVIII. 11.

§ 12. I have purposely spoken of our experience of willing with respect not to our movements but to our attending, and without reference to the movements, voluntary and involuntary, that we make in attending. For while it is wrong, as we saw and shall see, to identify our experience of will with attention, it is an older and far commoner error to correlate sense and understanding with the afferent limbs, and will with the motor limbs, of the nervous system. But we may now look more especially to the motor part of the system.

Instead of its organisation being like that of an army, as if it were the executive branch of the service connecting at all levels with the intelligence branch, the highest level has again the most complex organisation. "The motor system is no army corps with a single general at the top; it has far more generals than common soldiers."[1] This holds not merely of the highest levels of stimulation, but also of stimulation at the lowest level of the cortex; for there a motor cell may be excited from different sensory areas, as well as by several sensory cells in the same area. And it also holds of the stimulation of the sub-cortical motor systems, and whether the impulse comes by afferent neurones from the periphery, or by fibres from efferent neurones in the cortex. For it is always a system that is stimulated, a mechanism commanding not one but a set of muscles, contracting some, relaxing those antagonistic to them, and capable of a course of co-ordinated reflex action. This last is secured by afferent fibres from the muscles that are controlled by the mechanism. We may, however, neglect the working of these sub-cortical systems, and the manner of their excitement and inhibition by fibres from the cortex. Though they are the instruments of all our conscious actions, including all the will and skill that we learn, the learning is not theirs; it is in the cortex which learns to direct them.

The lowest level of conscious movement consists of sensori-motor arcs imposed on the lower reflex systems.

[1] Münsterberg, *Grundzuge der Psychologie*, i. p. 533.

XVIII. 12. The sensory limb of the arc consists of the last relay of afferent fibres, that, namely, which reaches the cortex and excites a sensory area there; and the motor limb consists of the first motor fibres from the cortex to the periphery. Most, at least, of the afferent fibres must be short, proceeding from the primary sensory centres at the base of the brain. And the motor fibres also may be short, terminating within the brain, but others are long, viz. the fibres of the pyramidal system which terminate in the spinal cord. The heads of the arcs are in the projection areas of the cortex, which are thus motor as well as sensory areas. They control the muscles concerned in the movements of the corresponding peripheral organs of sense. One—the Rolandic area, the area for body-feeling—is frequently spoken of as the motor area of the brain because of its relative importance. From it proceeds the pyramidal tract which is the medium of the great bulk of our voluntary actions, and so of our skill (p. 42). The motor areas do not extend over the whole of the projection areas, and they are arranged in such a way that those cell-bodies are grouped together whose fibres govern the movement of the same peripheral muscles.

The motor neurones in the projection areas are excited not merely by neurones belonging to the same level or reflex arc, but from higher levels. Hence we have to suppose that the higher levels of conduction in the cortex consist also of superimposed arcs with afferent and efferent limbs, and that these higher efferent limbs are the proper heads of the motor system. But, among other reasons, because we cannot say how far these higher neurones are only efferent, and give, for example, no experience, it is always the motor projection areas, and the neurones in them, that are spoken of as the motor areas and neurones in the cortex.

How the complex correlates of perceptions and ideas reach and excite the motor centres brings up the same difficulty as the question how those correlates connect with one another; and for answer we have, as before, to suppose that groups or areas acting as systematic wholes are connected as wholes with other groups or areas.

The excitement of the motor neurones is not the correlate of our motor sensations. These, like other sensations,

are due to the excitement of afferent neurones by stimulation from the periphery; and the sense of physical effort, which is one of the motor sensations, can only occur after the motor stimulation. Its correlate is neither the passage of impulse from sensory to motor neurones, nor from motor neurones to the periphery; it does not come till the muscles have been stimulated, and, in turn, have excited afferent fibres which return the excitement to the cortex. True we can feel the effort required for a movement before making it. It was thought that the correlate of this must be the excitement of the motor cells, or at least the discharge of energy into them; and it was called the sense of innervation. The notion has, however, been given up, because the experience can be accounted for in the ordinary way. It is partly an idea of effort, partly a sensation of effort. It is an idea so far as the neurones giving a sense of effort are stimulated from within the cortex, as when we intend to lift a weight. This idea produces a muscular strain, of which we then have sensation. We have it, for example, when, before lifting the weight, we set our muscles, and check our breathing, according to the weight that we expect. XVIII. 12.

We saw that our experience is developed not from isolated sensations, but from self-determining or instinctive courses of sensation. A course is carried out by movements; these are due to the excitement of motor neurones by sensory neurones lying in their neighbourhood or in other projection areas; and the path taken by the excitement is instinctive Hence the projection areas are also called the instinctive areas or levels. We saw, too, how the development through experience from sensory to higher levels of thought carries with it the development to higher levels of desire and will. And we saw how the higher development is a spur to the lower, as in acquiring skill and in the development of language and the arts. The sites occupied by the parts of the mechanism involved, and a picture of their working together, can be made out fairly well.

§ 13. It is more necessary for understanding the correlate of desire and will to examine two modern theories. One is the assumption of an ideo-motor law of which

XVIII. 13. voluntary action is then taken for an example. The other is the reduction of the experience of will to attention.

