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LIFE, MIND, AND SPIRIT
EMERGENT EVOLUTION
INSTINCT AND EXPERIENCE
THE INTERPRETATION OF NATURE
ANIMAL BEHAVIOUR
HABIT AND INSTINCT
INTRODUCTION TO COMPARATIVE PSYCHOLOGY
ANIMAL LIFE AND INTELLIGENCE
THE SPRINGS OF CONDUCT

MIND AT THE CROSSWAYS

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WILLIAMS & NORGATE, LTD.,
38 Great Ormond Street,
London W.C. 1

PUBLISHED MCMXXIX
MADE AND PRINTED IN GREAT BRITAIN
BY THE WHITEFRIARS PRESS, LTD.,
LONDON AND
TONBRIDGE

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Preface

It may be said that language has been devised in order that we may ask pertinent questions and may give answers which, even if tentative, are not incomprehensible. We have, however, to realise that new modes of thought often entail some change in the usage of the salient words in which both questions and answers must be couched. Hence as the years go by old words acquire new meaning, sometimes more extended, sometimes more restricted, and reciprocally new meaning is conveyed through old words. Definitions in yesterday's dictionary no longer bind us to-day.

Take the word " agent." A dictionary may state that an agent is a person or thing that acts or exerts power. Since this may include a motor car as an agent, I ask leave to substitute in what follows this definition : An agent is a person who acts with purpose. That leaves unaffected the secondary meaning : One who is authorised or delegated to transact business for another.

To illustrate my point of view let me go back to an early stage in reflective development. A boy who is learning the use of language is one who asks questions and hopes to get answers that he can understand. The word " agent " may not yet fall within his scanty vocabulary. But his reiterated question is : Who made it ? or Who did it ? He expects an answer in terms of someone, not only of something. His interest centres in the driver of the car. He watches him do this or that ; and he wants to know why he does it. So he asks the further question : What for ?

When I use the word " agent " in this book I mean always some person, or some being to whom I assign the status of a person. And to that person I impute some motive for his

act. Hence, like the boy, I always dramatically ask: What for? And the generalised answer I seek to give is: To attain some end in view (recognised as such) through means that are realised to be contributory to an outcome which shall more or less closely accord with the precedent end in view. This implies in all mundane affairs such reflective procedure as betokens purpose on the part of the agent.

Thus for me the words "agent," "purpose" and "person" are so inter-related as to justify the claim that an agent is nothing less than a person who acts with purpose. On these terms no physical "force" is an agent; no "principle" is an agent; "life" is not an agent; an "emotion" or an "instinct" is not an agent. None of these, apart from literary dramatisation, is a person who acts with purpose.

Turn now to the "it" in Who did it? It is something that happens.

Of a noteworthy boy—James Clerk Maxwell—it is told that his reiterated question was: What is the go of it? And if the answer was vague he returned to the charge and asked: But what is the *particular* go of it? The questions he thus raised were not: Who did it? What for? They were: How goes it? With what result or observable outcome? These questions were incipiently scientific; their answers lead up to interpretation in accordance with the method of science.

Much will turn on the way in which I delimit the domain of science. No binding rule can be laid down as to the meaning which one must attach to the word "science." There is wide-spread agreement as to the abstract nature of science. But as to that from which we abstract—as to that which lies beyond science—there is diversity of opinion. Are we to abstract from all that is merely empirical and leave only "pure" science? Are we to abstract from all that escapes the mesh of strictly metrical treatment in terms of units of measurement? Are we to abstract from æsthetic or ethical value? Are we wholly to abstract from mind

and exclude all that is mental? As things are each writer should state clearly what he means by science.

Following the lead which is given, as I think, by physicists, I exclude from the domain of science all questions of agency. That leaves us with a purely relational treatment of natural events. On these terms we ask only: What is the course of events in this or that system of events under consideration? Under what effective relations—temporal, spatial, physical and mental—is there some observable change in the course of these events?

Mental relations, be it noted, are here included within the domain of science. Their presence in this degree or in that makes a difference in the " particular go " of some of the events in some of the systems which fall under consideration. They are present in any natural system which includes living organisms, or at any rate those that have reached an evolutionary status which must be suitably characterised. Mental relations are no less effective—directly or mediately—after their kind than are physical relations; and they are no less natural than are physical relations.

On this understanding all events, without exception, are susceptible of scientific interpretation. But science avowedly leaves them wholly unexplained in terms of agency. None the less, agency in human affairs unquestionably there is. I speak of explanation in terms of agency as " dramatic."

I have taken Clerk Maxwell as a typical man of science. Do I mean that he was not an agent—that, boy and man, he was not a person who acted on occasion with purpose? Assuredly that is quite foreign to my meaning. Every man of science—every reflective human being—is an agent who acts with purpose. But he is also a living organism set in a field of effective relatedness, physical and mental. Regarded as an organism, all that happens to him and in him calls for interpretation in accordance with the method of science.

My aim in these prolegomena is to show how I propose to distinguish scientific interpretation in relational terms

from that which I speak of as dramatic explanation in terms of personal agency. And yet my philosophical conclusion will be that if there be no personal agency, human and other than human, immanent in nature, there would be nothing for us to interpret in relational terms. There would be no such orderly course of world events as calls for interpretation, let us say in terms of emergent evolution, or in some other and better way.

Seeing that the word "evolution" will be freely used, I must say what I mean by it. I accept an unrestricted usage in such wise as to designate a generalised natural history of the progress of all events, physical and mental, up to date; and a necessarily imperfect forecast of such further progress as will probably follow in due course. This and no more. The generalisation does not include any reference to the questions: Who did it? What for? not because these questions are philosophically unimportant, but because they lie beyond the domain I assign to science.

When we pass beyond that domain these questions press for an answer. And here the "it" in Who does it? is nothing less than the whole sweep of evolution. No less comprehensive for philosophical thought should be the explanation we seek. If we comprise under the one word "evolution" the whole course of natural events, so too should we comprise in one word an answer to the question: Who does it? The answer to which I am led on philosophical grounds is no new one. It is this: God does it. The whole course of events subsumed under evolution is the expression of God's purpose. If it be asked: What then is God's purpose, the reply is: All that has been and will be expressed in the consummated course of evolutionary progress. Such is my belief. But this belief far outruns knowledge. For it includes under God's purpose all that shall hereafter be expressed in that which for us is the unknown future.

It may however be asked: Why drag in belief if it confessedly outruns knowledge susceptible of rigorous proof? The reply of one who deals with mental evolution is suffi-

ciently obvious. Because belief on the part of those in whose minds it has place, itself calls for interpretation. How did it arise—not this belief only, but belief in a physical world; belief in other minds than their own? For if evolution is a generalised synopsis of all events in terms of relatedness; if this synopsis includes all modes of mental relatedness; does it not include the attitude of belief? This attitude of belief, say on my part, no less than my attitudes in presence of beauty, truth and goodness, is the outcome of evolution, and therefore calls for interpretation within the special province of that branch of science which deals with the progressive development of mind.

It may also be asked why, save on rare occasions, I do not use the words "cause" and "causation" in this book. Let us grant that, in some sense, for every effect there is a cause. Now the effect is something that happens. But if someone ask: What is its cause? he may want to know who did it; or he may want to know what were the relations which obtained when it happened. I have a growing conviction that the continued use of the one word "cause" in answer to both of these questions entails much misunderstanding. This I seek to avoid by refraining from its use, save where the context brings it into the field of discussion.

I seek to develop a relational interpretation of the course of world-events. From the point of view of physics space-time relatedness lies near the heart of modern discussion; but from that of mental evolution the root-question here is: How does reference to "theseness" and "thenness" arise? In our adult life of reflection it is in being. But how did it come into being? I try to answer this question.

C. LLOYD MORGAN.

ST. LEONARDS-ON-SEA, *September*, 1929.

MIND AT THE CROSSWAYS

CHAPTER I

INTRODUCTORY

§ 1

THERE are two ways in which one may account for any event. One may explain its occurrence as due to someone's act. Let us call this someone an agent. Or one may interpret its occurrence as in accordance with the order of nature. Let us speak of such interpretation as scientific.

Take first an explanation of the occurrence of some event as due to the act of some agent. Let me speak of this as a dramatic explanation. The event may be due to one's own act, or to that of another human person ; or to that of some other agent supposed to be more or less like unto oneself in so far as capable of thus acting. In each case the agent is regarded as an actor on the scene of events. In this sense an account is rendered in dramatic terms.

An account of what happens rendered in dramatic terms is far more primitive than that which is rendered in scientific terms. Primitive folk could not, it seems, pursue their customary avocations afield without encountering much that, in accordance with their dramatic outlook, showed how busily at work are fairies, pixies, imps, gnomes, naiads, dryads, goblins, and beings of that ilk, however they were named. Aiding them, or thwarting them, in their own acts were spirit-agents, good or bad, whose acts must be reckoned with. The world was peopled by agents of like nature to themselves as actors on the scene. Much that happens was accounted for, or explained as due to their agency. In the

childhood of the race as in the childhood of the individual the reiterated questions are: Who made it? Who did it? What for?

This leads up to dramatic fiction, we may now say. And we now relegate the answers to myth or to poetry. We say that we no longer believe that it is true as a dramatic explanation of what happens. We do, however, believe that men and women *are* actors who play their parts in the drama of human life; that the course of social affairs is in large measure due to their agency or activity; and that many events in the world around them call for explanation in terms of history which shall be both dramatic and true.

In terms of dramatic agency—and it is *agency* I seek here to emphasise—the actors on the historical scene, past or current, are agents. But how are we to characterise an agent? Let us provisionally characterise him as one who acts with purpose in some sense of this word. Then in what sense of this word? May one reply: In that sense in which he is a person—one who acts with some end in view, exercising choice of means to that end, in such wise as to bring about an outcome which shall more or less closely tally with the end in view with which he started forth on some course of action; one whose procedure implies a precedent wish, and terminates, if all goes well, in consequent satisfaction?

We are assuming that, however else the facts of human life may be interpreted, many of them may be explained as due to the acts of men and women as agents. These, I say, imply purpose. When we act with purpose I submit there is always an end in view: some subsidiary act or acts selected as a means to its attainment; some outcome which, if all goes well, answers to the end in view. We must have all three—end, means, and outcome—in the field of our thought and endeavour; and we must bring them into suitable relations in order that we may reach the outcome that we desire. It is in the light of purpose, characterised in some such way as this, that conduct is under the control of the agents concerned. It is in the light of purpose thus

characterised that a dramatic explanation of some given sequence of events in human affairs is rendered. On these terms purpose is a distinctively dramatic concept.

The question then arises whether, if one deals, as the philosopher is bound to deal, not only with human affairs but with all known events, a dramatic explanation of all these events can be rendered, and if so, in what respects the dramatic concept of purpose, central in human affairs, must in some way be so re-defined as to leave its essential character intact. For it is clear that such a dramatic explanation of all events presupposes subordinate agents with powers of control much less than that which we find in human folk, and of an agent or agents with range of control far wider than that which we attribute to ourselves.

§ 2

Turn now to an interpretation of the occurrence of some event as in accordance with the order of nature. I speak of this as a scientific or natural interpretation. Here we take the order of nature as we find it under observation and experiment. More strictly perhaps one should say: Here we conceive, and in a measure construct, an order of nature in accordance with our findings under observation and experiment. But we believe that an order of nature which we construct in the ideal realm of truth more and more closely approximates to the order of nature which exists in the world of reality independently of our findings.

In a scientific interpretation of existent nature (as such an interpretation is here delimited) the question does not arise: To the act of what agent is this order of nature due? Nor when we come down to details does the question arise: To the act of what agent may this or that observed sequence of events be attributed? The dramatic concept of agents who act with purpose has no place in a scientific interpretation *as thus delimited.* We discuss the course of events, in so far as it falls under observation, in abstraction from the

dramatic concepts of agency and of purpose. So long as we keep within the domain of natural interpretation we do not profess to give any explanation of the course of natural events. So long as we keep within that domain we do not explain but interpret the advance of events in evolutionary terms. On this understanding, as T. H. Huxley long ago said, and bade us remember, " Evolution is not an explanation of the cosmic process, but merely a generalised statement of the methods and results of that process."

Thus far I seek only to distinguish two ways in which we may account for the occurrence of any event or train of events which we observe. Its occurrence may be explained as due to the act of some agent, human or other ; or its occurrence may be interpreted in terms of generalisations which purport to express what we conceive to be the order of nature.

The philosopher whose business it is to survey the whole field of events has then to face this question : Are these two ways of accounting for anything that happens alternative in the sense of " if one *not* the other " ? Or are they complementary in the sense of " both ways, this *and* the other " without any discrepancy—involving no contradictory statements ? If they are alternative, there are two classes of events, of which one class may be interpreted in accordance with the order of nature, whereas the other cannot thus be interpreted but must be explained as due to the act of some agent. If they are complementary, there is only one class of events, all of them susceptible of natural interpretation, all of them susceptible also of dramatic explanation as due to the acts of some human agents or of some agents or agent other than human.

§ 3

Something more may now be said about scientific interpretation. Let us start with a mechanical interpretation of the solar system, for example, in the old-fashioned and so-

called classical sense of the word " mechanical." Our names of the days of the week are a constant reminder of the fact that many centuries ago astronomers of the East could assign to the chief planets an order in accordance with their orbital sweep as then interpreted, though it also reminds us that they attributed dramatic power to the celestial agent who " influenced " the first hour of each day. In due time came Newton with his unifying generalisation of universal gravitation. Even if the word " force " or " agency " be used, there was, in the natural interpretation of the results of observation, no implication of the act of an agent called Gravitation. In that sense, Newton said, " *Hypotheses non fingo.*" He saw no discrepancy or contradiction in accepting a natural interpretation, and accepting also an explanation of the solar system as due to the act of God as supreme agent.

It is with a natural interpretation in terms of the gravitation and other physical relations, as evaluated by Newton, that we are here concerned. Modern developments have built more on the old foundations in observation and experiment without substantially altering them so far as they are here used to the end of illustration. One need not recite a familiar story. Each planet or other member of the system plays its several part in maintaining a balanced sweep of orbit. And what strikes the imagination with regard to this, or any other, strictly mechanical interpretation is the seemingly unlimited range of prediction of events in the far off not yet of the future, so long as the system remains undisturbed by physical influences coming from without.

Let us now change the scene from the old-time astronomical observatory, before the day of the spectroscope, to a chemical laboratory. Those who have spent some prentice-time in such a laboratory are familar with the analysis of water into its component or constituent " elements," oxygen and hydrogen ; or the analysis of the " compound " carbon dioxide into its components carbon and oxygen.

They are familiar, too, with the observable fact that the compound as a whole has properties very different from those of the components taken severally. None the less one can on the basis of our present knowledge predict what the properties of compound and components will be as disclosed in any given instance of the formation of water under future experiment and observation.

Common alike to water and to carbon dioxide is the component oxygen. And the oxygen disengaged by the analysis of water has the same properties as the oxygen disengaged by the analysis of carbon dioxide. It does not follow, however, that prior to this disengagement by analysis, the atom of oxygen engaged in the transactions of a molecule of water is in all respects the same as an atom of oxygen engaged in the transactions of a molecule of carbon dioxide. The organisation of the one molecule differs from that of the other. They are different " organisms " in Professor Whitehead's extended usage of this word.

There has been much discussion as to the acceptance or rejection of this extended usage, under which a molecule or an atom as well as an oak tree, a rabbit, or an amœba, may be spoken of and discussed as an organism, though of course not a *living* organism. I am one of those who accept this extended usage. Nay, more. I beg leave, for purposes of exposition—at present I ask no more—to speak (under like extension of other words) of any organism, in Mr. Whitehead's sense, as a " community " of " members " in " fellowship." Of course I do not mean that, in all cases, it is a community of *persons*, as agents, in conscious and in some sense spiritual fellowship. I must ask the reader to take these words in the undramatic sense in which I here use them. If he says that it is merely a picturesque sense, so be it. I seek only to present a picture—as an aid to the scientific imagination—of the kind of thing that happens in any organism.

On these terms the molecule, as an organism, is a community of atoms, as members in molecular fellowship. Sup-

pose then that the same atom of oxygen is a member, first in the fellowship of a molecule of water, then in that of a molecule of carbon dioxide, and thereafter in that of a molecule of oxygen. It is different as *member* in each case. It differs in and through its relation to the other member or members of its community. As member in fellowship it is not just the same, since it plays a different part in different communities.

Under chemical analysis one dissociates the members in fellowship. So, too, if one take the works of a clock, as a piece of mechanism, to pieces one dissociates them. The scattered wheels and so forth are no longer members of a clock-community, in mechanical fellowship. Only when one re-assembles them do they play their parts as members so that the time-piece goes as a working mechanism. It may seem rather *outré* to say that this or that wheel in the going clock is different from what we call the same wheel before re-assembling the parts. But it is worth while to get at what is meant by this seemingly *outré* statement. One means, to put it picturesquely, that it is different under the strain of doing work in fellowship with other members, in much the same sense as a man is different when he is rowing in an " eight " and when he is resting in an arm-chair and conversing with a friend.

May one speak of the clock as an organism in Mr. Whitehead's extended sense of the word? It is difficult to say. Let us at all events provisionally distinguish that which implies mechanical fellowship *only* as an instance of mechanism. Then the difference between mechanism, in this sense, and other organisms is that, in most organisms, the fellowship is not mechanical only as it is in a clock or in the solar system. On these terms, admittedly provisional, the great majority of organisms are not only machines in this mechanical sense. We have to reckon with other modes of fellowship than that which is mechanical only.