(*a*) The first extends to all thoughts the fact that we found at the instinctive level. As every sensation passes into action unless prevented, so, it is said, every idea does or tends to do. This ideo-motor law is a very frequent assumption in modern psychology. It is argued on two sets of ground, one set being general or theoretical, the other being certain facts of experiment and common experience. One theoretical reason is that if an impulse goes into the nervous system, it must also come out. But against that the older view is still good, viz. that the energy of the impulse may be stored. And it may be stored not as a tendency to excitement, but as the alteration of structure which exhibits itself in memory, habit, and all acquired faculty. Another theoretical ground, however, is stronger. The ideo-motor law holds for the instinctive and the reflex levels of the nervous system, and, since the structure of the higher levels is presumably the superposition of still further arcs, must we not presume that any afferent impulse in a higher arc cannot but become efferent there, or at a still higher level? But there is a weakness in this argument that still gives entrance to the older view. If a stimulus passes through the afferent limbs of a reflex, or an instinctive, to a higher arc, it does not as a rule excite the motor limbs of the lower arcs to produce a movement. (It is possible that they are excited, and not merely as if they were any part of the nervous system; if so, their peripheral effects give afferent stimulation; and then we have a still greater avalanche for every sensation than one involving only upward or afferent paths.[1] On the other hand, the blocking of the efferent paths may be complete.) But what we can say is that whatever happens at the unconscious reflex levels may happen at higher levels, where still higher are open: the efferent paths from them may be more or less completely blocked. So far, therefore, sensations and lower forms of thought are frequently exceptions to the ideo-motor law: they produce no movement. That being the case, it is useless to speculate whether the impulse

[1] Such a view is developed by Kassowitz, *Allgemeine Biologie*, iv. (1905).

must not take an efferent direction at the highest level, or at the highest level that is open. It is quite possible that the work done may be entirely occupied as the correlate of ideas, and in effecting a change in the apperceptive neural system. On general or theoretical grounds, then, the law holds only in a sense that hardly needs formulating as a law: every excitement of the nervous system has some effect on the whole; and this cannot occur without affecting the rest of the body, and the internal economy of the body more than the skeletal muscles. In this sense every idea may be said to find expression in action; but this is far from the notion that an idea tends to express *itself*, and especially that the idea of an action tends to produce the act. XVIII. 13.

The facts of experiment carry to this result, but no farther. Nor do those of common experience. One often put forward is the fact that we hold and manipulate our ideas by means of words. But the words are not the natural expression of the ideas; other peoples have other words for the same ideas; hence the ideo-motor law would only state a fact of association. We might with equal propriety speak of an ideo-auditory law; but even if everybody tended to use and utter words for all his ideas, that is not the exit demanded by our question.

The first question is (*a*) whether a thought tends to pass into the act of which it is the thought. There are favourable facts enough in our carrying out suggestions of every sort, normal and abnormal. There is the impulse of overpowering ideas, there are facts like the alteration of the tonus of muscles when we merely attend to them, and there is all our involuntary imitation. But, in the first place, it is a fearsome notion to suppose that all our ideas of other people's habits and conduct have even a little tendency to give us the same. The notion is not true even of the association of ideas, far less of the association of ideas and act. An idea does not tend to reproduce all its former associates, otherwise our thinking would indeed be a struggle; the mere reproduction of one prevents the rest. If the sight of another's conduct strikes us with disgust, it does not also strike in us some little tendency to make it our own.

(*β*) Secondly, the facts of ideo-motor action might satisfy

XVIII. 13. the first question, viz. whether the thought of an action tends to produce the action, and yet not satisfy the further question, which is also ours. They do not say whether the correlate of this thought and its work is the correlate of our experience of will or seeking. On the contrary, they say that it is not; for ideo-motor action takes place without our will, and often against it, even when we feel ourselves the cause of our action (iii. 7).

(*b*) If it were true that the idea of an action tended to pass into action, we might identify our experience of will or seeking with attention, because attention gives dominance to its object. But attention may be involuntary, and so neither it, nor the dominance that it gives, is will; and a picture of them cannot serve for the correlate of our experience of will, or any form of seeking. If we say that voluntary attention is will, we are right, of course, but not because of the attention, but because it is voluntary.

But though attention is not always volition, it might still be the fact that all volition is attention; it has been thought that, seeking a change, we bring it about by keeping it, and the means of producing it, before us. We saw the error in this, and now we need only ask why it is prevalent. Very likely there is one reason in the notion of a chasm between an idea and a movement, and another in the notion that, when we feel ourselves acting on an object, it must be on our idea of the object. But apart from these confusions, which occupied us early in our course, there are other reasons. The error may come if we do not distinguish between attending and the purposes that it serves (viii. 1). For it serves all kinds of purpose: we cannot seek anything without attending to it. But so far as we attend, no matter for what purpose, we change not the thing but our thought of the thing. Attending to our act before it occurs does not make us do it, nor of course does attending to it while it occurs. On the contrary, we saw that taking thought of it, attending to it, is usually an interruption to our action, and always to our seeking. And thus a more fundamental reason for the error is present, if we fail to distinguish between subject experience and object experience. For the action, the giving ourselves to realising a more

satisfactory thought, or an external change, is just the part of the experience of seeking to which we do not and must not attend. XVIII. 13.

Finally, this experience of identifying ourselves with an end, or giving ourselves to realising it, is not merely at the start, but throughout the experience, till we produce what we seek, or till we cease to seek it. The whole experience changes every moment, the subject experience as well as the object experience. At one moment we are manipulating ideas in order to form better, at another manipulating things in order to form better ideas, or in order to suit other parts of our purpose. But all parts are felt as within the single purpose with which we are identifying our self, and to whose realising we are giving our self. The correlate of the experience is the whole action in its organic unity. There is not merely a self-developing course of ideas, but an idea made purpose, and so having a strength that would not belong to it as an idea. It must be pictured as a tension within the total system which develops an orderly course of action, and prevents the entrance of other occasions, and an exit through other channels of action. This state of things is to be distinguished from the mere strength of the correlate of an idea, and the difference is that between the whole maintaining the part, and the part maintaining and developing itself independently of the whole, or even in defiance of the whole.