Pass now to another matter of some importance. Instead of pulling the clock to pieces one may take it out of its case

and, without stopping it, distinguish, under directed attention, the several wheels and so forth as members in mechanical fellowship, and see how they play their parts in the going concern. The advantage here is that we do not destroy the mechanism as we destroy the molecular organism in chemical analysis. Can one deal with a molecular organism in like wise? Can one get at its structure, let us say, without destroying that structure? The difficulty here is that, partly owing to its minute size, one cannot distinguish, even with the aid of a microscope, the atoms in a molecule of water. But under new methods men of science are learning how to do so. And, in any case, one can do so in thought. Piecing together inferences from refined observation and experiment, one can picture, and make a model of, the atomic members as they play their parts in molecular fellowship. Nay more. When the atom is submitted to distinguishing analysis it is seen by the eye of modern scientific thought as an organism—a community of proton and electrons as members that play their parts in atomic fellowship. But the atomic fellowship of electrical charges is a different mode of fellowship from that of atoms in a molecule. Even the electron is now yielding to distinguishing analysis at the hands of Professor G. H. Thomson and others. It, too, may be a community of members in fellowship.

Distinguishing analysis under the eye of sense, or under the more penetrating eye of thought, deals always with the going concern. And the eye of interpretation is required to see the hidden relations which characterise this or that mode of fellowship.

§ 4

Let us now focus the eye of interpretation on the body of a man in so far as this is a self-contained physical system of members in fellowship, without prejudice to the sufficiently patent fact that he has also mental attributes.

This we may do under legitimate abstraction. In the sense in which the word is here used, abstraction implies the

reflective and selective fixing of attention on that which matters for some purpose in hand. What does not matter for this purpose is regarded as negligible and " abstracted from." When one is arranging rose-buds in order of colour to the end of classifying them in *this* respect, what then matters is just colour and nothing else. Difference in scent, or in shape, or in size, does not then matter. In this sense abstraction is " legitimate " to some end which one has in view under distinguishing analysis. In this sense it is legitimate to deal, for example, with the spatial relations of two similar billiard balls one inch apart, in abstraction from their mutual " gravitative attraction " which entails differential strains throughout each of them, however minute in amount, and thus renders them not quite the same as they were when two inches apart. For all ordinary purposes this difference is negligible, and we may legitimately abstract from it.

But if one say : There are no such stresses and strains in the billiard balls, one says what men of science since Newton tell us is untrue. More generally, if one say : That which is negligible for some purpose in hand has no being or existence in the concrete world of fact, then one is guilty of " vicious abstraction." The vice here lies in affirming that what is legitimately kept out of focus for the solution of some problem, *non est.* This may be untrue.

On this understanding abstraction, so long as it is legitimate, implies the affirmation of that which is abstracted from ; for if it were not in being there would be nothing to abstract from. On this understanding, therefore, in abstracting from the mental attributes of man we imply their existence. That leaves us free to deal with the physical features of the body in terms of members in fellowship.

Since I have been led to lay emphasis on abstraction in the sense here intended, a few more words may be added. I seek to apply the notion of members in fellowship as disclosed by distinguishing analysis. Under legitimate abstraction one may deal, now with the members in fellowship, and now

with the fellowship of these members. But only under a form of vicious abstraction can one speak of fellowship irrespective of members or of members irrespective of fellowship. Each implies the other, and apart from the other has no separate and independent existence.

Only under vicious abstraction does such a question arise as: Is the mode of fellowship what it is because the members are what they are; or are the members what they are because the fellowship is what it is?

If I were asked, in face of this conundrum, to give a definite answer one way or the other, I should reply: Under legitimate abstraction I may start either with one or with the other. But for practical dealing with the problems that arise, I should elect to start with the members, since I can observe them, and since it is as members that I can watch them as they play their parts. I should say: Let us first of all get clearly in view how each of them is behaving. Thus in a community of social insects, such as ants, I should try to ascertain what this, that or the other is doing. But should I not have to add: In relation to what others are doing? Then my attention would pass over to fellowship. One cannot dissever one from the other. There is no conundrum save under vicious abstraction. For if the members are what they are, as members, only in fellowship, and if the mode of fellowship is what it is, only in so far as the members play their several parts, how can one divorce them? Under the separation of divorce, were the decree philosophically valid, we should have on the one hand members out of fellowship, and on the other hand fellowship without any members. We should have vicious abstractions.

§ 5

So much by way of clearing the ground for the application of the notion of members in fellowship to an interpretation of the physical features of man in accordance with the order of nature.

One more point calls for notice. A provisional distinction has been drawn between mechanisms where the fellowship is mechanical only, and those organisms where it is other than mechanical only. We may have occasion presently to abstract from mechanism so as to concentrate attention on some distinctive features of those organisms which have place in " a hierarchy." Just now, however, we deal with them together. In the human body there is much mechanical fellowship—so much that some contend that there is nothing else, or that, if there be anything else, it can be reduced to mechanical fellowship. Just now we do not raise the question whether this is so or not. We assume that mechanical fellowship there is, and that some members of the body play their parts under this mode of relatedness.

The body of a man may then be regarded as a cluster of organisms subtly inter-related in fellowship. Let us submit it to distinguishing analysis. We begin with that which is most obvious. It is pretty obviously a community of organs, tissues, and so forth, as members in fellowship, each of which plays its part in the varying relations of the corporate whole. Take now the next step downwards. Each organ is a community of cells as members in fellowship, each of which in turn plays its part in maintaining the integrity of the organ. At a stage lower still each cell is a community of such members in fellowship as cytologists have taught us to distinguish, telling the story, as yet incomplete, of the parts they severally play in the life of the cell. Then we find at a remove, or more than one remove, lower down, that each member in cytological fellowship is a community of molecules in biochemical fellowship, some of them playing specialised parts in many-linked chains with linear or circular arrangement. Thus we come down to the molecular links or to simpler molecules. Hence we pass to atoms in molecular fellowship ; to electrical charges in atomic fellowship ; and to such fellowship of yet more primitive events as may be disclosed even within the electron.

Such is the notion of a " hierarchy " of modes of fellowship

with an orderly sequence of "thises" within "thats." Much, very much, is perforce left out of focus. But is there anything that is kept in focus which is other than natural—that is, susceptible of scientific interpretation? We are assuming that there is not. What one gets is a sample of the order of nature stated in highly generalised terms. Of course it is only a part of the order of nature as a whole. But our assumption is that it falls within that order and may be interpreted—though as yet not all has been interpreted—in terms of natural relations which are disclosed under observation, or are based on inference founded on observation and experiment. There is not so much as a hint of any explanation in terms of agency, so long as we interpret in accordance with the method of science.

The position we reach is this: There may be, or there may not be, agency in operation; what we find may be, or it may not be, due to the act or acts of some agent or agents. That is not here and now our concern; our concern, here and now, is only with the actual course of events under those modes of relatedness which I have asked leave to speak of as fellowship, that is, the modes of organisation which we find at this or that hierarchical level of events. So long as we keep within the domain of scientific interpretation, *as I here delimit that domain*, we abstract from the dramatic concept of agency. So long as we keep within that domain it is not for us either to assert or to deny that what happens is due to the act of some agent, human or other.

If what I say now, and shall have to say later on, is to be understood, it is imperative to grasp clearly the distinction I draw between scientific interpretation and explanation in terms of agency.

With reference to some organism under consideration, two questions may be asked: (1) How does it go; with what kind of organisation or relation of constituents? (2) Who or what makes it go; for what purpose? These questions may be asked in physical or in physiological regard, as the case may be, with reference to *any* organism,

say from water-molecule to man. With reference to the human body it is for the physiologist, as man of science, to tell us how it goes and what is the manner of its organisation. It is *not* for the physiologist, as man of science, to say who or what made it go; who or what organises; for what purpose? It is no more the business of the physiologist to ask these questions than it is the business of the physicist to ask: Who or what made the hydrogen atom go; who or what organises; for what purpose? These are not *scientific* questions.

Note that the foregoing assertions imply a way in which science is to be characterised. That is why I have tried to make clear in what way I—and not I only—characterise science.

If it be said that physiological science is quite different from physical science, it seems to me, and to those for whom I act as spokesman, that this cleaves science asunder. Science is no longer on these terms one comprehensive method of interpretation.

§ 6

If the body of a man, though in some measure a mechanical system, is also in some measure built up of a linear series of subordinate organisms in hierarchical order, the question arises: Is this hierarchical order that of evolutionary genesis? Some of us believe that it is. But this is, and will for long continue to be, a belief that outruns the direct evidence securely based on observation and experiment. In terms of this belief evolutionary advance is susceptible of natural interpretation, though it is as yet very far from being completely interpreted.

We must, however, in some way characterise evolution on the understanding that, in so far as it purports to be an interpretation of the natural course of events, no questions are asked with regard to the agent or agents to which it may be due. We must not therefore characterise evolution, as we here use the word, in the dramatic terms of agency. We

must not *in scientific regard* characterise it as "creative," for that implies agency.

The important thing is that any writer who uses the word, with or without adjectival qualification, should state clearly what he means by it. Let me say, then, that what I here mean by it is advance in fellowship within the order of nature; and that what I mean by advance is further and fuller fellowship.

We have, however, to reckon with a process the reverse of evolution as thus characterised—with retrogression in fellowship which takes the more drastic form of dissolution when there is a swift fall from a high mode of fellowship to modes much lower in the hierarchical scale, such as occurs on the death of a living organism.

Here difficulties arise. Those who have only a bowing acquaintance with the very complex transactions within the living organism know that evolution and dissolution proceed side by side. In technical phrase there is, in the body as a whole, a shifting balance of anabolism (building up) and katabolism (breaking down). If, however, we fix our attention on a member of a sufficiently subordinate community, say a molecule, there is in that member either building up or breaking down. Still what we have to realise is that in any complex community retrogression, or even dissolution of fellowship in some of its members, seems to be a condition of advance in the community as a whole. The difficulties arise in connection with the increasing complexity of fellowship as we rise in the hierarchical scale. Are they such as to justify one in saying: In face of these difficulties a natural interpretation of the advance of events is ruled out of court? That is here and now the crucial question. We believe that they are not.

I drew a provisional distinction between a mechanism and organisms which constitute a hierarchy. Let us consider it a little further in the light of a hierarchy of organisms. It is questionable whether there is, in like sense, a hierarchy of mechanisms. In any mechanical system there is (so we

assume) one mode of fellowship only. Given this mode of fellowship, and given the members in fellowship—say the sun and planets of the solar system—we have the data for stating what is now happening, has happened, and will happen within the system, so long as it remains undisturbed from without. Suppose that it passes through three successive stages, *a*, *b* and *c*, of which *b* is the present phase during the passing moment; then astronomers can tell us exactly what the conditions of mechanical fellowship were, and the state of any member was, at any *a*-moment in the past, and what they will be at any *c*-moment in the future.

Now the body of a man, as a going concern, is in large measure a very complex mechanical system, and there is a germinal thread of mechanical continuity connecting him with his ancestors and with his possible descendants. Were there no disturbance from without one could, with adequate and sufficient knowledge, deal with any evolutionary stages, *a*, *b* and *c*, as the astronomer is able to do in the case of the solar system. But of course in the case of living creatures there is much disturbance from without. None the less, so long as such disturbance is mechanical only, its effects are "calculable," though no one may have the wit or the knowledge fully to calculate them out. All this may seem to be very theoretical. But it purports to be founded on observation and experiment. And the outcome is this: If the physical world and all that is therein, including living plants and animals, be a mechanical system, then prediction of any event which will happen in the future is theoretically possible.

We admit that the physical system of man's body in some measure exemplifies mechanical fellowship and that many events are predictable. But I for one believe that, in so far as the body is a hierarchy of organisms, there are modes of fellowship other than mechanical. It is permissible, therefore, to abstract from the mechanical mode so as to concentrate attention on the other modes, let us say, for example, atomic, molecular, and biochemical.

On the assumption that all are in accordance with nature, and that they stand in order of evolutionary genesis, it follows that, at some stage of evolution *a*, there were atoms only; at stage *b*, molecules (and atoms) only. Not until stage *c* was reached were there living units (may one say "biocules"?) in biochemical fellowship. Here we come into touch with the hypothesis of emergent evolution. According to that hypothesis, the fullest knowledge of the nature and properties of the atomic world at stage *a* would not enable the most far-sighted atomic logician, so to speak, to deduce and foretell the nature and properties of the molecules in the world at stage *b*; nor would the fullest knowledge of molecules at this stage of evolution enable the molecular logician to predict the distinctive character of "biocules" at stage *c*, that is before any "biocule" had come into existence.

§ 7

As I have, under the terminology of members in fellowship, embarked on an attempt to give a picturesque description of what, as I think, actually happens, may I, still in the interest of exposition, go a step further? Permit me to say that in the community of any organism the members in fellowship "play the game." And permit me to say that in any given kind of organism—for instance, atom, molecule, or "biocule"—there are certain "rules of the game" as it is played.

That enables me to put the emergent position, as I see it, in rather a different way. We had three progressive stages of fellowship at three stages of world-advance, *a*, *b*, and *c*. At stage *a* there are atoms only, as in some hot stars to-day. There were, as yet, no molecules at stage *b*. And when stage *b* was reached, there were still no "biocules." Not until stage *c* was reached were there "biocules" as subordinate organisms to be wrought into the fabric of living plants and animals.

Now the atoms are organisms in which the electrical

charges play their parts as members in fellowship in accordance with certain known rules of the atomic game. The molecules are organisms in which atoms play their parts in accordance with certain known rules of the molecular game. The " biocules " are organisms in which molecules play their parts at the inception of the life-game. But the rules of the atomic game, the molecular game, and the life-game are different " rules of the game." I do not mean that there are *no* rules common to all three games. I mean that there is something new and distinctive of the molecular game, as such ; and, later on, something new and distinctive of the life-game, as such. In this sense there are new and distinctive rules of the game at each stage of advance in emergent evolution. And, if I may still put it picturesquely, no atom could say what must be the rules of the molecular game not yet in play ; no molecule could predict the rules of the life-game before any living being had appeared on the evolutionary scene.

Such, in brief and " in principle," is the emergent thesis, now on trial. In brief and " in principle," the antithetical contention is (as I understand) : Given the rules of any one game, the rules of all other games can logically be deduced therefrom. Hence : Given the rules of the mechanical or the atomic, or the molecular game (any one of them), the rules of the life-game are already implicitly given. Evolution is the unfolding of that which is thus implicitly *there* from the beginning of all things.

The advocate of emergence ventures on the hypothesis : *Not there, till it comes.*

Emergence, in the sense intended, is, I believe, an oft recurrent feature in the inherent constructiveness that obtains throughout nature—that constructiveness which we call evolution. It is that which introduces, again and again, something new in the course of world-history still in the making. I have emphasised new modes of fellowship, with new rules of the game as it is played. But more patently observable are new properties which characterise new fellowships.

We find certain components say this, that and the other. Each has its distinguishing properties. These components enter into fellowship to give some compound or product. We may know much about the properties of these components severally *before* they become members which constitute this product. And one might suppose that this suffices to enable us to know all the properties of the product. We have, one might say, only to add up what we know about this, and that, and the other, *severally* as components, to know all that there is to be known about the properties of the product as the sum of these components taken *collectively*. But seemingly that is not so. There are new properties which characterise the new mode of fellowship in the product *as a whole*. And the something quite new in those properties is disclosed only when the product comes into existence and could not have been foretold before it came into existence. The something quite new "just comes" under the constructiveness in nature which is evolution. *Why* science knows not. In science we loyally accept what we find.

But it may be said that this "just comes" affords no explanation. It is not put forward as an explanation. It makes no claim to be anything of the sort. "Evolution," to quote T. H. Huxley again, "is not an explanation of the cosmic process, but merely a generalised statement of the methods and results of that process." If I may put the matter in a form the inelegance of which may arrest attention, I venture to say: The whole story of nature's inherent constructiveness is the story of emergent "just-comery," each item of which we accept just as it comes without further question, *so long as we keep within the domain of scientific interpretation.*

The emphasis, then, in emergent evolution, is on the unexplained incoming of the new in the orderly advance of the unexplained constructiveness we find in nature. For it seems, on the evidence, that the incoming of the new introduces no disorder into nature. The new is no less orderly than the old. The orderly constructiveness in nature, which

at any given time is still in the making, is at each step in advance carried forward to a stage at which it has a higher emergent status; but always under relational conditions susceptible of precise scientific statement such as can be expressed in generalisations of universal import—such as can be formulated as new rules of the game under new modes of fellowship in organisms which have new properties.

Of all this the man of science, as such, gives no explanation. It is not his business to do so. It is not his business to ask: Who did it? What for? That is another question.

§ 8

In the foregoing sections we have abstracted from agency, in the sense of the activity of agents who act with purpose, so as to concentrate attention on a natural interpretation of events; abstracted from mental relations so as to focus attention on temporal, spatial, and physical relatedness; abstracted from mechanism so as to restrict attention to the hierarchy of organisms. The natural interpretation of this hierarchy—or, one had better say, such a hierarchy (to leave a wide margin for revision of its salient steps)—discloses constructiveness in nature up to date, and leaves room for further constructiveness in the future the emergent character of which we are unable to foresee. The constructive steps, thus far, are ascending stages in that which has been spoken of as fellowship under rules of the game.

If now we no longer deliberately abstract from mental relations but include them in the field of our attention, the notion of fellowship has the more familiar and more dramatic aspect that it assumes in human life within a social community—whether we regard such a community as an organism or prefer to speak of social organisation. The notion of fellowship thus invites more dramatic statement in terms of agents who act with purpose. We may now say: In social life there is a community of agents in fellowship; each of them is in sympathy with the others; each of them

plays his part in conscious relations to the parts that are played by other members of the community ; all of them, in playing their several parts, seek to be of mutual service to each other ; all of them behave in such wise as to promote fuller and further fellowship as an end in view. The whole situation is dramatised through the concept of agency.

Here mental relations reach a very high level of emergence. From what lower emergent levels they arise under natural interpretation we shall have hereafter to consider. Here and now we assume that there are ascending steps in mental relatedness in close alliance with ascending steps in physical relatedness. That is what I shall hereafter mean by emergence in mind. We must therefore introduce into our hierarchy, at any rate, near the top of the scale, such emergents as conscious mentality and, let us say, self-conscious rationality, on the understanding that they have physiological concomitants in the body. On them the emphasis falls when we reach the level of social fellowship.

But can we discuss social fellowship, which is for the rational members of the community an end in view, however imperfectly attained in outcome, and still abstract from the dramatic concept of human agents ? It is difficult to do so. Let us then no longer abstract from agency, but include it within our widened field of attention.

Now it has been part of the thesis which I am concerned to maintain that, though natural interpretation and dramatic explanation are radically different, though each is best dealt with in legitimate abstraction from the other, yet an account of any event or any set of events can be, and should be, rendered *in both ways:* now from the point of view of natural interpretation, now from that of dramatic explanation ; without opposition and without any discrepancy.

Under natural interpretation we find an ascending order of modes of fellowship in physical regard. But we must include also modes of fellowship in mental regard—those which reach their highest expression in communities of human folk. Our hypothesis is that, subject to emergence,

this ascending order in both regards has been that of evolutionary advance in the course of ages.

Turn now to a dramatic explanation of the same set of facts. The particular facts we have here in view are those of which an interpretation is offered under the hypothesis of emergence. But this explains nothing. The facts are just accepted as we find them. To explain them is to attribute them to the act of some agent. Our dramatic belief then will be that each ascending step in natural fellowship is due to the act of an agent. But each step in emergence introduces something new in the evolutionary series. If, then, it be due to the act of an agent, to that act the introduction of something new is dramatically attributed. We speak of such an act as creative. Hence that which, under natural interpretation, is emergent, is also, under dramatic explanation, creative.

Now the whole sequence of evolutionary steps in emergent advance may be due to the successive acts of one and the same agent. Or each several step in advance may be due to the act of a succeeding agent hitherto not in being. In the latter case there is an ascending hierarchy of agents whose creative acts afford an explanation of the natural hierarchy of emergent organisms. In the former case there is an ascending order of creative acts on the part of one agent.

In either case there are difficulties. And perhaps the chief of them centres in the concept of purpose. But I cannot here follow up this topic any further. We shall come back to it in the concluding chapter. One may ask, however: What is the conclusion thus far? The conclusion thus far is that natural interpretation does not necessarily preclude dramatic explanation; that both may be accepted without inconsistency in an attitude of belief; and that nothing I say in the chapters which follow should be taken as implying denial of the validity of the dramatic concept of agency in some one of the many forms it assumes.

CHAPTER II

Relational Interpretation

§ 1

We have now to deal with an interpretation of all that happens and anything that happens in accordance with the order of nature, or, more strictly, in accordance with that concept which we speak of as the order of nature. We are deliberately to abstract from the dramatic concept of agency in terms of which we may seek to explain what happens as the act of some agent, human or other. That leaves us with the course of events in their natural relations.

These natural relations constitute the " field of relatedness " within which the behaviour of certain events, on which we fix special attention, may be observed. I here use the word " behaviour " as equivalent to " manner of go." On these terms we may formulate a canon of natural interpretation: Given such and such a field of relatedness; this is the observable behaviour. To provide for change of behaviour we may say: Given such and such a change in the field of relatedness; this is the observable change of behaviour.

We have seen that distinguishing analysis of any complex organism seems always to bring us down, step by step, to less and less complex organisms. Each organism is a cluster, or a cluster of clusters, of events in relation. It may, however, be asked: What in the downward course, under distinguishing analysis, is an ultimate event apart from any relations? I can but reply that I do not know. Only under abstraction can we distinguish events from their relations. They seem always to be given together. At any

level, even the lowest we can reach down to, we find some bracketed whole, however small—something which we may express as [events in relation]. As we go up the scale of events we find larger and larger bracketed wholes. We need a name for any such bracketed whole. Permit me to call it an instance of *relatedness*.

An instance of relatedness, in this sense, includes, therefore, not only such and such relations, but such and such events in these relations. It includes the events in these relations, and the relations of these events. Thus one may place in a bracket of relatedness: The letter-weight on the table; or, This picture to the left of that; or, Sunrise before noon; or, A sapphire different in colour from an emerald. And so on. It is part of relational doctrine that when any two clusters of events—say, things in physical regard or minds in a different regard—are in relation, each may be, and one of them always is, in some measure at least, what it then and there is, in accordance with the relations that there and then obtain within some bracket of relatedness.

Let us here note that the facts of relatedness are, in language, expressed in a sentence or a phrase. Take the sentence: The colour of the sapphire differs from that of the emerald. Here the discrete words we use are aids to abstraction—to the fixing of attention on the colour of the gem, irrespective of similarity or difference in its shape or its hardness. But we may proceed further in abstraction and fix attention on the "colour," blue or green, irrespective of the gem, or indeed of anything, that "has" it. This procedure is quite legitimate. But if we say that there is colour apart from any thing that "has" it (on one theory), or apart from someone who "sees" it (on another theory), there is vicious abstraction.

In the phrase: Sunrise before noon, language invites us quite legitimately to fix our attention on the temporal relation named in the separate word "before." Thus we may speak of any event as before some other event. And in further abstraction we may think of the "beforeness"

as a temporal relation. If, however, we speak or think of temporal relations (or any other natural relations) as having independent being apart from the events which are bracketed with them, the abstraction is vicious. The use of language so ministers to abstraction that it may often lead to vicious abstraction. Some people use the words "space" and "time" as if they had independent existence apart from any instance of relatedness, that is, apart from any bracketed whole of [events in relation].

Now we may regard, as we have regarded, any given organism as a bracketed whole or instance of relatedness. The relatedness is then *intrinsic* to that organism. All the events in relation are within it. In so far, however, as the organism is in relation to others, and with them constitutes an organism of higher status, and in so far as it is also in relation to the rest of nature, the relations to these others, and to the surrounding entourage of events, are *extrinsic* to that organism. These words, and especially "intrinsic," are used in other senses. But this is the sense in which I use them here.

As a distinction drawn under legitimate abstraction, this is presumably clear enough. But we never find one without the other. Hence any organism is what it is in virtue of relations both intrinsic and extrinsic. Hence, too, we cannot say what any organism is intrinsically, if this means quite apart from any extrinsic relations, for that would cut it adrift from the nature within which it is related to other organisms and to the entourage of events.

It is noteworthy that at each stage of hierarchical advance, as we ascend the scale of organisms we bracket a wider range of events in intrinsic relations. Relatedness distinguished as extrinsic at one stage is regarded as intrinsic at the next higher stage; and so on up the scale. At each step upwards we have a longer bracketed whole. At each step downwards we have a smaller bracketed whole. The use of the words "within" and "between" may serve to make this clearer. *Within* the crystal are relations *between* molecules;

within the molecule are relations *between* atoms ; *within* the atom are relations *between* proton and electrons.

Carry this notion upwards instead of downwards. Where are we to stop ? Can we go right on, step by step, from organism to organism, until nature at large—the whole universe—is enclosed in one huge bracket in which there is intrinsic relatedness only, since there is nothing beyond the whole universe to which it has extrinsic relations ? May we regard nature at large as a giant organism ? There are some who do so. General Smuts in his *Holism* and Professor Lossky in his *The World as an Organic Whole* urge that, on philosophical grounds—and as I think largely on dramatic grounds of agency—we should do so.

Much here depends on the definition of organism. I have tried to characterise organisms in terms of relational fellowship along a line of evolutionary advance. On that line some mode of communal fellowship seems to mark the limit of its reach. But there are other lines of advance. There is also much in the bewildering array of world-events which seems best interpretable in terms of mechanism rather than as an organism at or near the summit of a hierarchy. And there seem to be many world-events which are not so to speak incorporated either as hierarchical organisms or as well-defined forms of mechanism. All these world-events (as we have grounds for believing) are intrinsically related within nature at large. But are they so related in modes of specific organisation as to constitute " an organism " which is the last step, thus far, in an ascending hierarchy of organisms ? Let us leave it as a question open for further discussion.

§ 2

Having now cleared the ground by considering certain preliminary matters, I pass to the question : What are the chief *kinds* of relation which obtain within nature ? I submit that at least two kinds may readily be distinguished—the physical and the mental. In this, I suppose, there is

pretty widespread agreement. I think many (though not all) will agree that neither is derivative from the other—not the mental from the physical, nor the physical from the mental—and that this is one of the marks of their radical difference in kind. I think, too, that evolutionists will agree that, on the available evidence, physical relations were on the scene of nature long before what we commonly speak of as mental relations came on to the scene.

But if mental relations are *not* derivative from physical relations, from what *are* they derivative? I ask this question as an evolutionist from an evolutionary point of view. From this point of view (that of natural interpretation) there seems to me to be but one answer: They are derivative from relations of the same kind as those that we speak of as mental, though these relations have not reached so high a status in evolutionary development as to justify us in speaking of them as mental in the usual sense of this word.

In common with many others, I am here in face of a difficulty. Physical relations obtain throughout the length and breadth of nature. But mental relations, under current usage of the word "mental"—even if we include those that are spoken of as subconscious or unconscious—do not so obtain. They obtain only in men and some animals, or at most only in living organisms.

None the less, in company with not a few philosophers of repute, I believe that relations of the same *kind* as those that we call mental do obtain throughout the length and breadth of nature, though the physicist may legitimately regard them as negligible within his abstract province of inquiry. But how name them? Since the word "psychical" is used in several differing ways and may therefore savour of ambiguity, I ask leave to speak of them as of the mental or other than physical kind.

Even this may savour of ambiguity. Let me say, then, that by "other than physical" I do not mean anything outside the bracket of [events in relation] which expresses

some situation. It may be that in order to render a philosophical (or metaphysical) account of how there come to be events in relation we are faced by a demand to go beyond any such bracket. There may, for example, be call to invoke something of the nature of that which Mr. Whitehead calls " ingression." That, however, is beyond our present purview; and that, or anything of that genre, is not what I mean by " other than physical."

Within our bracket there are always physical relations; there are sometimes such mental relations as characterise perception. They differ radically in kind. But on our theory there are relations of the same *kind* as mental relations but lower in what I speak of as *mode*. So we need some such expression as " other than physical " to designate that kind which includes all that we commonly call mental, but includes also far less highly evolved modes of relatedness of the same kind, from which these more highly evolved modes are derivative. One need not go outside such an organism as man to grasp what this means. It means that just as in him there is a hierarchy of modes of physical relatedness, so, too, co-related therewith from bottom to top, there is in him a hierarchy of modes of relatedness of the mental kind, that is, " other than physical."

On these terms I should not speak of the mental as emergent from the physical. It is, I should say, emergent from lower modes of the mental or " other than physical " kind in co-relation with the emergence of higher physical modes in the same organism. No new *kind* of relatedness is emergent from any other kind.

I find it difficult to express what I seek to express without drawing in some way this distinction between *kinds* and *modes*. What I want to express is this. In an ascending series of organisms we discover no new relations at any stage from bottom to top; and yet at each stage upwards we do discover new relations. This lands us in a position that is plainly contradictory. So I ask leave to say: Although there are no new *kinds* of relation from bottom to top, still

there are new *modes* of relation at each step upwards. Atomic, molecular, and biochemical relatedness are alike in kind. All are of the physical kind. But within this kind there are successively disclosed new modes of organisation—new modes of relatedness with new characters. And it is these new modes that I regard as emergent. Similarly we shall, I think, be led to believe that there are new modes of organisation, with new characters no less emergent, within the mental or " other than physical " kind.

My belief is that both kinds are always co-present in any organism. More generally my belief is that in the evolutionary advance of events there is not a new kind of relatedness, called mental, that slips in at some stage of hierarchical progress ; nor is the physical kind absent at any stage even the highest ; nor is either kind derivative from the other kind.

§ 3

Having now distinguished the physical and the mental or other than physical as two radically diverse kinds of relatedness, however closely they may in some way be connected within nature, let us consider the physical kind in a little more detail. Let us ask whether on further analysis we do not find natural relations that are distinguishable though we group them together as physical in the comprehensive sense of the word. May we not distinguish spatial and temporal relatedness ; distinguish, too, kinetic relatedness where accelerative changes cannot be regarded as negligible. If there be in the evidence some speeding up, or slowing down, or alteration in the direction of events, kinetic relatedness comes into the physical picture.

It goes without saying that we have in some way to reckon also with quantitative relations, those of more and less. Scientific inquiry cannot make headway without devising more and more searching and refined ways of treating them in alliance with the concept of number. Whether we deal with spatial, temporal, or kinetic related-

ness, there too is quantitative relatedness also. It cannot be ignored. Let us then take it for granted. That leaves us, at present, with spatial, temporal, and kinetic relations as such. They seem to be distinguishable. But are they different in kind? Or do they differ only in mode?

This opens up a question of evolutionary importance, namely: Are they diverse in kind in the sense that no one of them is derivative from any other? Or are they different in mode only, and therefore subject to our concept of hierarchical emergence?

In trying to envisage the evolutionary ascent of organisms in hierarchical order, we started with electrical charges, positive and negative. I take it that in any cluster of events which so enters into a specific mode of organisation as to constitute an atom, we presuppose kinetic, spatial, and temporal relatedness. But the events with which we thus start in the ascent of our evolutionary "ladder" may themselves be the outcome of evolutionary process. There may be lower rungs to our ladder of events, lower even than electrons. In that case kinetic relations, betokened by acceleration, may at some stage of advance have been derivative from temporal, or from spatial, or from combined spatio-temporal relations; and in that case, if unpredictable from empirical generalisations, I should regard them as emergent modes. And it may be that temporal and spatial relatedness, together or severally, were, at a prior stage of evolutionary advance, emergent from some lower mode of relatedness of the physical kind that was as yet neither the one nor the other. This seems to take us as far as we can go.

On the other hand, it may be that at the evolutionary outset—so far as we can descry an outset—we must credit any given cluster of events with the aforementioned three *kinds* of relatedness, originally diverse, none of which is derivative from any other. In that case the concept of emergence, even for those who accept its validity elsewhere, is not here applicable.

We seem here to be in face of alternative "may be's,"

and, in that sense, of alternative possibilities. The question therefore arises, whether, when we are brought to this pass, the issue can be decided on the basis of empirical generalisations founded on observation and experiment in accordance with the method of science. Many say that it cannot—that it can be decided only on " fundamental principles," logically possible in that they form integral factors in a consistent system of such principles. And these principles, though in our experience they are supported by observation and experiment, are not, strictly speaking, founded thereon. They demand the acceptance of *postulates*. And we are told by so eminent an authority as Mr. W. E. Johnson that " a postulate is framed in terms not given in experience." " By a postulate," he says, " I understand a proposition that is assertorically and not merely hypothetically entertained ; but yet is adopted neither on the ground of intuitive self-evidence nor of inductive confirmation " (*Logic*, Part iii., p. xviii.). On such postulates are founded logical systems, mathematically geometrical in form, from which all that subsists within a given system can be securely deduced.

Thus we come into touch with the logical contribution to modern physical thought. Of it Mr. Bertrand Russell says : " The theory of relativity, to my mind, is most remarkable when considered as a logical deductive system " (*Analysis of Matter*, p. 395). This has, however, to be combined with the accredited outcome of the empirical generalisations of physics as a natural science. And " here what really happens," Mr. Russell says, " is that the phenomena afford inductive verification of the general principles from which our mathematics starts " (*ib.*, p. 88).

§ 4

" If I were asked," says Professor Alexander, in his lecture on *Spinoza and Time* (1921)—" If I were asked to name the most characteristic feature of the thought of the last twenty-five years, I should answer, the discovery of

Time. We were accustomed to think of the world as a mass of things spread out in one comprehensive Space, and Time as merely an interesting addition, whereby things happen and have a history. The discovery of Time means that we are to rid ourselves of this innocent habit of mind, and regard the world as through and through historical, and treat all things in it as events. This is the simple meaning of the proposition of the mathematicians that we live in a four-dimensional world. It is really quite a simple proposition, and though it is revolutionary enough, it is not so revolutionary as it sounds. Things, I may assure you, are in the four-dimensional world exactly what we are familiar with. The only difference is that we have learnt that they are four-dimensional. We have been living all our lives in four dimensions, but have only just come to know it." (Pp. 15–18, slightly altered and abbreviated.)

I venture to think that this does not quite bring out the steps in the transformation of thought that has marked the progress of recent years. Let me put it in a different way. The plain man was accustomed to think of the world as affording space or room for persons and things to move about in. No doubt he realised that it takes time for them to do so. But that seemed to him another story; and he kept the two stories separate.

He had, however, at least a bowing acquaintance with a three-dimensional geometry in terms of which this space that things move about in may be interpreted. But he was, perhaps, not a little puzzled when he asked himself the question: What am I to understand by these three dimensions of space? I have no experience of them in the roomy world in which I move this way and that. It seems to me that they have being in a system of geometry framed in such wise as to enable one to *interpret* the shapes and sizes, the positions, or changes of position, of things in the space of my practical experience. If that be so, should we not distinguish the roomy space with which we are familiar from the constructive scheme of geometry framed for its interpreta-

tion—no doubt so framed as admirably to square with perceptive experience? In entering this fascinating realm of geometrical constructs, are we not passing from the workaday world of practical experience to a realm *transformed under reflective thought?*

But though this geometry with its three dimensions might be regarded as a construct of thought, it seemed to be securely rooted on the one hand in an inevitable necessity of thought, and on the other hand in the very nature of the world. It was, for the plain man of those days, just *the* geometry which fitted *the* world. Hence, for him, *the* world—the real world—was, as I put it, transformed as contrasted with that of naïve experience, that of appearance which varied so much with the varying point of view of the observer. The cube was really four-square, no matter how far visual appearances might seem to the contrary. And this was confirmed by manipulative construction based on the reflective application of measurement. The cube or the billiard-table, or the room, could be *built* four-square. This procedure, and the like, conformed with the real world of "classical" mechanics, naturally built to a four-square frame and susceptible of three-dimensional interpretation in accordance with the thought-construct of Euclidian geometry. I think that this is still in large measure the mental attitude of the plain man towards that which he commonly speaks of as the real world as geometrically interpreted. In any case, such was, I think, his attitude near the close of last century.