In the presence of so general a notion the comment is not that we know little of the mind or our will, but little about the brain. We are merely seeking to picture the mind and its experience which we know, in terms of the little knowledge of the brain that we have for this purpose. You will remember that this picturing is not at all necessary in order to use every ascertainable fact about the dependence of our will on physical conditions. And you will remember that, in translating the structure of the mind and its experience into that of the brain and its action, we do not seek a copy, but a correspondence. We forget this if, taking the organic unity of a physical structure and action for correlate of our self and our volition, we also personify the physical structure as if to make it as like as possible to the unity of

XVIII. 13. a subject. For in all systems of physical structure and action, however organic and living, there is only mutual dependence. We forget the same principle if we say that therefore there can be no correlate of the unity of our self, as well as if we say that its correlate must be at a spot so small that we may take it for a point. And for an exercise in these errors I may end by quoting a gross but far from singular example: "The materials of the past become associated with recent ideas and impressions, and, in a word, those marvellous phenomena, so instantaneous and so varied, presented by the activity of the brain are developed in presence of the conscious personality, which assists as a spectator, at their evolution, without being able to direct the movement which is accomplished, and, strange to say, with the idea that it is regulating them. . . . A phenomenon quite analogous to the conjuring trick of forcing a card takes place in this instance; the conjuror forcing us unconsciously to take a card, while letting us imagine we have liberty of choice." [1]

14. (C) Certain views of which I shall speak regard some or all of our feelings, viz. pleasures, pains, and emotions, as organic and motor sensations. Except for them it is not thought that feeling has a seat of its own. It is certainly connected with the correlates of thought and will, and may be said to occupy the same seat, being, like them, a factor in the same action. At the same time, also like them, it has parts that are more peculiar to it, just as they have; for the intenser a feeling, the more it involves organic sensations. On this view the correlate of feeling is the same at all grades, and the same for our practical and intellectual interest in things, as well as for their intrinsic interest, down to the interest of mere sensation. The infinite variety of pleasures, pains, and emotions is to be assigned to the variety of their base (iii. 6), together with the difference of organic change and sensation excited from their base.

Two aspects of nervous action offer themselves for the correlate of feeling. One is the amount of disturbance in the action; it is the correlate of the sense of excitement. The other is the success or failure of the action in coping

[1] Luys, *The Brain and its Functions*, p. 254.

with the disturbance, so as to restore the old equilibrium or to bring a new one; this corresponds with the pleasantness or painfulness of the excitement. XVIII. 14.

There is some degree of general nervous disturbance in all experience. The disturbance may come from purely organic conditions, and not through an external stimulus, nor by a thought of any kind. The excitement is then to be regarded simply as organic sensation. But such a condition does not live long without thought of an object as the centre of excitement, and, as a rule, the condition is introduced by a thought. Something excites us; we feel excited about something; that is the rule. Then the excitement is no longer mere sensation; it is our attitude of feeling towards the object; we have an emotion towards it, an interest in it. One may imagine a variety of nervous disturbance to correspond with the difference in the things that excite us in youth and age, in health and sickness, and in novel and habitual circumstances. But it is impossible to do more than imagine, and it would be tedious to delay over them. It is to be observed, however, that the physical disturbance, like the emotion, need not be violent in order to be deep, strong, and persistent.

The pleasure or pain in an emotion is a separate question from that of its excitement. The mere sensation of excitement can hardly be quite neutral, but certainly its degree of pleasure or of pain is not according to its own amount. When the excitement is not a mere sensation, but part of an emotion, it can still less be neutral; but again it is frequently hard to say whether it is a pleasure or a pain, or more one than the other. For often a high degree of pleasurable emotion is also painful, and a high degree of painful emotion may be a relief, and become an indulgence.

Why one thing and not another should excite pain or pleasure is a question that at present has mainly a biological answer. The answer is that what is pleasant points to an advantage, and what is painful to a disadvantage, for living. There are notable exceptions, otherwise there would be little evil in the world, and no need for a sense of duty. But it is fairly true, and the exceptions are no objection when it is added that our body is to be taken for a witness of the past,

xviii. 14. and not for a judge of the present, nor for a prophet of the future.

The physiological answer to the question carries the biological answer into detail; and it can not only trace the good effect of what may be disagreeable, and the bad effect of pleasant poisons, but also say why the disagreeable may depress, and the poison stimulate. It is because they have a temporary or a local effect which is the reverse of the final or the general one. The translation into neural correlates of pleasure and pain remains, however, quite conjectural. We may assume that the correlate of pleasure is always a success of some sort, and that of pain always a failure, in the action of the nervous system. And in doing so we do not have to assume that the nervous system is itself always a success, as if whatever wins pleasure from it must be good.

The most explicit, and therefore the simplest, case to understand is the pleasure and pain of seeking, and especially the pleasure and pain which have their base in the act of seeking, as distinguished from those that are based on the other part of the experience, viz. on the thought of what is sought. There is pain when a desire is thwarted by opposition of our own raising, or by difficulties beyond our control; and there is pleasure when it succeeds. There is little or much pleasure and pain according as the desire is weak or strong, but also according as it is felt little or much by reason of the absence or presence of opposition. We may cease to care much for what we seek, and yet care very much to maintain our will, because it is ours. We may resent interference, and refuse to break habits that we do not prize. And the proper pleasure of a game rises with the need to struggle, because it is far more in the thought of winning than in the thought of what may be won.

But the objects of our desire and aversion have also an interest of their own for us. They have it before we seek to realise or avoid them, and they have it while we do. It does not seem so appropriate to speak of our pleasure in them as a success, and our pain in them as a failure. That is because there is now no goal to measure from. There may, indeed, be a standard, as when we have a reason for being displeased with an opinion, or a piece of work or

conduct. But usually we are displeased before we have thought of a reason, and very frequently we cannot find a reason. Then the standard is in ourselves; and, in respect of it, we may again speak of success and failure. We might, instead, use the words harmony and discord, and that is perhaps the commoner way. But the other includes this, and also contains the reminder that all experience is a disturbance, and that the greater the harmony or pleasure, and the greater the discord or displeasure, the more profound must be the disturbance. We saw how, when absorbed in objects of intrinsic interest, we realise our own nature, and may find ourselves furthered or thwarted. We may find ourselves thwarted not merely in our effort to enter into another's work, but, when we are there, by its limitations or faults. And we may speak similarly of our absorption in products of our own—in a delightful memory, for example, or in an irremediable grief. And so also we may speak of our intellectual and practical interests. XVIII. 14.