If I may adduce my own experience there was a stage at which I, for one, did realise that I must distinguish between space as room to move about in, and space as a construct of geometrical thought. I made a fresh start, bearing this distinction in mind. But I found myself shifting from one point of view to the other. If I started with room to move about in I found part of it "occupied," let us say, by a solid cube. This I then dealt with in terms of three-dimensional geometry. I could arrange my cubes, or what not, at

discretion in the room-space around me. I thought of this room-space as within the larger room-space of the school-buildings; this in the larger room-space of the "locality"; and so on, until I comprised in my thought the world-space of the solar system, and of room-space beyond that system. There were successively larger spaces within a huge astronomical space. I was thus led on to that which has been spoken of as a "band-box" notion of space—space as a universal container. But all the while I was uneasy. What on earth, or in the heavens, *is* this containing space? I suppose most people are sooner or later brought face to face with this question. Later, much later than my schooldays, I said to myself: You are muddling up things. You are posing a false problem. Think geometrically. Then space will be for you no longer a great band-box without top, bottom, or boundary sides, but just a constructive scheme of spatial relatedness susceptible of geometrical treatment in terms of such "dimensions" as you may find good reason for introducing into your scheme.

On these terms for long I accepted the scheme of "Euclidian geometry," as did most of my contemporaries—all perhaps save a very few, and they "pure" mathematicians rather than physicists in constant touch with observation and experiment. But presently the plain man and the interested onlooker with philosophical leaning were invited to combine the two stories of space and of time which they had hitherto kept separate. That was all right. They knew quite well how closely connected they are in practical experience, and had probably been taught how to construct a "graphic" representation in which spatial distance and lapse of time, different as they are, could be dealt with together in terms of co-ordinates, one of which was, as M. Bergson would say, spatialised time. If the plain man, or the philosophical onlooker, was bidden in due course to hyphen them under space-time—why not do so? But on what understanding? What was he invited to alter? Not his workaday world of perceptive experience,

but the scheme of geometry, still so called, in terms of which it might better be interpreted by the mathematician. That scheme now became four-dimensional. It cannot be pictured in visual imagery; but it imposes no great strain on his capacity of conceptual thought. He can picture a three-dimensional space-frame for the metric interpretation of what happens in respect of spatial relatedness as such. He cannot in like manner picture a four-dimensional frame; not because it is so devised as to include the interpretation of temporal relatedness—just because it *is* four-dimensional. But he can conceive it without very much difficulty.

Of course he has to entertain new concepts, labelled by new words or by old words adapted to new modes of thought. If, for example, he is to combine space, distance, and time-lapse in a new synthesis (especially for mathematical treatment) he must grasp what is now meant by "interval" which, as four-dimensional, cannot be pictured. None the less he can conceive it.

§ 5

Meanwhile, new data were accruing through the increasingly refined observations of experimental physicists. Very high speed behaviour of "event-particles" at velocities approaching that of light, with picturable effects, took form in the constructive world of physical thought. Relativity dawned on the scene. What was the plain man to make of it? He had to say: In my youth I used to think of a world transformed in accordance with certain generalisations formulated, say, by Galileo and Newton which presupposed a conceptual frame of three-dimensional space; now I am bidden to reckon with a four-dimensional frame of space-time; but new observations dealing with the high-speed behaviour of event particles seem to demand either a modification of Euclid's four-square geometry or the acceptance of one or other of a number of non-Euclidian geometries.

To rise to this demand puts far more strain on his capacity of conceptual thought. What is he to do? If it be not

beyond his capacity he must resolutely grapple with this or that non-Euclidian geometry. If this be beyond his capacity, as is most probably the case, he must be content to put up with statements brought down to the level of his mathematical incapacity. This may take form, let us say, in terms of curvature (or warping, or kinking, or puckering, or wrinkling) of four-dimensional space-time. He may be told that to provide for all this he will have to reckon with, say, six extra dimensions, making ten in all. And so on.

If the plain man should regard such statements as savouring of encouragement in a vain attempt to picture the unpicturable, I take it the reply is: This is the best we can do for you, since you have to put up with a picturable model (or more often a diagram or two on the flat of a page) of the quite unpicturable concepts of a tinkered Euclidian or of a non-Euclidian geometry of space-time. You must, however, try to realise that the "curvature" which expresses certain mathematical concepts is in many respects quite different from that curvature which you perceive when, for instance, you see a soap-bubble. *That* is the curvature of a visible surface which may be interpreted in terms of spatial relatedness in a framework (commonly called "a space") of three dimensions. If nowadays you hear tell of the "curvature of space," *that* you cannot picture as you can picture the curvature of the surface of a billiard-ball. Indeed, the curvature of space is a new mathematical concept. Still more is the curvature of space-time. And if you hear tell of "finite and unbounded space" as an implication of certain forms of curvature, it is doubtful whether any picture we can suggest as an aid to your imagination is adequate to enable you to conceive the subtle complexity of space-time relatedness. Even the multi-dimensional concept may be only a method of symbolising space-time relatedness, as it really is in non-Euclidian geometry, by so tinkering the Euclidian geometry (which the plain man knows something about) as to make it "fit the facts."

(See Eddington, *The Nature of the Physical World*, p. 159.)

This is very lamely expressed. But it does perhaps show the kind of change in attitude which is required of those who have to face new developments.

In any case, we all have to realise that (curvature apart) there is scarcely a technical term of "classical" import in old-time physics which has quite the same import in the transfigured physics of to-day.

And, as things are, the interested onlooker may find some diversity of opinion among his expert leaders. He well understands that the old-time distinction between "matter" and "energy" is no longer regarded as a radical difference sundering quite diverse kinds or modes of physical being. But, taking "matter" on these terms, he may ask: Does the presence of matter induce a "curvature" of space-time; or is that which we call "matter" just an incident due to a specialised wrinkle in this curvature? It is for experts to say. It is for them to tell us whether, so long as the mathematical treatment is sound—and this the outsider must take for granted—the philosopher is free, as things are, to accept either hypothesis.

What I seek, however lamely, to emphasise is the astonishing transformation—nay more, transfiguration—of this elaborately constructive realm of modern mathematical physics. How different it is from the world of naïve perception from which the plain man, the philosophical onlooker, and the physicist himself sets forth!

That world was a world of appearance from the point of view of the observer. From this, under what I spoke of as transformation, we thought we could get at a "real" world of (Newtonian) physical objects. What has happened since then? We have been led, step by step, into a transfigured realm of conceptual thought vouched for, under observation and experiment, by a new and heretofore unsuspected array of appearances. Appearances? Yes, still appearances from the point of view of the physicist *as*

observer or from that of some supposed observer, perched, let us say, on some suitably attenuated event-particle speeding onwards at a velocity of, say, nine-tenths that of light. To such an observer there will be the appearance of that which awhile since was called the " Fitzgerald contraction."

I see no good reason why the plain man should find any special difficulty in accepting this appearance. He has for long been familiar with changes of " sound-appearance " dependent on the velocity at which he approaches, passes, and recedes from, another cyclist who is ringing his bell; familiar too with analogous phenomena in the visual field, where difference of " colour appearance " depends on relative velocity of approach or the reverse. As appearances these are on the same footing as the Fitzgerald contraction. And, under space-time, compensating changes in time-lapse can readily be conceived and accepted.

It may be said that in the phrase " from the observer's point of view," as it is used in writings on relativity, there is no implication of mental perception on the part of any actual or supposed observer, for that would take us outside the closed system of physics. For " appearances," therefore, we should substitute some such word as " records." Thus records on a photographic plate are included as well as records on the retina of the eye. And then it may be said: When you start with naïve perception, what you mean by appearance from the observer's point of view is that, for example, the penny *looks* elliptical. This, no doubt, is so from the psychological point of view. But the whole story may be told in physical terms if the human body, with its organs of sense, be regarded as a multiplex recording instrument. On these terms the elliptical appearance of the penny is—or, as I should say, is co-related with—the elliptical record on the retina. And in this sense the phrase " from the observer's point of view " has the same meaning whenever it is used within the closed system of physics.

One more point calls for brief notice. In passing from naïve perception to the transformed world of classical

physics—the plain man's real world—the aim is to get rid of all idiosyncracies of the point of view of this or that observer. This, too, as I understand, is the aim of relativity. Notwithstanding so much that is relative when this or that frame of reference is under discussion, the goal is to reach a space-time system so transfigured that all idiosyncrasies of this or that point of view are eliminated. Hence, strange as it may sound, the ultimate aim of Relativity is to get rid of all relativity—to reach a purely geometrical interpretation in which one may regain that touch with something, in a sense, absolute which seemed for awhile to be lost.

This interpretation, dealing as it does with the high-speed behaviour of minute event-particles, demands, as we are told, the acceptance of some non-Euclidian geometry. Here the plain man may ask one further question. When we deal with physical objects in the old classical sense, and with low speed velocities, say under twenty miles per second (a little above that of the earth in its orbital course), what percentage of difference will it make in our measurements if we discuss matters on the old-fashioned basis of the classical geometry of Euclid? If it be, say, ·000,000,001 per cent., may we not disregard, as negligible for the purpose in hand, a difference so minute?

§ 6

We are to deal in the pages that follow with the world far less radically transfigured than the world of relativity into which we were led in the last section. Why, then (it may be asked), introduce even so meagre and so obviously inexpert reference to this world? Because, whatever else it may be, it is a world to which there is *mental reference* on the part of those who seek to interpret it in accordance with the order of nature; and because notions of "space" and of "time" will again and again be in evidence as we pursue our inquiries.

Stated in crude form, we all start, let us say in childhood, with the world of perceptive reference in mental regard. In

this regard one may call it the world as yet untransformed. In this regard, later on, this world becomes for us the transformed world of reflective reference. Still later on, it becomes for some of us the world transfigured under the illuminating concept of relativity. But it is still, in mental regard, the world that has being in the field of someone's reflective reference.

We deal with these worlds of reference, this, that, and the other, under abstraction, as the physical world. The abstraction here is from the someone—the physicist as interpreter—so as to concentrate attention on the somewhat—the physical world as interpreted. So far the abstraction is legitimate.

Revert, however, to our bracket of relatedness. Then we have [someone in relation to somewhat]. And the questions arise: Is the someone what he is independently of his relation to the somewhat? Is the somewhat that which it is independently of the someone (or, let us say, anyone) who interprets it?

Whatever the answers may be, these questions are not asked "under abstraction." Question and answer presuppose that there are relations both physical and mental from neither of which does one abstract.

In our bracket we have [someone: in relation to: somewhat]. If we concentrate attention on "in relation to," we must ask: In *what* relation to? To that end we may proceed on the method of legitimate abstraction. The physicist abstracts from mental relations, that he may attend to physical relations. For him "in relation to" is "in physical relation to." Hence for him, both the someone and the somewhat are clusters of physical events. The someone, *as interpreter*, does not come within his closed system of physical events. So long as he keeps within his domain of abstraction such mental relations as there may be do not come within his purview. He may believe that such relations there are. But it is no part of *his* business to say what they are, or what part, if any, they play within the

bracket of relatedness. If he chance to say that they play *no* part, he steps outside his physical "universe of discourse." If he say that whether mental relations be present or absent, this makes no difference to the somewhat (no longer taken in abstraction), it is not as physicist that he pronounces judgment, but, let us say, as philosopher of the new-realist school. My point is that as expert in physical science he pronounces judgment of weight and value in matters physical; only if he be also an expert in mental science is his judgment in matters mental of like weight and value.

Now some of the experts in physical science—I do not say all of them, but I think an increasing number of them—not only abstract from mental relations, but abstract also from agency in any form—certainly in the form of dramatic explanation. They abstract from "force" and "cause" if either of these words implies agency, dramatic or other.

So long as I can remember, and that takes me back many years, there has been discussion as to the validity, in natural interpretation, of the concept of force as that which has operative efficiency. I heard W. K. Clifford discourse thereon; I heard T. H. Huxley denounce it as "pseudo-scientific realism"; and now I read in Mr. Bertrand Russell's *Analysis of Matter:* "We must not conceive 'force' as an actual agency, as the older mechanics did; it is merely part of the method of describing how bodies move" (p. 77). Meanwhile, I have heard and read much on the other side of this prolonged controversy. May I not, then, say: Let us abstract from force in this sense and see whether we cannot get along without it?

There has been, and still is, no less controversy as to the sense in which the word "cause" should be used. My belief is that the concept now embodied in this word is of dramatic origin. In primitive times everything that happens was explained as due to some agent who acts with purpose—if not a human agent, then some agent other than human, however he might be named. I believe that at least a soupçon of this dramatic implication is still carried

by the expression " causal efficacy " or " the operation of some cause to which the effect is due."

Be that as it may, I submit that, under legitimate method, one may abstract from the concept of cause in any sense which implies agency in any form. Under abstraction—and all admit that in some sense science is " highly abstract "—this does not imply denial of efficient causality. It implies only acceptance of the sound maxim : Keep within your universe of discourse. May I in the pages which follow speak in terms of relatedness and not in terms of causation ? It remains to be seen whether on these terms I can express my meaning in comprehensible form.

I stated above (p. 33) that I was led through a tangle of perplexities to a relational interpretation of space. In like manner I was led to a relational interpretation of cause. In the one case I had to abandon the notion of space as universal container. In the other case I had to abandon the notion of cause as universal pusher or puller—the driving force which makes events go.

It may be helpful in concluding this chapter on relatedness if I re-state (*cf. Mind*, vol. xxxviii., N.S., No. 150, p. 209) how I came by a revised notion of what cause was to mean for me. I do so rather crudely with, no doubt, some reading of my present attitude into the past history of him who was I.

More than half a century ago, as a beginner in science with prior interest in philosophy, he had to ask himself : Cause, what is it ? He was somewhat embrangled in the difficulties that arose through the use of the word " cause " with more than one meaning. Still he fancied that he might take *efficient* cause to mean something like this. There are in our complex world quite a number of pushes and pulls of many sorts and kinds. Events are on the go. There is something that makes things go or alters, in this way or in that, the manner of their going—something that veritably pushes or pulls. The efficient cause is that which pushes or pulls. But it seemed to him that this efficient cause which

pushes or pulls, in *the sense intended*, always conducted its operations behind the scientific scenes. And he wondered whether what was said to be busily at work behind these scenes was of much use to him in the business procedure of science. Observable pushes and pulls; Yes. But this something behind the scenes! Is it any good to him *in science?* He harboured grave doubts.

He seemed to get along all right without it when he discussed the pull of the engine on coaches duly coupled up, or the push of the rails that deflected the course of the train round a curve, and so on. Mechanical states and conditions seemed here to suffice. But what about crystallisation? So far as he could gather from what they did, and what they said about it, men of science dealt here with a complex set of subtle pushes and pulls, physical states and conditions. They did not ask: What efficient cause is operative? If—apart from the concept of Divine agency—some of them with philosophical leanings did so, the reply they gave, and bade others accept, came to this. The efficient cause of crystallisation is the agency of crystalline force. This opened up a wide prospect of agencies or efficient causes severally underlying all the so-called forces of nature.

Among these forces of nature is gravitation, widely regarded as presenting a test example. Here, in terms of efficient cause, the operative agency to which the observed pull is due is, we used to be told, the agency of the force of gravity. Is not that, it may be said, what Newton taught? This is questionable. Newton did speak of "active principles." But speaking as a man of science, he said: "The cause of gravity is what I do not pretend to know." There has been much further discussion of gravitation since Newton wrote these words to Bentley. What said Huxley with regard to operative agency or efficient causality in this test example? (See *Essays*, vol. v., p. 114). And, nowadays, what says modern science under a searching re-examination of the data? Does modern science discuss gravitation in terms of efficient causality, or in terms of space-time related-

ness? In terms, as I understand, of the latter, not the former. (*Cf.* Eddington, *The Nature of the Physical World*, *e.g.*, p. 119.)

Thus gradually I—who in preceding paragraphs was he—have been led to the conclusion that, in science, the concept of efficient causality is out of place. To put it bluntly, this concept is always useless and sometimes mischievous. Anyhow, my belief is that, in science, there is no need to ask: What pushes or pulls?

How, then, do things work out? Here, let us say, is a cluster of natural events in which some change in the manner of their going occurs. The man of science seeks to express in suitable generalisations what, under statistical treatment, he and others observe in this and in all like cases. To that end he describes what happens in some selected instance. He then pursues his inquiries in such wise as to ascertain the internal " state " of the cluster of events, and the " conditions " external to the cluster. Here description, inquiry, and generalisation based thereon, are in terms of relations. I submit, therefore, that, in view of the procedure of the man of science, one may say: Any change in the manner of going of the cluster of events under investigation is interpreted by him in terms of relations within it, and relations between it and other events outside it, where within it and outside it constitute a co-related whole.

CHAPTER III

MENTAL RELATIONS

§ 1

I PROPOSE in what follows to drop the word " causal " and retain the word " effective." The word " effective " in this usage is adjectival to relations, and means that when effective relations are present something happens ; there is some change in the behaviour or the " go of events."

If physical relations are in this sense effective under natural interpretation ; and if we seek to give a natural interpretation of what happens when mental relations are present ; what valid grounds are there for hesitation in saying : Mental relations are in like sense effective ? Of course, there must be good presumptive evidence that relations of this kind are within the given field of relatedness, together with relations of the physical kind. But does anyone—even a left-wing behaviourist—entertain a shadow of doubt that mental *relations* (I stress the word " relations ") are often present within that field ? He may deny that they are effective—in other words, deny that the course of events is different in and through their presence. I believe that they are effective. Hence my belief is different from his. And there for the present we must leave it.

I shall seek hereafter to apply the concept of emergent evolution to that which we speak of as mind. On this understanding I submit for consideration a relational interpretation of mind. On this understanding we still keep within our canon of interpretation (p. 22). We must, however, so state it as not to exclude any kind of relations. It will run : Given such and such a field of relatedness, physical and mental ; this is the behaviour we observe in

others, and this is the experience we have in so behaving ourselves. One must rest content for the present with the somewhat ambiguous expression " the experience we have."