It is not meant that pleasure is a sense of success or harmony, but only that such is its physical correlate. The action is a success when it brings equilibrium to the system in which it has been excited, and a failure when it does not. The system, again, is so much of the nervous system as is excited by the stimulus or occasion, and reacts upon it.

§ 15. The notion of success and failure is general enough to include the pleasures and pains of mere sensation. But these have been thought capable of a more specific explanation. They depend on a variety of conditions; but it has often been thought that the variety may be read as a quantitative relation between the intensity of the stimulus on the one hand, and, on the other, the store of energy that the stimulus meets and discharges in the cerebral cortex. (*a*) Long or repeated stimulation exhausts the store. The result may be inexcitability, as when pain or pleasure becomes indifference; or the result may be pain, as when a pleasant exercise becomes fatiguing. The permanent effects of habituation may be read in a similar way, with the addition that what gave pain at first may end by giving pleasure. Observe, however, that there are other effects of a long-continued stimulation than those on the sensory area concerned,

XVIII. 15. and on the nervous system as a whole. Ordinary fatigue is not a nervous exhaustion, but an exhaustion of the muscles and other peripheral organs. This makes it impossible to read the correlate of sensory pleasures and pains as, in any simple way, a relation between quantity of stimulus and quantity of nervous energy to meet it.

(*b*) There is the same result when, instead of the case where the central nervous conditions are changed and the stimulus constant, we take the central conditions for constant, and observe the effect when the stimulus varies in intensity. Between an upper and a lower limit, the degree of pleasantness and painfulness varies directly with the intensity of the stimulus. And there is some room for the more ambitious notion that not merely their degree, but the very pleasantness and painfulness themselves, depend on the intensity of the stimulus, a moderate intensity giving pleasure, an immoderate giving pain. The facts that fit most easily are organic and muscular sensations. They are normally present as a sense of well-being, but in disease and excessive effort they are painful. It is doubtful, however, to what extent the same nerve-elements have a range from pleasure to pain. True, there is a maximum of pleasantness beyond which a greater stimulation begins to bring pain: a sweetness becomes cloying, a sound becomes deafening, and a light blinding. But in these cases the stimulation radiates beyond the proper sensory organs of taste, sound, and sight. The cloying is probably due to organic sensations, the deafening to shock, and it has long been known that violent stimulation of the retina, and that disease confined to the retina, give no pain. At the opposite extreme, according to the theory, we ought to find painful sensations passing to pleasant when there is a sufficient fall in the intensity of stimulation. Against the positive evidence for this it has been objected that the opposite is sometimes true, viz. that sensations are often unpleasant because they are too weak. But it is not a good objection, for it is not as mere sensation that the weak sensations pain us, but because they puzzle us, or because they interrupt and annoy us; they do not pain an infant. There is other reason, however, against the positive evidence for the theory. In the first place, the facts used in support are too crude.

To contrast the feeling from a severe rubbing of our skin with that from hard rubbing, and again with that from tickling, or to contrast the pleasure of dilute odours and tastes with their unpleasantness in a concentrated form, is not enough to support the theory; we might as well contrast the pain of hard running with the pleasure of walking. The question is whether the mild stimulation affects the same nerve-fibres as the stronger. And, secondly, there are the cases where the mildest stimulation gives pain. This difficulty is always met by saying that in these cases any stimulation is excessive; it is excessive in abnormal conditions where every touch is a pain, and wherever nerve-endings have lost their protective coverings, as in toothache and abrasions of the skin, and even in normal cases, *e.g.* a light touch on the cornea, and a taste that is always unpleasant. But this answer requires us to include the central conditions, and not merely the intensity of the stimulus. We cannot assume that the disturbance thus easily produced is a violent mechanical one. There is no reason to suppose, for example, that the cells giving the unpleasant sensation of bitter are more excitable or more violently assaulted than those by which we have the sensation of sweet. XVIII. 15.

(*c*) Finally, the seats of sensory pains and pleasures are greatly affected by general conditions at the centre. Not to mention abnormal cases, we are all aware of the difference due to our state of health and to our temperament; there is the obscuring of a less by a greater present pleasure or pain; and there is the opposite effect of a successive contrast, the contrast, namely, of our present with what has just been, and with what we expect to come. These facts add a little definiteness to the general notion of success or failure, but they prevent us from reading it as a simple quantitative relation between a stimulus and the energy that responds to it.

§ 16. It will add more to our notion of the correlate of feeling if, instead of trying to picture it, we turn to the views which regard feeling as sensation. They are of three kinds: (i.) the view that cutaneous, muscular, and organic pains are sensations, (ii.) the view that æsthetic feelings are

XVIII. 16. organic and motor sensations, and (iii.) the view that all emotion is organic and motor sensation.

(i.) The first raises two questions: (*a*) whether sensuous pleasures and pains are to be grouped with higher forms, and (*β*) whether there is a pain-sense.

(*a*) We took the former when analysing the experience of mere sensation (iv. 9). It is true that such a pain as a burn feels very unlike the unsatisfactory quality of a bad argument. But every analysis must follow a difference in kind. Not only ours, which followed the difference of function, but an analysis into 'elements' (p. 215), if it is into more than one kind of element, must rank the painful quality of different kinds of pain with the unpleasant or displeasing quality that we feel in anything else. Between a burn and an unsatisfactory argument there is a gradual series, and the greatest break is not between sensory and higher pains, but between those from skin, muscle, and internal organ, on the one hand, and those of taste, smell, sound, and sight on the other. The former, indeed, are sometimes called the real pains to distinguish them from all others. Of the other sensory pains the nearest to them is, in our case, the unpleasantness of a taste, then that of smell, which is within hail of the æsthetic unpleasantness that we may have from sound and sight.

(*β*) The question whether cutaneous pain is a sensation may be answered apart from any opinion as to whether pain may not also be brought by the nerve-fibres conveying the other skin sensations. If it is, then excessive stimulation radiates to the grey matter in the spinal cord, and it is especially this roundabout course that brings pain. It is still less necessary to say whether the stimulation of pain spots on the skin does not also give some sensation of contact and of local quality. The facts are all in favour of regarding the skin as containing not only special senses, but organic senses as well. Of these the chief is that called the pain-sense. It is found over nearly the whole skin, the pain spots usually very close together, and containing no peripheral organs, the nerve-fibres ending free in them, and nearer the surface than those of special sense. But if the pain-sense is an organic sense, we may presume that it is

not merely for pain, but that, like the internal senses by which we have pain,[1] it contributes to the mass of common or organic sensation that is always with us. "If we suppose that pain is not an excessive phase of something which is continually going on in a lower phase, but a something by itself quite distinct from all other sensations, we are driven to conclude, since such a sensation must have a special mechanism, including special afferent nerve-fibres to carry it out, that in the case in question such a mechanism of pain has been preserved intact but unused through whole generations, in order that it may once in a while come into use, which is in the highest degree improbable. This difficulty disappears if we suppose that the constantly smouldering embers of common sensibility may be at any moment fanned into the flame of pain."[2] And it is only in this way that we can reasonably meet the objection, 'If a pain-sense and pain-nerves, why not a pleasure-sense and pleasure-nerves?' XVIII. 16.

§ 17. (ii.) The explanation of æsthetic interest as motor and organic sensation can best be examined in a series of three simple views about our appreciation of visible form.

(*a*) It was perhaps a natural supposition that, as the eye follows a regular or a graceful outline, it describes the same regular or graceful curves, that we feel pleasure in this movement, or in the ease of it, and that we turn this pleasure into a quality of the object whose outlines we follow. But it has recently been discovered, by photographing the movements of the eye, that instead of describing the curve continuously, and as it is, the eye moves in a series of jerks from point to point on the curve, and that the lines between the points are straight rather than curved. "If mere ease of ocular movement were the controlling principle in our enjoyment of forms, we should enjoy straight lines and angles rather than curves." It is essential that the

[1] "A specific set of nerve-fibres and end-organs, devoted solely to the production of pain, . . . does not appear a warrantable postulate for muscles. . . . The feeling of muscular fatigue is a state certainly largely due to the regularly employed specific nerves of muscular sense. In its relation to them it is well comparable with the feeling of hunger in relation to the visceral nerves" (Sherrington in Schaefer's *Text-book of Physiology*, ii. p. 990).

[2] Foster, *Text-book of Physiology*, p. 1540.

XVIII. 17. muscles moving our eyes do not force their awkward movements on our notice: "they are mere scene-shifters."[1] In order to feel the beauty of the curve, we must be absorbed in it, and, if it is a single curve, we may, in order to this, trace it with our eyes. But, first, it is not this experience of the movement of our eyes that we feel to be beautiful, but the curve. This objection has always been met by saying that we deceive ourselves. But there is no answer to the new objection. The movements of our eyes do not describe graceful curves by any means; indeed, they do not describe the same curve twice when tracing the same object. And so, secondly, though we feel their movement, neither it, nor our feeling of it, can be the cause or the base of our æsthetic satisfaction in the object.

(β) Instead of eye-movements, our whole bodily attitude has been thought to account for our like and dislike of visible forms and attitudes. "Here is a jar equally common in antiquity and in modern peasant ware. Looking at this jar one has a specific sense of a *whole*. One's bodily sensations are extraordinarily composed, balanced, co-related in their diversity. To begin with, the feet press on the ground while the eyes fix the base of the jar. Then one accompanies the *lift up*, so to speak, of the body of the jar by a *lift up* of one's own body; and one accompanies by a slight sense of downward pressure of the head the downward pressure of the widened rim on the jar's top. Meantime the jar's equal sides bring both lungs into equal play; the curve outwards of the jar's two sides is simultaneously followed by an *inspiration* as the eyes move up to the jar's widest point. Then expiration begins, and the lungs seem slowly to collapse as the curve inward is followed by the eyes, till, the narrow part of the neck being reached, the ocular following of the widened-out top provokes a short inspiration. Moreover, the shape of the jar provokes movements of balance, the left curve a shifting on to the left foot," and so on; in fact, "the phenomenon of inner motor adjustment must be, in each single case, exactly as complex, as co-ordinated, and as individual a totality as the artistic form perceived is com-

[1] Stratton, *Philosophische Studien*, xx. pp. 350, 352; *Experimental Psychology and Culture*, chap. xii.

plex, co-ordinated, and individual."[1] If this does not mean that we have to make a jar of ourselves in order to be absorbed in the jar before us, it means that we take the nearest substitute; we take an invisible one, in order, I suppose, that we may escape ridicule. Ridiculous though the notion is, it only carries out thoroughly a theory that may appear reasonable enough, if we recall our experience when absorbed in listening to a march, in watching a tussle, XVIII. 17.