It follows that one may speak of mental relations as effective as freely as one may speak of physical relations as effective. What this means is that if certain changes in the course of events are observable, or experienced, only when certain specific mental relations—perhaps at some high modal level—are in being ; whereas no such changes are observable, or experienced, when such relations, at this level, are not in being ; we have just as good grounds for regarding these mental relations as effective, as we have for regarding physical relations as effective. Of course there are difficulties, on any theory, in showing how things work out. I shall have, in the sequel, to face them, on my theory. But is there, thus far, aught discrepant with " the plain verdict of common sense " ? Does not the so-called plain man say something like this ? Let us take our stand on the bed-rock of fact with the minimum of theoretical superstructure ; however you or others may account for the fact, the unquestionable fact is that mind does count in the affairs of human life. But that, otherwise phrased, is just my contention in saying that mental relatedness is effective. All I claim, so far, is that, in the conduct of human affairs, mental relations there are ; and that in their presence—always on my theory in co-relation with certain modes of physical relatedness—there is some change in the current course of events.

I said that the expression, " the experience we have " is somewhat ambiguous. But, I take it, most people will understand what I mean when I say that we have in some way experience of mental relations in our conduct of affairs, and that we attribute or " impute " like experience to other human folk. This may be illustrated by taking some familiar episode in one's daily routine.

I got up from my chair awhile ago and left the room for lunch. I have just returned and picked up the thread of

what I was writing. Meanwhile I have seen things, touched things, tasted things, heard things. At the bidding of sensory experience I have behaved in sundry ways with awareness in so behaving. I was hungry ; now I am hungry no longer. After lunch I craved for a smoke ; I have now taken steps towards the attainment of satisfaction. All this, and the like, can be explained—dramatically, as I put it—in terms of purpose. I was acting throughout with some end in view.

But just now I am not concerned to explain this little episode in such dramatic terms. I am concerned to interpret it in terms of mental relatedness in accordance with the order of nature. Purpose I do not deny, nay freely admit. It implies end in view ; selection of means to its attainment ; subsequent outcome partially concordant with precedent end. It implies desire at the outset, some measure of satisfaction in partial fulfilment. All this calls for interpretation in terms of mental relatedness. Dramatically we start with purpose in order to explain what happens ; in natural interpretation we search for the conditions under which purpose plays its dramatic part in human agency. Dramatically purpose comes first ; in natural interpretation the mental conditions of purpose come at long last alike in the individual development and in the racial evolution of man. What are these conditions ?

Since what happens, even in so familiar an affair as I have chosen for illustration, is very complex, we must try to get down to what seems to be essential. When one sees things, touches things, tastes things, there is what I shall speak of as mental *reference* to these things. When one imagines things, or remembers things, to these " things " too there is mental reference. When one hears things, or says things—hears a good joke or tells a dull story—there is mental reference to these " things " also. The word " thing " here has varying signification. It means " somewhat to which there is mental reference." These somewhats may be arranged in an ascending order ; for example, somewhat

seen or tasted may be assigned a lower status than somewhat imagined or remembered, and this in turn a lower status than somewhat conceived or thought of. So, too, there may be ascending modes of reference to these somewhats. We shall consider them in the third section of this chapter.

The question here arises whether the somewhat to which there is reference is physical or mental, or perhaps in part mental and in part physical. Since there is difference of opinion, this is not the place to discuss it. Leaving this question open for the present, let us take " reference on someone's part to somewhat " as a distinguishable kind of mental relatedness.

In the course of the episode I have chosen for illustration there was, then, abundance of reference on my part ; to somewhats seen, touched, tasted, and so forth ; to somewhats imaged, expected, remembered ; to somewhats that were the subject-matter of conversation during lunch. I trust this suffices to show what I mean by mental reference without going at present into further detail.

But I was seeing, touching, tasting ; imaging, expecting, remembering ; attending to the topics discussed at table. I was playing my knife and fork, and behaving in other ways. I was feeling on the whole pretty fit notwithstanding occasional twinges of rheumatism.

All these 'ings, and such others as might be included in a much longer list, I propose to group together as instances which imply a kind of mental experience distinguishable from that of reference. I shall speak of it as *awareness*.

As a verbal matter this involves a restricted use of the word " awareness." On leaving the room I saw the door-handle, grasped it, and so turned it as to release the catch. Now some would say that I was aware of the handle which I saw and touched, aware too of a slight resistance to my turning it. On these terms the expressions " awareness of " and " reference to " mean much the same. Both centre on the somewhat. I shall not use the expression " awareness

of " in this sense. " Reference to " suffices to express what I mean. Under the restriction of which I hereby give due notice, I shall speak of " awareness *in* "—for example, in seeing, or touching, or grasping; in remembering, or attending; in feeling fit, or the reverse. On these terms " reference to " is centred *on* the somewhat, but " awareness " centres *in* someone. Thus we have " objective reference " and " subjective awareness " as distinguishable kinds of mental relatedness.

I speak of them as kinds because I know not how else to designate them. I may be asked, however: Do you regard them as relations differing in kind in the same sense as spatial and temporal, or physical and " other than physical " (p. 26) relations differ in kind? The answer to this question might lead one down to " metaphysical " depths which we need not here attempt to plumb. It must suffice then to say that, however we name it, the distinction seems to be unique in its character, and *may be* universal in its range. Has not Professor Alexander, in plumbing the depths, spoken of time as the mind of space, and of space as the body of mind? In any case, spatial and temporal relations are so intimately co-related as to lead us to hyphen them as space-time. Some philosophers urge, in effect, that we should discuss, under hyphen, object-subject. May it not suffice then for our present purpose to think in terms of a hyphen and to symbolise as reference-awareness? On both sides of the hyphen there is a hierarchical series of ascending modes —for example, modes of awareness in perceiving with correlative modes of reference to that which is perceived.

§ 2

In what has been said above it was hard to keep the physical relatedness, from which we were abstracting, out of the picture. We took for granted that eyes, finger-tips, palate, and the organ of hearing, were in some way stimulated; that muscles and perhaps glands were in some way

excited to carry out their functions within the body. We took for granted physiological integration or organisation of processes many and various in organs and tissues and cells. We took for granted that mental reference to the door-knob is co-related with influence from a cluster of events in physical relations to my body.

We took all this for granted so as to concentrate attention on mental relations as such—so as to distinguish therein objective reference from subjective awareness. We are now to introduce into a re-adjusted field of attention physical relatedness, not with a view to giving a detailed description of any physiological process, but to the end of considering the nature of the co-relation of such processes, taken in the most general sense, with modes of experience, taken in like general sense, within the living organism as hyphened body-mind.

To this end let us now take for granted such physical influence from without as there may be; take for granted, too, such objective reference as there may be. We abstract from this "kind" of mental reference; and that leaves us with awareness as the other "kind" of mental relatedness. But we no longer abstract from such physical relatedness as obtains within the body. Nay, rather our aim now is to focus attention on the nature of the co-relation of physiological process with mental awareness. On these terms we are here and now to keep wholly *within* the living organism as body-mind.

Within the body are thousands of closely inter-related processes, physiological and bio-chemical, which play their parts in physical fellowship in such wise as to render the body a living body. My belief is that there are a like number of modes of awareness which play their parts in mental fellowship in such wise as to constitute an organised or integrated system of subjective awareness. This unitary system is the someone in mental regard.

Nowadays one hears not a little of "one-to-one correlation." I, too, believe in a one-to-one co-relation. But in

the present context what this means is that with each item of physiological process we may hyphen an item of subjective awareness.

We need some suitable word by which to name this special type of co-relation of mental and physical as diverse kinds of relatedness. That which seems to me most suitable is "concomitance." As naming the co-relation of physiological process with awareness, it differs widely from "parallelism" in the commonly accepted signification of that word. Under parallelism the stress, as I understand, is on reference, not as it is here on awareness.

What, then, for us here and now, is concomitance to mean? It implies that this special type of co-relation obtains only within the organism as body-mind, and is that which is symbolised by the hyphen. It means that there is one course of events within the organism; just one, though these events are always in two-fold relatedness, physical and mental, diverse in kind yet inseparable, but none the less distinguishable under abstractive analysis. Taken in detail it means one-to-one co-relation of this or that physiological process, say in each living cell in the body, with this or that factor of awareness as contributory to mind, your mind or mine—more strictly you or me as concrete instances of mind. Taken as a whole it means all-to-all co-relation—concomitant co-relation of the two "kinds" of *fellowship*, mental and physical; concomitant co-relation, too, of ascending modes within each kind. It means, then, that, within the organism as an integral whole, there are thousands of events which run their course in substantial unity; that each event, in physical relations to all the others, contributes to living—to the life of the organism; that each event in "other than physical" relations contributes to subjective awareness—to the subjective mind of the organism; and that the two kinds of relatedness, with ascending hierarchy of modes, are co-related, as a whole and in intimate detail, in that special way which calls for some such distinctive name as "concomitance."

In brief, my belief is that life in physical regard and subjective awareness in mental regard are, as I phrase it, concomitant. Neither has independent existence or being apart from the other. Neither is before or after the other. Neither is elsewhere in spatial relation to the other.

If it be said that this is a " two-aspect " hypothesis, it should be noted that, thus far, the two so-called aspects are physiological process and awareness, not physiological process and something to which there is reference. Remember that thus far we are abstracting from such reference as there may be, reserving it for consideration in due course.

Let it be clearly understood that in formulating my belief in the concomitance of life and awareness in an ascending hierarchy of modes it is *my belief* to which I give expression. I cannot adduce more than presumptive evidence that accompanying the life of each cell within my body there is awareness, however lowly in mode. All I can say is that I deem it so highly probable as to justify the attitude of belief. Too speculative a probability, it may be said, for practical folk. Is that wholly so ? If the evolutionist think it is so, I ask him three questions. Do you believe that in an unicellular organism, such as an amœba, there is some measure of awareness that " accompanies " its life ? Do you believe that a multicellular organism, such as a man, is a fellowship, as I put it, of such cells ? If you say Yes to these two questions, then why should you regard it as speculatively improbable that, accompanying the life of each cell in the human body, there is, so to speak, amœbiform awareness ?

Here my own belief rests on a basis of inference that runs from life to mind—from life of which I know somewhat through observation, to modes of cellular awareness that I do not pretend to distinguish in my own experience. But there are modes of awareness which I can readily distinguish in my own experience. These were sufficiently illustrated in what I said of the luncheon episode. I believe that every one of these was concomitant with a subtle interweaving of physiological processes in my brain. Here the

inference, admittedly based on presumptive evidence, runs from mind to life—from the mind that I know in experience to modes of relatedness in the brain that cannot be observed as they run their course. This belief may be erroneous. Others do not share it. But this is my belief. In espousing it I do not stand alone. As such I give expression to it under concomitance.

§ 3

In the foregoing section we have been dealing with the someone. Without denying that the acts of this someone may be, and as I think should be, explained dramatically in terms of purpose, my aim was to interpret this someone in terms of relatedness. He is " living " and " minding." As living he is an organised system or fellowship of physiological processes. That constitutes his life. As minding he is an organised system or fellowship of modes of awareness. That constitutes his mind in subjective regard. My belief is that life and mind, since they are inseparable, constitute one system of natural events under concomitance.

I have, however, distinguished subjective awareness from objective reference, and distinguished them provisionally as different " kinds " of mental relatedness. But in the foregoing section we took for granted such objective reference as was co-related with some at least of the modes of subjective awareness. Let us now concentrate attention on objective reference ; and, to simplify matters, let us restrict our attention to objective reference in so far only as it centres on " objects " in the external world beyond our bodies. That excludes here and now reference to the seat of twinges of rheumatism in muscles or joints within my body. What we are to take for granted now is such physical influence as reaches specially attuned " receptors " in the body from these external objects. But here we cannot merely take for granted the 'ings of subjective awareness ; for here with each 'ing is a correlative 'ed under reference.

Permit me to resort to analogy in an attempt to picture what is unpicturable. Permit me to speak of " arrows of reference " on the understanding that any such arrow is diagrammatically to symbolise some mode of reference to somewhat on the part of someone. Then the shaft of the arrow represents some mode of relation of one to the other, say under perception. Its pointed end is embedded in the somewhat ; its feathered end is embedded in someone. Under perception, for example, the point is on that which is perceived ; the feathered end in someone perceiving. I hope this analogy may serve its purpose in this brief and preliminary survey of the salient facts in respect of reference. Sometimes I shall speak from feathered end ; sometimes at pointed end. This ought not to give rise to confusion of thought if it be remembered that the shaft of relationship connects the two ends. Hence sometimes one may speak, so to say, in shaft. When we talk of " perception " it is often the shaft of which we are thinking ; but when we talk of " a perception " we may mean that which is perceived at the arrow-point, or we may mean awareness in perceiving from the feathered end. The arrow analogy may thus be of service in so far as it enables us to ask in any given instance of relatedness under reference : In shaft ? At this end, or from that ? Which do we mean ?

It may be said that, in terms of this analogy, only a much too simplified account can be given of the complexity of objective reference. But is that necessarily so ? The complexity must frankly be admitted by all those who make any pretence to be in touch with the facts. Wherein does it lie ? Partly in the convergence of so many arrows on to the somewhat in which all their points are embedded ; partly in this also, that there are different sorts of arrows—modes of reference at point, modes of awareness from feathered end—that thus converge on the somewhat. What, then, should we do ? Under distinguishing analysis we should single out the several arrows which converge on the somewhat. Under distinguishing analysis and classification we

should try to ascertain what different sorts of arrows there are.

Let us, then, proceed to ask: What differing modes of reference, converging on the somewhat, are there? At present we ask this, and nothing more than this. We are to keep within a field of reference. The somewhat is just somewhat to which there is reference on someone's part. It links up with other such somewhats in an organised system of objective reference. By this I mean an actual system of reference on someone's part. The dining-room in which we lunched is now vacant. Is it in my actual field of reference? Yes; in so far as I am now thinking of it. It was not a minute ago when I was not thinking of it. If you say: There it is all the time whether anyone is in it, or thinking of it, or not, I may agree with you. But we are then going outside someone's actual field of reference. We pass beyond our present universe of discourse. To modify Mill's phrase, we are talking about "permanent possibilities" of reference. I am not here and now dealing with "permanent possibilities," nor am I asking what this means. Let us, then, restrict our attention, irksome as it may be to do so, to actual and not, in some sense, possible arrows of reference.

Then I submit that we may distinguish three sorts of arrows—no doubt, under further analysis, more than three, but, broadly and generally, at least three. There are *reflective* arrows. Of them the feathered ends are in someone thinking, valuing, admiring, appreciating, speaking of with significance. Their pointed ends lie in somewhat thought of, valued, admired, appreciated, significantly spoken of. It is questionable whether organisms lower than man have any such arrows in their quiver.

But they, and we too, have good store of *perceptive* arrows. Now to say that their feathered ends are in someone perceiving, and their points in somewhat perceived, gets us no further. Suppose, however, that you had no reflective arrows in your quiver. You would make a poor show as a

man. But you could behave unreflectively with much nicety in your physical relations to surrounding sources of influence. There would still remain in your mental quiver a serviceable sheaf of perceptive arrows.

Next suppose that even these were denied you. Would you have any arrows left ? I think you would still have left the arrows of purely sensory reference. You would still have visual, tactile, auditory, olfactory, gustatory arrows, and some others, in purely sensory regard, though in the absence of perception, begotten of behaviour, their points would not converge on anything definite. All would be like an unlocated scent in the air to which there is sensory reference only ; for location, here, there or elsewhere, comes with perception. I shall speak of them as *percipient* arrows. They are disclosed under distinguishing analysis. They seem to be of a special sort ; not reflective ; not even perceptive ; at a lower level of reference.

I do not anticipate that the results of my analysis, thus summarily stated, will carry conviction. We shall have hereafter to reconsider them in concomitant co-relation with physiological processes at the feathered ends of the arrows.

In the affairs of ordinary life, all three sorts of arrows are convergent on the same objective situation. I watch, let us say, a friendly game of billiards. I say perhaps : " Cannon and pocket off the red ; five ; game." Arrows of reflective reference. I see the balls rolling over the table. Arrows of perceptive reference. I have sensory acquaintance with white, red, and green ; with soft thuds and sharp clicks ; which under reflection and perception I refer to balls, baize, or cushion. Arrows of percipience. All converge on this objective situation. But under distinguishing analysis the arrows are of at least three sorts.

§ 4

So long as we keep consistently within the field of reference we are not yet troubled with questions with regard to permanent or transient possibilities. Such possibilities, so

to speak provocative of reference, are often spoken of as qualities; and we may discuss whether they belong to or reside in the somewhat which is provocative of reference, but is not within any field of reference.

There lies before me a small tray for cigarette-ends and ashes. I admire it as a beautiful bit of work. It has economic value as wrought silver. It has, for me, sentimental value as the gift of a dear friend. Reflective arrows impinge on it when it is thus in my field of reference. It has shape and size under reference. Perceptive arrows impinge on it when I perceive it. The tray has characteristic silvery sheen. Percipient arrows impinge on it when in the visual field. Does the colour-sheen belong to it whether it be in sight or not? Do the shape and size belong to it whether anyone perceives it or not? Does economic value reside in it irrespective of someone who wants to buy it? Does sentimental value reside in it wholly apart from me? These are questions, with perhaps different answers, which are open to discussion. But they do not arise when we keep within an actual field of reference. Within any such field, it suffices to say: To one and all of them there is a mode of reference at the time being—reflective, perceptive, or percipient; probably in all three ways. The tray is a centre on which many arrow-points converge. What else it may be with abiding or transitory "qualities," is another story.

Another point here calls for passing notice. While I was writing about the ash-tray and using it for illustration, with reflective reference to its illustrative value, I did not keep my eye on it all the time. But all the time fleeting images of it were coming and going and coming back again. As images they were predominantly perceptive. The point for notice now is that, as images, I include them under the heading perceptive. These arrows of reference are of the perceptive sort.

It may be said that the word "perception," in its naïve sense, commonly signifies a central core of stimulation

evoked by some external influence and a supplementary "fringe of meaning" in some way associated therewith. But so long as we keep within the field of perceptive reference we have naught to do with stimulation under external influence. That is part of the story of physical relatedness co-related with reference. Without denying that there is a purely mental difference in arrows the points of which are embedded in something actually seen, and in those which impinge on supplementary meaning or free images, one may say that to both alike the reference is of the perceptive sort. And this applies also to reference of the percipient sort; to the red of the billiard-ball I see, and to the red that is in some way given in imagery under revival. In fine, the difference between "presentative" and "re-presentative" is, for the present, accepted as a fact which needs further interpretation. Our arrows of reference, as such, remain unaffected so far as classification under difference of sort is concerned. They are still reflective, or perceptive, or percipient.

If we may legitimately abstract from stimulation under external influence, since it belongs to the story of physical relatedness, may we also abstract from behaviour, since it too belongs to the story of physical relatedness? External stimulation is the outcome of physical influence *from* something. The outcome of behaviour is physical influence *on* something. I seek here to abstract from all physical relatedness, taking it for granted, that we may still restrict our attention to reference as a kind of mental relatedness. And I submit that, in the matter of behaviour, we may legitimately do this *in so far as* it belongs to the story of physical relatedness. But we must emphasise "in so far as." For behaviour is on the part of someone who behaves. It is concomitant with *awareness in behaving*. Furthermore, it is ancillary to reference. When on leaving the room I turn the handle of the door, I behave with reference to that something. May we not, then, exclude behaviour in so far as it is contributory to the story of physical influence and

none the less include behaviour in so far as it is, through awareness, contributory to the story of mental reference? Unquestionably it does contribute in very large measure to the story of reference.

§ 5

The better part of our experience in daily affairs is suffused with reflective reference, superposed on perceptive reference, as that is superposed on percipient reference. So closely are all three sorts of reference combined in the procedure of adult men and women that when we speak of human perception we have in mind, not naïve perception only, but this as it is more or less tinged with reflection.

By naïve perception, I mean that perceptive reference which we share with many animals, whether some few of them share with us reflective reference or not. I seek now analytically to distinguish the perceptive and reflective factors in that human perception in which both contribute to our experience.

Take some illustrative episode in this experience. That in the billiard-room will suffice. As we watch the game the perceptive reference is to a situation though it may centre on distinguishable things therein. There is a pattern of such reference, and, if there be anything doing, a changing pattern. Within us, as we see the movements of the balls, there is a changing pattern of behaviour. We focus our gaze upon these movements, and follow them with our eyes. But in mental regard this ocular behaviour is with perceptive reference to the objective situation. It is essential to spatial location.

Reflective reference is to a system in terms of which the changing situation is interpreted. Changes in the perceptive pattern are interpreted in accordance with a reflective plan. If we may speak of the world of naïve perception as our perceptive world, then that world is transformed under reflective reference. We think and commonly talk in terms of a world transformed. The infant before he can think or

talk, and most animals—to give some few of them the benefit of a doubt—live in their world of perceptive reference prior to transformation, though *we* speak of their world in terms of *our* transformed world. When we seek to *interpret* what happens in our own perceptive world, as such, we can do no otherwise.

An oft-told tale needs little more than a brief reminder. The facts are familiar enough. But my use of the word " transformed " may give pause. To that I shall return in the next section.

When from this end of a billiard-table you watch a ball roll down the table, it perceptively diminishes in size till it reaches the further cushion, then increases in size as it returns. " Apparently and just a little," you may say. You substitute your word " apparently " for my word " perceptively." We need not so far quarrel over that. But I question your " just a little." Take photographs and measure up diameters. Then you may see reason for substituting: " Not a little." You may, indeed, be surprised to discover how much it is. Through custom and habitude you think of the ball as retaining all the while the one size which you have learnt to attribute to it in the systematic plan begotten of reflective reference. That, you think and say, is its " real " size. And you so discount the purely perceptive difference as to say " just a little," which is frankly untrue to naïve perception.

There is no less difference under vision between shape in the perceptive situation and shape for reflective thought than there is in the matter of size. And the two are closely interconnected under reflection.

This end of the billiard table, near which you stand, is *perceptively* much longer than that further end. That is how you see it. That is not how you say it or think it. You think of the table as rectangular, with this end and that end equal in length, and you speak of its " real " shape in these terms.

Under reflective comparison of situation and system, time

too is implicated. You roll a ball across the breadth of the table at your end, and bid a friend to do the like at the further end. Your big perceptive ball takes, let us say, just the same time to traverse your long end as does his little ball to traverse his short end. Perceptively the movement of his ball is much slower than that of your ball, which has " to hurry up " so as to cover its far longer course. Reflectively the rate of motion is the same in each case, and you most emphatically say so.

It comes, then, in brief to this, as stated—and it must be so stated—in reflective terms : Perceptive space-time (if one may so speak of it reflectively), as given under naïve perception in this or that situation, differs from the reflective space-time which is a construct of systematic thought. In terms of the latter we interpret the former, and we do so in such wise that we feel justified in saying : Given the one ; such is the other. Difference there is, but there is no discrepancy ; for both fall within that comprehensive construct of reflective thought which we speak of as the order of nature.

We have been dealing with visual perception, taking visual percipience for granted. So, too, may we deal with tactual perception, taking for granted tactile percipience. Be it remembered that, in my interpretation, the genetic order under reference is, first percipience, then, as I think emergent thereon, naïve perception, and, thereafter, reflection with further emergent characters. At the lowest of these three ascending levels arrows of percipience afford the sensory data of primary origin in sight or in touch. They afford no more. They do not afford the data requisite for spatial or temporal reference. These data are afforded by arrows with feathered ends embedded in the system of subjective awareness in respect of *behaving* with reference to something. This at least will be my contention at a later stage of our inquiry.

Subject to this hypothesis tactile percipience contributes to, but does not suffice to constitute, tactual perception with spatio-temporal reference to a changing situation.

There is also that added factor of behaviour which renders touch " active."

It is through active manipulation of that somewhat with which our more general behaviour, as we move about, brings us into contact or keeps us in touch, that its shape and size are felt out. Hence it is through behaviour that they are felt out. Genetically, only through behaviour—that is, through mental reference co-related with physical behaviour —is there shape or size for tactual perception.

But matters are complicated in daily affairs. When the shape and size of one of the billiard-balls is felt out by touch, it is probably at the same time explored by vision. And it is through behaviour of the eyes that it is explored. Visual percipience, the purely sensory factor, contributes to, but does not constitute, visual perception. There is also that added factor of behaviour which renders sight " active." Genetically, only through behaviour is there shape or size under perceptive reference in vision.

Since, then, feeling out by active touch and exploration by active sight are alike rooted in behaviour; since this behaviour is with mental reference to something felt out and explored; since they commonly proceed side by side within a short span of time; and since the behaviour of " hand and eye " have been progressively co-ordinated under naïve perception from the early weeks of our life; visual shape and size, and tactual shape and size have become closely inter-related in our dealings with reference to this and that situation.

To all this reflective thought has reference when we seek to interpret perceptive reference. Let us now concentrate attention on reflective reference.

§ 6

I spoke in the foregoing section of a world transformed under reflective reference. What I mean is that, if we start with a perceptive world of reference, given through active

touch and active sight, as little children and animals are acquainted with it in naïve perception, then what we reach in reflective thought is a world so different that one may speak of a transformation. Even the perceptive world of touch is different from that of vision, though behaviour in the one becomes so closely co-ordinated with behaviour in the other, that, through convergence of place-and-time-reference on varied situations, it becomes practically one, even for naïve perception.

Under reflection it is much more thoroughly unified, and this largely through the conspicuously reflective process of measurement in ways more and more delicate and more cunningly devised. Through measurement we enter a world of physical science which (apart from relativity) has thus been transformed for all purposes of reflective reference in daily affairs. And since these measurements or " pointer readings " are in practice founded on tactual perception, even when they are applied to photographic records of things at a distance, we are prone to suppose that they open up a pathway to " reality," in some wise independent of reference, and one more sure than that of direct vision with its troublesome variations of perceptive size and shape at varying distance and from different points of view.

It may be so. I am not asserting that it is not so. But if it be so ; if we interpret the physical world in terms of " pointer readings " ; if this physical world be in some sense " real " quite independently of those who devise and use these pointer readings ; are we not, thereafter, starting forth in our interpretation from a world transformed ? Do we not, thereafter, invert the whole position ? Do we not *then* say that it is the perceptive world that is transformed " in appearance," and therefore so far departs from "reality" ? Is not this the attitude of that highly transformed person who claims to represent common sense ? I am not now speaking of further transfiguration for some of us under physical relativity. Of that common sense has to make the

best that it can. I am speaking of quite ordinary things. There is, let us say, what we call a square box in my room. For none of us is it perceptively cubical for vision. It varies in shape from our several points of view. Even under touch-manipulation it is not *perceptively* four-square. Only through measurement, however crude, is it reflectively four-square. And yet we confidently assert that it *is* " in reality " four-square. In doing so are we not starting from a world transformed ?

This transformed world we think of and speak of as the order of nature. Have I not myself done so ? Have I not throughout been seeking to interpret in accordance with the order of nature ? Yes. But I have said (*e.g.*, p. 3) that this order of nature is a construct of reflective thought. And I still say, with due emphasis, that, as such, it has being *under reflective reference.*

Within this order of nature, however, mental relatedness has being no less than physical relatedness. And all reference falls under mental relatedness. Only under mental relatedness has physical relatedness being *for our thought.* Assuredly we cannot think of an order of nature without, in doing so, having reflective reference thereto. None the less, it may have abiding existence whether anyone is thinking of it or not. I firmly believe that it has. I firmly believe in a physical aspect of reality of which certain generalisations based on observation and experiment—based therefore on perceptive data—are true. But, with Mr. Alexander, I distinguish truth from reality. With him, I believe that truth is reality in so far as it is " possessed by mind," or, as I put it, reality subject always to reflective reference.

On these terms I can still keep within the universe of discourse assigned to this chapter, namely, *mental relations* to mental somewhats. I can still contend that, if I may so put it, our acquaintance with and knowledge of the order of nature is a self-contained, and, in that sense, a " closed," system, whatever may lie beyond it. I can still contend that, whether transformed or untransformed—and, if trans-

formed, whether it be transformed this way or that—the world around us is known only through arrows of reference, percipient, perceptive, or reflective, whose feathered ends are embedded in someone's system of subjective awareness.

In the foregoing chapter I sought to make clear what I mean by relational interpretation. It comes to this: Given any bracketed whole of relatedness in the generalised form [*a*R*b*], then *a* is what it is in relation to *b*, and *b* is what it is in relation to *a*; or, more picturesquely stated: When *a* and *b* are members in fellowship, each is thereby earmarked with a differentiating character. Hence, as Mr. Whitehead says: "An electron within a living body is different from an electron outside it by reason of the plan of the body" (*Science and the Modern World*, p. 111).

Mr. Whitehead adds: "This plan includes the mental state." That introduces the subject-matter of this chapter. Here we have within our bracket [somewhat R someone] where R is the relation of reference. My contention is that the somewhat is what it is in relation to the someone. Hence in so far as the physical world is known to us in and through reference it is thereby earmarked with a differentiating character. And it may be that since it is known to us only under reference we cannot say what it is "in itself" wholly irrespective of any such reference.

CHAPTER IV

Perception and Percipience

§ 1

The points of our imaginary arrows of reference are embedded in somewhat; their feathered ends are embedded in someone. What is the somewhat? If we follow the lines laid down in the last chapter, can one say more than: It is that to which there is reference on the part of someone? In terms of such reference it is described by that someone. Such a someone am I as a system of subjective awareness. I take it for granted that there are other such someones more or less like me; and among them I reckon, broadly speaking, all human folk—you, for example. I take it for granted that, as you read on, your field of reference will be, again broadly speaking, much the same as mine when I wrote. I frankly assume that yours and mine have enough in common to enable you, on that score, to understand what I say.

Let us suppose, then, that I see a ruby set in a ring on my wife's dressing-table. It is somewhat which for me has sentimental value; and probably for no one save for me has it just this sentimental value. It has economic value which, apart from the size of the gem, is enhanced by what connoisseurs appreciate as its beauty. These values in some way attach to the ruby as thus valued, otherwise we should not say that "it has" sentimental value, or claim that "it is" beautiful.

Now, notwithstanding its size and its beauty, I may harbour grave suspicions that, on certain representations of the jeweller, I gave for it more than it was worth. I am switched off on to some reflections with regard to the moral character of the dealer. Still it was seeing the ruby that

switched me off. Furthermore, I am now using this object of vision and of valuation on my part for the purpose of illustration. In this respect it is a centre to which my reflective thought is switched on. And so forth. The ruby is a target in which are embedded the points of many arrows of reflective reference. And, thus far, it just *is*, under reflection, a more or less organised system of these and sundry other such arrowheads.

Although there may be, and is, much more to be said about them, I ask leave to abstract from any *such* reflective reference; for I seek in this chapter to get down to those arrowheads which are of the perceptive and percipient sort, commonly taken together as sensory. We shall not be able, in discussing the matter from the human standpoint, to abstract from *all* reflective reference. But we need only introduce such reflective arrowheads as are embedded in that which we call the physical object as illustrated by the ruby.

Now when I said that it "has" sentimental value and that it "is" beautiful, what, you may have asked, is *it?* Is it not the physical object to which there is what you call perceptive and percipient reference? And does not that physical object exist, in some sense, whether any arrowheads of reference are embedded in it or not?

I confidently believe that it does in some sense exist whether anyone chances to perceive it or not, though just *what* it is modern science only knows. All that I say is that if no one perceives or thinks of it there are no arrowheads of reference embedded in it. What I firmly believe is that there is an existent order of nature which includes the ruby, the ring in which it is set, the dressing-table on which it now lies, and me as I sit at my desk in an adjoining room. It is on such belief that all my behaviour and conduct is founded —not, indeed, on such belief *only;* still, in the present context, on this essential factor in my system of belief. If the word "belief" give pause, I am content to say that I accept the order of nature, which includes both physical and

mental relations, as an hypothesis on which so to proceed as to try it out and judge whether it works.

My present theme is reference as a kind of mental relatedness within the order of nature. And what I am now concerned to emphasise is that if there be no reference there is no object *of reference.* But the word " object " is regrettably ambiguous. I freely admit that there are physical objects that continue to exist wholly independent of any reference to them on the part of someone. Hence a physical object need not be an object of reference. But it may be an object of reference. Then it is not only a physical object ; it is also a mental object. The object of reference is, so to speak, a synthesis of arrowheads. But if there be no arrows of reference there can be no arrowheads.

Of course it is easy enough to convert a physical object into a supposed object of perceptive reference if one introduces supposititious someones. One may say, for example, that the course of some planet, as a persistent physical object, is such as would be perceived if there were a great number of observers continuously watching it. Such a notion may be useful in practice, and something of the sort is probably in the mental background of most of us in ordinary affairs. No one is in the billiard-room to-night ; but I can picture myself there as if the lights were turned on. Here and now, however, I am dealing with reference on the part of someone actually there, and seek to get down to perceptive reference on his part. All this " as-ifery " is unquestionably reflective in origin.

Now the object of naïve perception is a synthesis of arrowheads of two sorts, perceptive and percipient. But the object of adult human perception is a synthesis of arrowheads of all three sorts. There are, at any rate, some arrows of the reflective sort if one may go by what the plain man says. When he says that the billiard-ball at the further end of the table is of just the same size as it was when it left his hand ; when he says that the sides of the table and the walls of the room are four-square ; he is

talking excellent common sense. But he is speaking of a world transformed by arrows of reflective reference.

Not infrequently he introduces into his statements the word " really." He says that the penny which for naïve perception is of varying shape is really round; that the railway lines which are perceptively, or " apparently " convergent, are really parallel. One knows quite well what he means. But he might find physical reality hard to define. Suppose one includes it in some such definition as this: Reality is all that there is in all the kinds and modes of relatedness that there are. On these terms the penny, seen from a certain angle is, from that point of view, really elliptical.

The plain man may introduce the word " true " with regard to some of his statements, perhaps to give added force to that which he asserts. Here a suggestion of Professor Eddington's may be in place. " I think," he says, " we often draw a distinction between what is *true* and what is *really true.* A statement which does not profess to deal with anything except appearances may be *true;* a statement which is not only true but deals with the realities beneath the appearances is *really true.*" Speaking of the FitzGerald contraction, he says: " The shortening of the moving rod is true, but it is not *really true.* It is not a statement about reality (the absolute), but it is true about appearances in our frame of reference " (in the physical sense of this expression). On these terms the plain man may say: It is true that yon penny is elliptical; but, beneath appearances, it is really true that the coin is a circular disc of bronze.

What am I driving at? This; that all these questions are of the reflective sort. Appearances, reality, truth, cannot be discussed save in a world transformed under reflection. I seek to get down to the naïve untransformed world that is lower in the evolutionary scale of reference. I want to strip off, if I can, every shred of the vesture of reflective thought that renders my world and yours trans-

formed. I want to disclose, so far as I can, perceptive and percipient reference as the baser alloy that was in being before the gold of reflective thought was incorporated therewith.

It may be said that this puts a severe strain on abstraction. We are bidden under abstraction to fix attention on what matters for the purpose in hand. The purpose in hand just now is to lay bare naïve perception. So we are bidden to strip off under abstraction all that matters most in adult human life. No doubt in adult human life it is hard to do this. In that life arrows of reflection count most. But even in that life there are also perceptive arrows and arrows of percipience. Should we not try to disclose their nature ?

There are, moreover, thousands and tens of thousands of animal " someones " that have in their quiver *no* arrows of reflective reference. I trust I do no injustice to the cow, the guinea-pig, the ostrich, the lizard, the frog, and the fish, if I place them in this category. In this category I place also the year-old child. But that, you may say, does him grave injustice. Anyhow, there are some animals that other folk than I regard as perceptive and percipient only. And, notwithstanding our adult garments of reflection which hide, even from ourselves, the naked minds they endue, we, too, are also perceptive and percipient. My aim now is to dig down to that naïve perception which underlies the transformed human perception of which in this chapter I have thus far been speaking.