[1] Vernon Lee and Anstruther Thomson in *Contemporary Review*, vol. lxxii. pp. 554, 681. The theory in these frequently quoted articles has been modified in a more recent article (*Quarterly Review*, April 1904) in favour of "the *Einfuhlung* of Lipps" (p. 438); but the facts also require a radical transforming to meet his eight-fold objection (*Archiv fur system. Philosophie*, vol. vi.). One cannot go far in the literature of this theory without being struck by the weight of the task that is heaped on organic sensations. Breathing has suffered most. How, in the time, can one pair of lungs perform the feats assigned to them in the quotation? Why must they not all be performed simultaneously when the jar is viewed as a whole? And how if the jar is coloured? For the authors also require a certain breathing for the appreciation of colour. "A colour sensation on the eye is followed quite involuntarily by a strong movement of inspiration, producing thereby a rush of cold air through the nostrils on to the tongue and the top of the throat, and this rush of cold air has a singularly stimulating effect. Colourless objects, on the contrary, offer no inducement to draw a long breath. If one breathes in strongly, nevertheless, there results a sense of almost intolerable insipidity, like the taste of white of egg without salt" (p. 669). And to this feat of simultaneous breathing for the mere shape and colour must there not be added, I do not say for a jar, but for objects that offer a fuller sensation, a still further variety of simultaneous breathing? But it is also weighted with other than æsthetic emotions, and the highest as well as the crudest. "Sometimes in a dog I observed that a shot caused, first, a deep inspiration, then a light expiration and inspiration, while the chest was much expanded; then another deep inspiration like the first," etc. (Mosso, *Fear*, p. 126). "The pleasure of breathing has to do with our highest and most transcendental ideals. It is not merely a metaphor that makes us couple airiness with exquisiteness, and breathlessness with awe" (Santayana, *The Sense of Beauty*, p. 56). And why should the same disturbance of breathing be a pleasure in one case and a pain in the other? Then breathing is made to bear the weight of our sense of effort, of attention, of expectation. One claims to have shown that inhaling adds to the clearness, exhaling to the distinctness of our thoughts, and that the evenness of a course of thought is due to breathing—"the fly-wheel of the mental mechanism" (Giessler, quoted by Gutberlet, *Psychophysik*, p. 328). At the same time that it is taken to account for all this weight of mental work, it is made to keep pace, and vary with, our merely physical movements. To Groos it is actually an argument for "the symbolic imitation of optical forms by the breathing apparatus," spoken of in the text, that "every movement of our limbs is accompanied by definite breath-movements" (*Der Æsthetische Genuss*, pp. 206-207). He thinks it proves that there must be symbols enough. It would be easy to show that with not merely the lungs but the whole body in its service an imitative language is poor and very ambiguous. But supposing our breathing were an æsthetic language, how could it say such a multitude of different things at once, and carry out its proper work into the bargain?

XVIII. 17. or in looking at a statue of man or beast, whose attitude is energetic, drooping, light, or burdened. For, first, we cannot appreciate those things if we have never marched or fought, and been energetic, or the reverse. And, secondly, to take an actual posture is the way to experience it most vividly; and, the more vivid the imagining, the nearer it comes to our adopting the posture. Hence, at first sight, it does not seem extravagant to say that, the more we are absorbed in the object, the more we must copy its curves, its balance, and movements, in our body; or, short of actually copying it, the more we must innervate the necessary muscles to the edge of action. But it would also follow, first, that no ordinary person could appreciate even so simple an æsthetic object as this jar; for he has not only to begin with it as a whole, but, while adding details, he must continue to be absorbed in the whole. And, secondly, the changes in his breathing and in his posture, actual or imagined, must be beyond or beneath his notice of them. For, if they called his attention to themselves, they would hinder and not help, far less actually be, his absorption in the object.

(γ) On this ground it is argued by a writer well known for his insistence on the importance of motor sensations for æsthetic appreciation that they must be mere hints, and that they may come from any set of muscles, and need not come from those that we should use in actually imitating the shape, attitude, or movement of an object. Such a view reduces the motor sensations to the function of a language. Indeed, its author thinks there is "a symbolic imitation of optical forms by the breathing apparatus" which is able to represent them with "the inconceivable delicacy, rapidity, and adaptability" with which, in the form of words, the same apparatus represents the infinite variety of our ideas.[1] But it is difficult to see the use of a symbol if its meaning is already before our eyes. We do not trouble to name things that are before our eyes, unless we cannot make them out. And, if the optical forms are a little complex, how, and no matter how symbolically, can our breathing imitate them all at one and the same moment?

I think we may now end our examination of this series

[1] Groos, *Der Æsthetische Genuss*, pp. 204-207, 231.

of views about the correlate of æsthetic feeling with a positive result, which is, indeed, the natural ending to the series itself. There is nothing strange in our being able to grasp a complex sensory object in a more and more economical manner, while losing none of its complexity. The movements that are necessary to our perceiving become more and more symbolic in the sense that they become unnecessary; and the same thing is to be observed about the expressive movements that follow on our perceiving, and express our emotion. All may be compared with our progress from thinking and reading aloud to our use of an equally clear internal speech, and from internal speech that we all but utter to one with less and less of the tendency, and yet with the same clearness. Often in thinking, it is true, we have to take thought of words, and to labour them in order to better thinking; and often in reading we have to ponder another's words piecemeal in order to take his meaning. Then we come the nearer to actual utterance, but it is then that for the moment we have to desert in great part the thought we have been building, in order to make sure of a part, as a child drops the thought of the sentence when it has to spell a word. So it is in appreciating a work of art, and in being absorbed in any object of sense. The more complex it is the more immediately we must grasp the sensory object in its full complexity. We fail not merely if the whole includes for us only a few features, we also fail so far as we have to forget the whole in order to absorb ourselves in a part. Absorbed in a part, *e.g.* the curve of a jar, we move our eye along it, or feel our hand as if passing over it; but we lose nothing of it when we learn to dispense with this, and become absorbed in the whole. Similarly when we pick out melody, rhythm, rhyme, the fiery quality of red, and the resting quality of violet, we come the nearer to the corresponding movement and posture. And so we ought for the moment, or when children, just as we ought to ponder a word whose meaning we cannot manage. But the more complex the whole, the more intensive must be the thought at the base of our interest (viii. 4, 9). It is not that we need be less absorbed in body the more we are absorbed in spirit, but simply that, as in all learning, our nervous

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XVIII. 17. system becomes relatively independent of peripheral stimulation and peripheral emphasis.

§ 18. (iii.) The same comment has to be made on the general view that all emotion is organic and motor sensation; but we may look at it more closely. It commanded little attention before 1884 when it was brought into psychology by Professor James of Harvard, and Professor Lange of Copenhagen, in somewhat different form; and it is usually called by their names. It does not contradict what we have seen about the base of emotion. It merely says that the act or the thought, which is the base, has to get its emotional quality by exciting peripheral organic changes, which in turn give organic sensation of themselves. Both the common theory and this one say that the thought creates a disturbance in the brain, which produces muscular and especially visceral disturbance; but the common theory says that the first disturbance is felt and is the emotion, whereas, according to James, there is then only a 'tone of feeling,' a 'pleasantness or unpleasantness,' 'an agreeableness or disagreeableness' inhering in the sensible quality or other object of the thought.[1] And both say that the muscular and visceral disturbance gives sensation of itself; but while the common theory says that this is an additional factor in the emotion, the new theory says that it is the emotion.