§ 2

I distinguished in the foregoing section between a physical object and an object of reference. It is troublesome no doubt to have one noun for both ; but we must do our best to escape the ambiguity which thus arises. It should be noted that the word " object " is here used in accordance with the common acceptance of its signification, not in accordance with that as yet uncommon and philosophically

specialised usage which Mr. Whitehead has suggested. The ruby, I should say, is a physical object in the older classical sense of the word "physical." In so calling it, I trust I shall not be misunderstood. Nor, I trust, shall I be misunderstood when I say that, save when someone embeds in it arrowheads—reflective, perceptive or percipient—the ruby is not an "object of reference"; for it is an object, in *this* sense, only when there is reference to it on the part of someone. I run far greater risk of being misunderstood when I say that, unless the someone has attained to the level of reflection, there is, *for him*, no physical object.

It may be asked: Since for *us*, why not also for *him?* The reply is: Because *we* have reached the level of reflection, whereas *he* has not. Because *we* live in a world transformed, whereas for *him* the world is not thus transformed. It may still be asked: Is it not a pure assumption that *his* world is not thus transformed? I prefer to say that this is my belief, the grounds for which I propose in due course to adduce. One more question. You presumably proceed on some canon of interpretation; what is it? It is an evolutionary canon. I believe that in genetic order we find first naïve perception without any reflection, and thereafter such reflective reference as lifts naïve perception to the higher level of that which we may distinguish as human perception. This canon of interpretation runs: If an adequate account of the behaviour of someone—say an animal someone or an infant—can be given in terms of naïve perception, we have no grounds for assuming that the higher type of human perception which includes reflective factors is in being. Or one may state it thus: If the observed behaviour of someone can be interpreted in terms of a world untransformed, there are no grounds for assuming that *his* world has been reflectively transformed.

If, then, for an animal someone, say a guinea-pig or a goldfinch (I should say also for a one-year-old child), there are no physical objects with constant shapes and sizes, his world is untransformed. In common phrase, it is a world of

appearances only. It follows that for him there is no " real " (transformed) world distinguishable therefrom.

Note that I do not say that there *are* no physical objects, or that there *is* no " real " world (order of nature). I say only that there are *for him* no physical objects; there is *for him* no " real " world. *For him* objects of perceptive reference under vision just swell and shrink. *You* account for this by saying: The greater the distance of the real physical object, the smaller in appearance is the object of perceptive reference. And you may suppose that the guinea-pig or the goldfinch thus accounts for it. More probably you have not thought over the matter in terms of mind in animal life. But many people do suppose that the one-year-old child does, or at any rate can, thus account for it. I do not. This is a pretty complex outcome of reflection. I doubt whether even the three-year-old child can reflectively grasp this outcome.

But the perceptive animal or child can nicely adapt his behaviour to the appearances which constitute his untransformed world, among others to the swelling or shrinking of his objects of reference. Concerning that no question is raised. To put the matter very crudely: for the dog, under naïve perception, the cat over there swiftly swells or swiftly shrinks; this or that is for him linked up with appropriate behaviour. Rapid swelling; run away. Rapid shrinking; follow up. Of course there is much more—very much more —than this. But I seek to concentrate attention on just this.

We want to interpret this. But it suffices for the dog to behave with perceptive reference to what we distinguish as appearances. From the standpoint of animal perception and that of the little child, all visual or other appearances, as they come, are taken just as they come, and behaviour is conformable to these appearances. Interpretation of these appearances in terms of reality is our business as reflective beings, not their business as perceptive beings.

Now should we, in an evolutionary treatment of the

course of mental development, start from appearances and thus get to physical objects as " real " ; thus proceeding from below upwards ? Or should we start from " reality " and work downwards to appearances ? Should we start from the untransformed world of naïve perception ; or from the world transformed under reflection ?

I think that, as psychologists, we should start from perceptive reference and work upwards to reflective reference ; but that under the recognised conventions of logic, we habitually invert this order. My aim is to show that if we start, as we habitually do start as interpreters, from the platform of our transformed world, we say : While its real size and its real shape remain constant, the apparent size and the apparent shape of some object of vision varies with its distance from us and with the point of view. The question then arises : How do we get from the tidy world of reality to the untidy world of appearances ? From the genetic point of view the question is different : How did we get, in childhood, from the untransformed world of appearance to the transformed world of reality, with its constant physical objects ? In other words : How does reflective reference come into being ? That is the genetic question.

But genetically there is a prior question : How does perceptive reference come into being ?

For purposes of illustration I have briefly considered size and shape because the genetic question does here arise : By what process of mental development has there come about the passage from variability in these circumstances or those to constancy under all circumstances ?

A question in some measure similar, and in some measure different, arises in connection with that which I ask leave to speak of as *thereness*—location in place in the perceptive field of appearances. Let us distinguish this perceptive question from the reflective question concerning " assigned position " in a transformed world of reference. Place of location depends, as does apparent size and shape, on someone's point of view. But assigned position at any given

moment is in the physical universe—that is, in the world transformed.

The question to which we now pass is: How are we to account for this thereness as a distinctively perceptive mode of reference? How do we come to locate somewhat as there? On what relational foundations is place-location based? Is it based on visual percipience? Yes; but not *only* on visual percipience. It is based *also* on visual behaviour. Essential to place-location is the behaviour of the eye, or in our binocular vision almost from the first of the two eyes, as directed therewards. Without *this* there would be no thereness. Perceptive arrows of reference with their points embedded in somewhat *there* have their feathered ends embedded in someone thus *behaving* with suitable eye-movements.

Thus does one locate the ruby just there. Perchance it may be said: Behaviour is physical business; but you are roping it in with mental reference. That is so. And I seek in this chapter to keep strictly to mental interpretation. Some physiological interpretation will follow in due course. The question now is: When there is an arrowhead of reference embedded just there, have we at feathered end *awareness in behaving?* Surely we have. One has only to hold up a pencil-point at a distance of a foot from the eyes, in line with a medallion on the wall ten feet off, and focus to and fro, to have distinct awareness in so doing, with felt difference in eye-behaviour as focal vision passes from near to far and, more markedly, from far to near. No doubt there are other factors—"disparate images," for example, in us binocular folk. But there are always behaviour-arrows of reference—especially arrows of thereness—with feathered ends buried deep down in our awareness and points embedded in the object of visual reference.

A question far less easy to answer may here be asked: How comes it that, when arrows of visual behaviour and arrows of visual percipience converge on that which is the centre of perceptive reference—how comes it that there

then arises a new something that leads us to say with surprise : Lo, there ? I can only reply in two words : Through emergence ; adding perhaps two words more : through emergence *in mind.* This seems to be something in the order of nature (which includes all mental relations) that we must accept as we find it. Carried a step further all one can say is : Just as oxygen, with certain properties, and carbon, with certain other properties, combine to give carbon bisulphide with properties quite surprisingly different ; so do visual percipience and awareness in eye-behaviour combine to give that surprising thereness which we attribute to the object of perceptive reference.

I am pretty sure that many will say that the introduction of this magic word " emergence " explains nothing. It merely names what happens—what, as has been said above, " just comes " (p. 18). So be it. Take what I said in the foregoing paragraph on these terms. To get carbon bisulphide with its new properties one must have oxygen and hydrogen with their properties. So, too, to get thereness and what it feels like in experience, one must have percipience and behaviour-awareness and what they feel like in experience. If no oxygen as a component, no carbon bisulphide as a compound. If no behaviour awareness as a component, no perceptive thereness as we experience it. Percipience by itself does not suffice. It must combine with awareness in behaving to give perception of thereness referred to somewhat there—at arrowhead as I put it. The emphasis here, and in much that follows, is on behaviour—on the contention : No behaviour, no perception. That contention is not extravagantly speculative. It is a matter of presumptive evidence.

In naïve perception with thereness goes thenness. But apart from expectation of the outcome of behaviour, the thenness is primarily nowness. In what follows, however, I seek to combine them so as to get at what one may call the time-and-place of naïve perception.

Beyond moderate terrestrial distances precision in loca-

tion of the object of perceptive reference fades away, *because the difference in eye-behaviour decreases to a vanishing point.* But perceptive direction still remains. What I wish now further to illustrate is the distinction I have drawn between physical object and object of perceptive reference; or here in especial the distinction between the physical object under reflective reference and the object of vision under perceptive reference where they may be said to be co-present. We may take, therefore, an example pretty high up in human experience.

Let us start from the viewpoint of a world transformed under reflection. Suppose that, suitably equipped, one sees Saturn in the night sky. The planet as physical object and as object of *reflective* reference has an assigned position—say, 877 million miles from any someone that we know of. What is its localised place as an object of vision? Can one say more than: Somewhere out-therewards? But may one not add: Though the somewhere along the line of vision is perceptively indefinite, still the direction of thereness is for perception quite definite? Somewhere in that direction, one may say, is Saturn. Yes; but Saturn as perceptive object of reference under vision; not Saturn as physical object in the transformed world of reflective reference. Note that I speak of "assigned position" in the transformed world and of "place-location" in the naïve world of perception. If we use the word "location" for both, and the word "position" or "place" for both, ambiguity is sure to arise.

Furthermore, physicists tell us that, under transmission of radiant influence, it takes the light-waves some eighty minutes to reach someone and affect his retina at the "now" of percipience. When one says that one sees Saturn there and now, the events in the planet as physical object occurred more than an hour and a quarter ago. The line of perceptive reference to the located place of the visual object has definite direction to where the planet, as physical object, *was then*, not to its assigned position in the heavens at the "now" of

that reference. To put the matter briefly, the line of influence on the body in physical space-time and the direction under perceptive reference in the objective world of vision are, in this case, markedly divergent.

It is clear that no difference in method of interpretation distinguishes what happens when one sees Saturn from what happens when one sees the ruby. The only difference is that the ruby is much nearer and the time taken in the transmission of physical influence is much shorter—so much shorter that for all practical purposes it may be regarded as negligible. Hence, though in strictness we should say that in this case assigned position under reflective reference and located place under perceptive reference are very nearly, but never quite, co-incident, still we may treat them as if they were co-incident.

§ 3

Thus far we have taken percipient arrows of reference for granted. By percipient arrows I mean those, for example, of touch, temperature, taste, smell, audition, and vision. Their points are embedded in somewhat touched . . . seen ; their feathered ends in someone touching . . . seeing. The list is not exhaustive ; but it may here suffice. Even so, how great is the number of arrows it includes ! How much variety they present when one uses the plural of each noun and includes, under hearing, all sounds ; under vision, all colours ; and so on ! But they are all of one sort—that which I call percipient.

Why percipient ? Since the list is just that of our old friends the five senses, with temperature thrown in, why not " sensory arrows " ? Under suitable definition they may so be called. But, unfortunately, the expression " sensory experience " may include more than I include under percipient reference. In common parlance hunger, thirst, and fatigue are spoken of as modes of sensory experience. But they imply factors other than percipient reference only. In common parlance one speaks of motor sensations, those

which accompany behaviour. They, too, imply something other than percipient reference as I have characterised it.

To get down to what I mean by percipient reference *only* and *as such* let us ask: With what modes of physical relatedness are modes of percipient reference co-related? Clearly in all six of our salient modes of percipience—in touch, temperature, taste, and the rest—what is co-related is the influence of some physical object. By that physical object, we say, the someone's body, as physical object, is affected. Something happens in that body "on stimulation of receptors." What does happen we shall have hereafter to consider. But even at this stage of our inquiry we may give it a general name. Let me call it a "recipient event," since the body is recipient of physical influence through receptors. One may now say: Any percipient event as a mode of mental reference is co-related with some recipient event as a mode in which the body is affected under physical influence.

Those who are familiar with Mr. Whitehead's writings will here note that what I speak of as a recipient event *he* speaks of as a percipient event. *His* percipient event is the physical outcome of physical events "from a place to a place." My percipient reference is a kind of mental relatedness "to somewhat on the part of someone." *His* universe of discourse is the physical world as "a closed system"; mine is the mental world of objects of reference. If this be borne in mind there will be little difficulty in comparing his views and mine, notwithstanding that we use the word "percipient" in different senses.

What I call percipient reference, then, is co-related with some recipient event in the body entailed by the stimulation of receptors. And since many and various are the modes of stimulation of differing receptors, many and various, too, are the modes of percipient reference. But the arrows of percipient reference are, as I put it, all of one sort. They are just percipient arrows and no more. There are no such "sensory" arrows as raise percipience to the higher

level of naïve perception. Even if these be always co-present, they are, under distinguishing analysis, of a different sort. There are percipient arrows of touch, warmth . . . vision. There are no *percipient* arrows of thereness. Touch receptors, taste receptors, auditory receptors, retinal receptors subservient to vision there are. Specialised receptors which subserve location in place or in direction are unknown. More strictly, there are no such specialised *extero*-ceptors, in direct receipt of influence from the external world, as may be co-related with thereness.

I put it in this way, though in doing so I trench on biological interpretation. But apart from this question with respect to specialised extero-ceptors in the organisation of the body, there is a strong and, I think, growing trend of opinion in favour of Mr. Alexander's contention that, though our experience of thereness is " provoked in us through sensation, it does not follow, and is not the case, that it is apprehended by the senses " (*S.T.D.*, Vol. II., p. 143). " At the risk," he says, " of attaching a new interpretation to a much used and misused word, I shall call this mode of apprehension, in its distinction from sensation, intuition."

" The mind therefore does not apprehend the space of its objects, their shape, size, and locality, by sensation, but by a form of apprehension simpler than sensation." " The same proposition," we are told, " is true of Time, and of motion in which the space and time elements of external things are inseparably united . . . This apprehension, too, is not had without sensation, but is anterior to it " (p. 147). Let us here, however, confine our attention to thereness, leaving thenness for subsequent consideration. That leaves us with the claim that thereness and its derivatives are " apprehended " otherwise than through sensory percipience. This is now widely endorsed. It is accepted, for example, by Professor Norman Kemp Smith in his *Prolegomena.* And one frequently comes across such a statement as this : " Space may be, and I should say is, an object of non-sensuous apprehension, though no doubt sensation is

needed to stimulate us to the apprehension if it." (H. H. Price.)

There seems, then, to be a growing body of opinion that the spatial qualities which we attribute to physical objects under reflective reference are not disclosed through sensory acquaintance with the world of naïve perception. As I put it these so-called qualities cannot be interpreted in terms of percipient arrows only. Percipient arrows there always are. But there are other arrows of which one must render some account. It seems, however, that there is as yet no common agreement as to how best to render an account of them. Mr. Alexander invokes a special form of direct apprehension which he speaks of as intuitional. That means, in my phraseology, that there are, as he believes, specific arrows of intuition in co-relation with specific modes of physical influence. It may be so. But I am not satisfied that it is so. In any case I ask: Cannot the facts of experience be interpreted otherwise? As an alternative interpretation I suggest that it is through arrows of reference co-related with bodily behaviour that the spatial qualities which we attribute to physical objects are there, if not for percipience, still for naïve perception.

For naïve perception there they are. No one doubts that. The question is how they got there. The answer, I suggest, is: Through behaving therewards; that is, through bodily behaviour with mental reference to a perceptive object just there.

Thereness again! Yes; thereness again; for it is this that calls for interpretation. And clearly this that calls for interpretation is thereness, or change of thereness, in *place* within a perceptive field of reference, not *assigned position* in the world of physical objects; the world transformed under reflective reference; the "real world," if you like. In that world there are changes of assigned position to be discussed under *motion*; in a perceptive field of reference there are changes of place which one may speak of as *movement*.

We want here and now to get down to the perceptive

world prior to reflective transformation—the world as it is for the kitten that pats and plays with a golf ball; on the not very extravagant supposition that the kitten knows nothing of the most elementary physics—that for the mental outlook of the kitten there is no physical world under transformation. But *we* have reflectively to describe what *the kitten* unreflectively perceives.

In trying to describe the kitten-world of naïve perception may one say that what *we* call the ball, with what *we* call its "apparent" shape and size, is, for the kitten that lives in that world, a cluster of therenesses? And may one say that the movement the kitten perceives is change of place of this cluster? If so, how does the kitten come by its acquaintance with thereness and its perceptive derivatives? I submit that the kitten comes by this acquaintance through behaviour—through patting and playing with golf balls and the like.

You will perhaps say that this is too whimsically topsy-turvy. Surely the kitten first perceives something out there and then plays with it as thus perceived. Yes; but the kitten has already learnt not a few of the lessons of feline experience. How did it learn them? That is the *genetic* question. Note the emphasis on "genetic." How did the thereness of reference arise? What was its manner of origin at the outset of life, in the first instance, so to speak? I believe that the genetic answer is: Through behaviour; through patting and playing with things; through following their movements with the eyes, head, and body.

A strange doctrine! The kitten (and the human infant) does not, at first, learn to behave through perception of thereness; it attains to thereness-perception through behaving. The genetic order is not: First perceive and then behave. The genetic order is: First behave and then through behaving perceive. Thereafter follows in due course that reversal of the original order which is a turning point in mental development.

A strange doctrine! But what says Mr. Alexander in a

different context? He says: "All error in understanding what knowing is arises from holding the principle that our actions are determined by knowledge; that we first know and then act. All truth in these matters depends on recognising the opposite principle that we know in and through acting." (Lect. on *Art and the Material*, p. 19.) He does not, however, apply this principle—which I unreservedly endorse as a *genetic* principle—to thereness. I do. But in doing so I cannot claim his support.

My contention, then, is this: In the genesis of reference to perceptive thereness, behaviour-arrows with their feathered ends embedded in someone's awareness in behaving always play a part. Percipient arrows do not suffice. There are behaviour-arrows also. They combine (in emergent synthesis, as I think) to give spatial "quality" to the world of naïve perception.

§ 4

Towards the close of the foregoing section, and earlier, the genetic note became prominent. I said that the genetic order is first behaviour, then perceptive thereness.

Earlier in the section I found it difficult to characterise primary percipience without reflective reference to recipient events in the body of which the percipient knows nothing.