It has thus a negative and a positive part. It rightly denies that the pleasantness or unpleasantness of experience is emotion; for an emotion is an attitude of the subject, even if it is a mere like or dislike of the object (xvi. 4). But it also denies that the stimulus exciting the pleasantness or unpleasantness is adequate to excite emotion. It asserts that the brain cannot excite itself directly to emotion, but only by creating an organic disturbance, and getting a second stimulus from that. An external stimulus is enough to make a sound pleasant or unpleasant, but it is thought that the second one is necessary in order that we may find the sound enjoyable and rejoice in it, or execrable and hate it.

[1] *Psychological Review*, i. p. 523. In this article (1894) Professor James deals with objections that had been made to the theory, and especially with misunderstandings.

To this denial, however, there are two limits. I suppose XVIII. 18.
no one thinks the roundabout necessary in order that our sensation of a pleasant sound may become our experience of being pleased with it; yet the difference between being pleased, rejoicing, and exulting, is merely one of degree; and if rejoicing and exulting in anything are emotions, it is also an emotion merely to be pleased with it. Hence the denial holds of intense emotions only; this is the first limit. The second is that it does not hold of intense emotions that are deep without being violent. If a sensation requires no organic disturbance to make it pleasant or unpleasant, neither, presumably, does the thought of an object; and, when the thought is deep or intensive, the pleasantness or unpleasantness must be so too, though it need not be violent. But, again, I suppose no one would say that the roundabout stimulation is necessary in order to pass from this to a like or dislike of the object; and the like or dislike—the emotion—has a corresponding depth. It is not only in regard to æsthetic emotion that our nervous system must become relatively independent of peripheral stimulation.

These limits to the negative part of the theory are a fatal objection to the positive part, namely, that emotion is organic sensation. As we grow in years we give our emotions less expression; and, though they are less violent, they are not less intense. As its thought becomes deeper, an emotion must become less violent; otherwise we should lose much of the thought, and fall to a mere agitation or excitement that is all organic sensation, and not emotion. "If excitement reaches a certain pitch, it tends to weaken emotion, and, when it gets beyond all bounds, emotion tends to disappear. Much *commotion* means little or no emotion. Rage may thus pass into sheer psychical turmoil, and in extreme terror there would be much more real fear if coherent intellectual activity were possible."[1]

To this objection others may be added, but they may be met in a variety of ways that it would be useless for us to pursue. We have all sorts of organic sensation without emotion; but this may be met by saying that the group of

[1] Irons. *The Psychology of Ethics*, p. 61.

XVIII. 18. sensation which is taken, let us say, to be our feeling of hate cannot be excited in any other way than by thought of an unpleasant object, or cannot be felt as that particular group except in connection with an object. And when James says that we do not weep because we are sad but are sad because we weep, and do not tremble because we are afraid but are afraid because we tremble, and it is objected that we may weep in gladness and tremble from cold, the answer is always possible that the tearful part of gladness feels like sadness, and that the feeling of fear is like a cold shiver. And to the objection that different people have different ways of showing the same emotion, one reddening, another paling, from anger, it may be replied that so far they feel differently.

We shall do better to take instead the evidence for the general theory. It is of two kinds: (*a*) the physical and (*b*) the mental evidence.

(*a*) Besides the visible and audible changes that we call the expression of an emotion, there is a far greater invisible commotion, and there is not an organ of the body that may not be involved.[1] It seemed probable that the differences of feeling might be represented by these differences. Indeed Lange thought they might all be found in differences of circulation alone, and another even suggested the capillary pulse. But just as we need the context in order to read correctly the visible expressions of emotion, so it has been found in reading the deeper changes. For the same changes are constantly occurring from a variety of causes which give a very different experience, and from subcortical causes that are not due to experience. The first hope was to distinguish pleasant from unpleasant experience, according to the difference in blood pressure, in pulse, in respiration, and in voluntary muscular power. The results, however, became less encouraging the more crucial the conditions of experiment. There was found to be a better contrast between the symptoms of exciting and depressing emotions; joy and anger, for example, have much the same. But then it was found that the same symptoms appear with any great effort of attention, irrespective of emotion. And it is still a

[1] Féré, *The Pathology of Emotions*, ch. v.

question whether the subcortical causes that have nothing to do with differences of experience have been eliminated.[1] These are difficulties and not objections against the notion of a 'symptomatic of emotion'; but they are strong enough to make hopeful believers in it limit its possibilities far below the demand of the theory that the symptoms or expressions are the cause of the emotion. And so far the theory is deprived of the physical evidence that it ought to have. XVIII. 18.

If the evidence were complete, however, it would not prove the theory. It is quite possible that to every emotion there corresponds a different group of organic changes, but two questions remain. First there is the question whether they are felt. For "no one will make us believe that the excitements and delights that we have felt consist exclusively in ripples of the pulse-curve which we have not felt."[1] And, secondly, there is the question whether our feeling of the organic changes is emotion.

(*b*) Hence, the final evidence is mental, and it is on this, indeed on introspection, that James relies. Take from your experience of any emotion, he says, the muscular and visceral sensations, and you find yourself left with no emotion but only thought. This reminds one of an older challenge to think without words, or to take away words from general and abstract ideas, and see what is left. And we shall look at the question in that way. But first let me mention the rest of the mental evidence, namely, the argument from apathy (where there is thought without feeling), and the argument from "objectless moods" (where there is feeling without thought).

Cases of apathy in hypnotic and hysterical subjects are not well to the point, because in them thought as well as feeling is obstructed. But there are cases where the mind is quite clear, and where there is little or none of the emotion that one would expect; and we have all known occasions of caring little for what we usually care much, losing not merely physical appetites, but all sorts of interest, though our thoughts are the same. This is evidence that thought is not the whole cause of feeling, as we have seen (p. 173), but that is all. Apathy is a failure of the brain to stir itself to emotion; and there is nothing to say that the

[1] Stumpf, *Zeitschrift für Psychologie*, xxi. p. 87.

XVIII. 18. first stirring would not be felt but only the second stirring that follows upon organic changes produced by the first.

It is true that moods occur without thought, and that these are quite like the moods that have begun with a thought and persist when the thought has departed. We may call them the mood before an emotion, and the mood after an emotion. A pure case of either needs finding; for when we seem to think of nothing we frequently have some object indefinitely before us, *e.g.* necessity, or our self, or the world as a whole; and even in abnormal experiences, *e.g.* in stupor, in a causeless hilarity, or extreme exultation, where there appears to be a paralysis of thought, there is often a nightmare, an obsession by the thought of an indefinite object, rather than no thought at all. But a pure case of a mood before an emotion you may frequently find in the morning before the adventures of the day have begun. Such an experience you can then observe to be merely a mass of organic sensation which is not yet a sense of impending calamity, or of anxiety, or ennui, or the joy of living. And in the mood after an emotion you can still better observe the organic part of an emotion that has lost its object and base. For every one has felt how, when a danger has past, trembling remains without fear. Deprived of the thought which gave them coherence, the mass of organic sensations dissolves into its elements like a sentence into sounds when its meaning is lost.

This connection with a thought is obviously the essential factor in the definition of emotion as distinguished from organic sensation. Emotion only occurs as a subject-and-object experience; that is to say, when the mere pleasantness, painfulness, or other disturbing factor in an experience becomes our like, dislike, or more specific interest in an object. The attitude is maintained and developed by organic sensations into the wealth and variety of an emotion. The sensations become an integral part of the feeling, giving it quality, intensity, and persistence. There is no sufficient reason to think that they are the whole feeling, in other words, that the brain cannot give feeling of the commotion it excites in itself, but only of the commotion that it thereby excites in the body. But it is also well to

observe that, even if they were the whole feeling, it is not as mere sensation excited by a thought that they are emotion, but only when they are felt as our attitude towards the object that is thought.[1] In other words, even if the challenge of which I spoke were so successful that the emotion ceased as we proceeded to eliminate organic sensations from it, we could not infer that the sensations are the emotion. Though we found that without words we could not form a certain thought, we should not infer that the words are the thought. XVIII. 18.

An emotion depends on its expression much as thought depends on its expression. As the language of thought is possible without thought, so are the organic sensations in emotion possible without emotion. But as language has its coherence—as a sentence, for example, has its unity—only when expressing a thought, so groups of organic sensation have the characteristic unity of love, fear, hope, only if there is thought of an object, and if they are felt as our attitude regarding it. We saw how indefinite is a thought that cannot be expressed, and I quoted a saying that we do not know what we are to say till we have said it; but it would be absurd to suppose that we have no thought when we

[1] Considering the confusion that has gathered round the question, it is also well to observe that "the theory has no philosophic implications whatever of a general sort" (James, *ibid.* p. 522). It is really a physiological question, and has no more and no less concern with the question of the relation of mind to brain than has the question of the correlate of any experience. In illustration of the confusion I may quote from two recent discussions of the theory. "Though we think that we turn from vile-smelling things because they smell vile, that is certainly an illusion, for, and it cannot be said often enough, a feeling can neither decompose protoplasm nor produce any sort of bodily movement. The fact is rather just the reverse. It is because we turn from the vile smell, because we hold our breath, and because very likely a movement of nausea sets itself up in our throat, that we think the substance has a vile, nauseating smell" (Kassowitz, *Allgemeine Biologie*, iv. 350). The last sentence is a statement of the theory; but the question is not whether a feeling produces a bodily change, but whether the correlate of the feeling produces the change, or, on the other hand, is produced by it. Again, "emotion is a cause of which the physical manifestations are the effect, says one party; the physical manifestations are the cause of which emotion is the effect, says the other. In my view there would be a great advantage in eliminating from the question every notion of cause and effect, every relation of causality, and in substituting for the dualistic position a unitary or monistic one" (Ribot, *Psychology of the Emotions*, p. 112). What it is here proposed to eliminate includes the whole question, and the dispute between dualism and monism has no part in it. The whole question is about what is cause and what effect in the neural conditions coincident with emotion.

XVIII. 18. intend to speak, but only after we have spoken it to ourselves. Similarly of emotion, and of our giving way to it. And as the same thought may be expressed in different words, so it is with the language of emotion, though it is a natural and inevitable language. Different people express the same emotion differently in their bodies, and the same person may feel the same emotion, *e.g.* of joy, or of fear, though he expresses it differently according to the object, and according to his years, and his audience. And as two opposite ideas may be expressed in terms that are to a large extent the same for both, so it is, for example, with the muscular language of joy and anger. As when we lose an idea we get it back by remembering the words, and as new ideas dawn on us if we repeat the words that express them, so by imitating the expression of an emotion, we may get the emotion itself. As we often deceive ourselves when using words that have little or no meaning for us, so we may express emotions without having much feeling, though we think we have. As there is nothing derogatory to our deepest thoughts in saying that they are not very deep unless they can take body, so we may say of our deepest emotions. And as the language of our thoughts must not distract our attention to itself, so it is with the organic sensations: they must be organised as our attitude to the object. They must not lose the object, nor take its place. Finally, all comparison of this kind has little value unless we identify the function of language for thought, and that of expression for emotion. The most obvious, and the earliest function of both, is to let others know, the one what we think, the other what we feel. But we saw that language has another function of not less importance, viz. its necessity for thinking; and doubtless there is the same need of organic stimulation in maintaining emotion. For unless the nervous system continues to be adequately stirred from its periphery, it soon goes to sleep.

THE END

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