Now what goes on in the body falls for later consideration. Since, however, one cannot well proceed without some reference to it, a few words of very general import will here be in place.

Recipient events in the body are interpreted as the outcome of stimulation of extero-ceptors through some external influence under touch, temperature . . . vision. And, genetically, only through external stimulation are there any such recipient events in the story of the body with primary percipient reference on someone's part in the story of mind. The outcome of extero-ceptor stimulation is, then, bodily

recipience ; but the outcome of recipience is some response in behaviour. Primary percipience accompanies extero-ceptor recipience. This is followed by behaviour accompanied by behaviour-reference. This entails perceptive thereness. Note that I did not say in the last section that behaviour-reference precedes *percipience.* That is not so. I said that it precedes *perceptive thereness.* Just as, in the natural course of events, recipience precedes the outcome in behaviour, so, too, does percipience precede reference under behaviour ; precede, therefore, the thereness of perceptive reference.

On this showing percipient arrows come first. They are co-related with recipience under external stimulation. The very first time the retinal receptors of the newly born infant are stimulated under light influence there is primary percipience under vision. The very first time the gustatory receptors are stimulated in the mouth there is primary percipience under taste. In each case behaviour follows.

It may, however, be said that, in later life, there are thousands of percipient arrows when there is no stimulation of extero-ceptors. When the child sees a stick of chocolate there are percipient arrows under stimulation of the retina. But are there not also percipient arrows of taste though there is no stimulation of gustatory receptors till the chocolate is in the mouth ? Judging by one's own experience in such matters, there are. If so, we must make due provision for them as contributory to perceptive reference. May I speak of them as weak and derivative arrows of percipience to be distinguished from strong and primary arrows under direct stimulation ?

We shall have, in due course, to consider in what manner these derivative arrows, relatively weak, have origin in naïve perception. They play the leading *rôle* in that reversal of order which I said (p. 80) is a turning point in mental development. But unless we are to rest content to murmur the blessed word " association," we shall make little headway in interpretation till we have gained some reflective

knowledge of what happens in the hidden recesses of the body, and especially in the central nervous system.

However they may be interpreted, however named, what I speak of as weak or derivative arrows there are, and they must be reckoned with. In the naïvest of naïve perception they are always contributory factors. The object of perceptive reference is a centre on which three sets of arrows converge. There are (*a*) strong primary arrows of percipience under stimulation; (*b*) weak derivative arrows which come, as we commonly say, under "revival"; and (*c*) arrows of behaviour, under response, which give thereness to the centre of reference. To these three sets of arrows a fourth set is added under reflective reference. In this set is included reference to a physical object which may occupy a "position" in the transformed world of geometrical space-time more or less co-incident with, or in some measure divergent from, its "place" in the visual field of naïve perception.

§ 5

The feathered ends of all these arrows of reference are embedded in someone. They contribute to his subjective awareness in so far as he is referr*ing*—percipiently, perceptively, or reflectively. They do not *constitute* his system of subjective awareness. Were that so there would be nothing in that system save feathered ends of reference to that which we speak of as the external word. And there is much more in a system of subjective awareness than that. Still, it is reference to this external world with which we have been dealing in this chapter.

But what about the pointed ends of our arrows of reference? In what are they embedded? Clearly in that which we call the external world. Yes; but in an external world of reference and in objects of reference therein. Unless it be an external world *of reference* I should not feel justified in speaking of arrows of reference thereto.

The question then arises: Is this external world of

reference a mental world? In further detail: Is the percipient world—so far as it can as yet be called a world—is this mental? Is the perceptive world, with factors of the expected, mental? Is the transformed world of reflective thought mental? My reply is Yes; one and all are mental. They constitute someone's mental world of reference. In terms of my arrow-analogy it comes to this. The arrow-heads of reference, no less than the feathered ends, are mental. Both are in someone's mind—yours, mine, or another's. If in no one's mind, there is no reference.

This may seem at first sight to outrage alike common sense and scientific knowledge. But it does so, I submit, only if it be taken to mean more than it says, and to imply denial of something that lies beyond what it says. It may be taken to imply denial of the existence of the ruby, the ring, and the dressing-table if no one chances to perceive or to think of them. It may be taken to imply denial of the existence of an order of nature, and more especially a physical order, if it be not in the field of someone's reference thereto. But does it imply any such denials? I who made the statement at the close of the last paragraph believe in the existence of an order of nature and base all my interpretation thereon. This order of nature, I believe, was in existence long ages before any perceptive someone was in being. But in the course of evolutionary advance such someones have come into being. Within these someones (living organisms) there has been developed in ascending stages—percipient, perceptive, and reflective—something modally new in the order of nature—namely, that system of mental relatedness which I speak of as reference. But until there were someones there was no mental reference on their part; and until there was mental reference on their part there was no object of reference. There was then no belief which implies reflective reference on the part of someone who believes.

I do not say that there was no physical order of nature until these someones appeared on the scene. I say only

that not till then, and not till reflective reference came on to the scene, did this physical order of nature *come within the orbit of reference.* And I say that *within this orbit of reference* all arrowheads are no less mental than are the feathered ends in someone's awareness. Is it so very extravagant to say that within the field of mental relatedness there is nothing wholly non-mental ?

Note that if one does say this, keeping steadfastly within the orbit of reference, no such questions arise as : Is colour mental or non-mental ? Is thereness or shape mental or non-mental ? Is beauty mental or non-mental ? All alike are mental. There is no so-called " bifurcation of nature " so long as we do not stray beyond the orbit of reference.

Within that orbit I have endeavoured to keep in this chapter so far as it has been practicable. In other words, I have tried to deal with mental relatedness as such. But it was impossible to avoid all reflective reference to the physical relatedness with which mental relatedness is always co-related. The hyphen of co-relation in body-mind, or in (physical object)-(object of reference), marks the boundary between the treatment of mind and of that which lies beyond mind. In the case of the concomitant co-relation of body-mind, the emphasis falls on *within* the organism as exemplifying both kinds of relatedness, physical and mental. Just as all modes of mental relatedness are within the mind, through reference or in awareness, so, too, within the body are all modes of physiological relatedness concomitantly co-related therewith.

CHAPTER V

Biological Interpretation

§ 1

In the foregoing chapter I tried to keep as close as possible to that kind of relatedness which I speak of as reference. But it was not possible to keep awareness on the part of someone out of the picture ; for any arrowhead of reference to somewhat has its feathered end embedded in someone. I tried also to keep close to purely relational treatment. No hint was introduced of dramatic agency, not because I deny dramatic purpose in all that happens, but because its discussion would have introduced concepts *d'un autre genre.* The question was not raised : Why should there be in nature such a kind of relation as reference ? There it is ; and we must in science loyally accept nature as we find it, asking questions only with regard to the relational " how " of what we do find.

Though I dealt chiefly with perception and percipience, it was impossible to avoid some reflective reference to biological interpretation, if only for the sake of illustration. Here, in this chapter, biological interpretation is to be in the foreground of the picture, but always with affairs of the mind—modes of mental relatedness—in the middle distance ; for mind in its connection with body is our theme.

The note that was struck at the end of last chapter was this : Just as all arrows of reference—not feathered ends only, but pointed ends also—are within the mind, so, too, within the body are all physiological processes co-related therewith.

Much stress was laid on behaviour, and on awareness in behaving. It is clear that bodily behaviour calls for

biological interpretation. But it was claimed that such behaviour, centred on some physical object, entails mental arrows the points of which are embedded in the object of reference co-related with that physical object. Nay, more; it was claimed that only through behaviour, and genetically no otherwise, can percipience be raised to the level of perception—for example, in the salient matter of thereness. For percipience, analytically regarded as such, there is no thereness.

The emphasis laid on thereness begotten of behaviour and essential to perception may have seemed to be only a whimsical fad on my part. That is not so. It is the hinge of my interpretation of the genesis of perception. I make no apology, therefore, for reverting to it.

Try to look eye to eye with me in the matter so as at least to grasp my point of view. Start, if you like, with that which I speak of as the transformed world of physical science. What is very much of it about? Is it not space-time? And is not this the framework, or the inter-related set of frameworks, within which thereness—or nowadays there-thenness—falls for consideration? Is it not, therefore, a pertinent question—nay, more, a cardinal question—how did this there-thenness arise in the evolution of mind? It is not, of course, a physical question. But can the physicist, if he have in his make-up some tincture of the philosopher, afford to ignore it? His aim is, let us say, to elucidate physical reality; and he keeps to his task. But has he nothing to do with that naïve perception which lies at the root of all his observations?

What, then, is my position? What am I driving at? First, my position is that all thereness and all changes in thereness are known only through behaviour; for example, through behaviour in visual "focussing," through the behaviour of the eyes as they move in their sockets, some head movements, and so forth. Secondly, my position is that it is to the biologist we must turn for an interpretation of behaviour.

In a little further detail; one sees the billiard ball rolling down or across the table. Every change of thereness lengthwise depends on changes in focussing and accommodation; every change of thereness cross-wise depends on lateral movements of the eyes in their sockets, of the head on its axis, and so on. Not, of course, dependent *only* on this and the like. All the time there are changes in percipience. It is a terribly complex business. Whose business? So far as changes in the body are concerned, it is that of the biologist. It is for him to interpret them.

And what am I driving at? The difference between perceptive thereness in the relatively untransformed world little above that of naïve perception, and reflective thereness in the increasingly transformed world of physical thought.

Revert to the Saturn illustration (p. 75) considered as a stage in the progressive transformation. The direction of thereness, dependent on eye behaviour, is perceptively given. Not so the location in place of the planet, because it lies beyond the range of eye adjustment for distance. For naïve perception Saturn is just somewhere out-therewards now.

What says the physicist dealing with a comparatively early stage of the transformation? He says that since Römer we have to deal with the velocity of light of which naïve perception knows nothing. In accordance with Professor Eddington's distinction (p. 68), he may say: For us, as well as for you, it is "true" that a Saturn event happens somewhere out-therewards now; but for us what is "really true" is that the event happened some eighty minutes ago, and not out-therewards in your perceptive sense, but in an "assigned position" out there—quite definitely there—in our world transformed under reflective thought. Your perceptive there-thenness is true enough for us as for you; but our reflective there-thenness is really true, which yours is not. With our knowledge of physical relatedness, however, we can say: Given either we can tell you the other.

Using the word "real," then, in this sense, as applicable

to a world transformed under reflective thought, what is real is the system of physical relatedness as thus far formulated in accordance with what one may call the rules of the game.

Nowadays, however, there is much further transformation (I have called it transfiguration) still in progress. There are a great number of high-velocity events till lately unknown. Modern physicists have discovered, and are discovering, new rules of the game as it is played in the system of physical relatedness, which incorporate all that is really true in the old rules, but incorporate also fresh nuances of that which is no less really true. It comes down, therefore, to this. There-thenness under relativity is different from there-thenness in pre-relativity days; but with the resources of refined mathematics at command we can still say: Given our system of space-time relatedness, such and such will be your perceptive there-thenness. Thus we come back to naïve perception; and there still remains on our hands the question: How does its perceptive place-reference arise in the course of mental evolution and individual development? That is the question for us here and now.

What does the physicist say? He may say: That is a psychological question, and is no concern of ours. We deal with physical relatedness as a closed system. Yes; but you start with naïve perception and to naïve perception you return. Your photographic records and the like are no doubt physical and within your closed system. But someone perceives them. What part, if any, does this someone play? Merely that of an onlooker, you say. He just takes under "direct apprehension" what is given to be thus apprehended. On that basis the mind starts forth on its task of interpreting what is taken under direct apprehension.

That seems clear enough. But just one more question. With regard to this direct apprehension, are you talking physics or something else? Mind, you tell us, is outside your closed system. But here you accept an hypothesis with regard to the relation of this closed system to the mind.

Clearly the discussion of *this* hypothesis is no part of your business *as physicist.*

§ 2

The aim of the physicist is to get his closed system. Within it, of course, are all physical events in the living organism. These, however, do not interest him much. They are so complicated that it is convenient to relegate them to a suspense account for consideration at some future time, so that current attention may be concentrated on the world external to the body. That, at the present stage of inquiry, constitutes in the main the closed system of the physicist.

He wants, then, to get at this closed system of physical relatedness in abstraction from any so-called interference on the part of mind; that is, apart from any mental relatedness, if such there be. To this end obviously his simplest course is to accept the hypothesis of direct apprehension, according to which all that the mind does is just to apprehend what is there to be apprehended. That leaves mental relatedness out of the picture; or, to vary the metaphor, it merely allows mind to sit in the stalls, pit, or gallery, and witness the play enacted on the physical stage.

This may be good enough for the physicist. For him perception of, say, place and movement and all the thereness business we have discussed, is founded on direct apprehension; and there's an end on't. Through direct apprehension there are disclosed or revealed what are traditionally called the " primary qualities." Give us *them* as thus revealed, and we physicists can go ahead with our task.

And then the genetic psychologist and the biologist working hand in hand intervene. They do not all speak with one voice. Is it likely that they should do so if they are severally at work on *their* problem as each physicist is on *his* problem? What I here ask is that to my voice shall be given at least a courteous hearing.

I try to dig down to the roots of the matter. I am at present concerned with early stages of mental development in co-relation with phases of bodily development, on the hypothesis of concomitance the salient features of which I have already indicated. And what is my finding thus far? That the naïvest of naïve perception is *not* primary; that genetically it follows percipience; that it is nowise simple, but is a compound of arrows of percipience (which *are* primary), and arrows of reference, begotten of behaviour. I invert the traditional order of primary and secondary. *The traditional order*, I say, *is transformed, not original.* Percipience, then, for me, is genetically primary. Let us see whether biological interpretation throws light on an old problem seen perhaps from a new angle.

There are modes of physical influence on the body many and various. To each is attuned a specialised set of receptors, such as retinal receptors in the eye, those of the organs of Corti in the ear, and so forth. These are, or are closely connected with, recipient nerve endings. What happens when they are stimulated? Much happens. But in the interpretation I offer, this is essential. I must state it rather dogmatically. When a group of receptors in some sensory organ is so stimulated as to give a recipient pattern there runs through the system of nerves and brain a pattern of nerve excitation, to a pattern of effector nerve-endings in muscles or glands, giving rise to some pattern or form of behaviour. At the genetic outset, on the first occasion of any such stimulation, the nerve-route *is definitely prescribed* through the inherited build of the nervous system.

Thus, using the first half of the alphabet for receptor-stimulation, and the rest in reverse order for effector-distribution (which entails behaviour), we have, say, $(a - z)$, $(b - y)$, $(c - x)$, and so on; but, at the outset, and on the first occasion, never $(a - y)$, $(c - z)$, or $(b - x)$.

Is this a little difficult to get hold of clearly? Perhaps at first. But is it more difficult to grasp than much that one is told day by day by the physicist? Biological interpreta-

tion, even if it be simplified to the utmost, is not easy to understand without some serious effort. What, you will ask, does this (a — z)-business mean ?

Let me give a simple illustration from bird life. I had under observation some plover-chicks. They were moving about freely in their pen. I fired (out of sight) a toy pistol with detonating cap. Every plover dropped motionless with outstretched neck and " chin to ground." Here the sudden sound-shock was the receptor stimulation, say d. There ran (as we infer) through the nervous system an excitation giving rise to an effector pattern w. Thus we have (d — w). The crouching posture is the behaviour entailed by the effector pattern. *It is quite definitely prescribed.* I have seen it in every plover-chick I have had under observation. With pheasant-chicks the posture is quite different. They just stand arrested. What is prescribed depends on the inherited organisation of the nervous system and body of this or that species of animal.

We are to take, then, any (a — z) or (b — y) or (c — x) as a whole. Since each starts with some receptor stimulation, let me, for the purpose in hand, call it a *recipient line.* At the receptor end it is reflectively referred (by us) to some physical occurrence in the physical world which we commonly speak of as its cause. Receptors which are thus stimulated by something in the external world are called " exteroceptors." I have used the word in a liberal sense so as to include receptors in the mouth and in the cavities of the nostrils—the gustatory and olfactory receptors co-related with taste and smell.

My hypothesis is that concomitant with any recipient line as a whole there is an answering arrow of percipience. Why, I know not. Such is the constitution of nature. We must loyally accept that kind of mental relatedness which I speak of as reference, just as we loyally accept that kind of physical relatedness which may be spoken of as influence—for example, the influence of light on the retina. We must accept, too, that " external " reference outwards, which is

co-related with recipience of influence from the physical world beyond the confines of the body.

I am well aware that a difficulty here arises with regard to the arrow analogy. It may be said: You admit that your percipient arrows have " external " reference ; and yet you deny that this reference is to anything *there ;* for " thereness," you say, comes only at the higher mental level of perception. What can you mean ? I mean that arrows of percipience as such, though they have external reference, point *nowhere in particular.* The direction of external reference is quite indefinite. There is, so to speak, for percipience just a sound, just a scent, just an all-embracing yellowness under santonin. Where is it ? Percipience cannot say. The answer to " where " is " there " ; and thereness is a matter, not of percipience, but of perception.

What, then, *can* percipience say ? If percipience has no dealing with thereness, with what does percipience deal ? In one word, with *thisness.* We must strip off all reflective classification ; we must strip off all perceptive reference. What then remains ? Just the thisness of this mode of percipience, this and no other, with all the definiteness of its thisness ; just this which, under reflective classification, is a percipient arrow of touch, of temperature, taste, smell, hearing, or sight. And each of these thousands of percipient arrows has as its bodily concomitant one of those thousands of recipient lines initiated under external stimulation.

And then, since we who seek to interpret are reflective folk, we must e'en ask: Where is the recipient line ? In reply we must trace its devious course in the body along neuron-routes from one end to the other. And what is it ? A train of highly-specialised biochemical events. What is the mental concomitant of this or that biochemically specialised train of events ? This or that mode of percipience.

But these biochemical events are within the body. *Beyond the confines of the body they are not yet in being.* If, then, colour percipience is concomitant with biochemical events

of a very highly specialised type, until *they* are in being *it* is not in being. Colour therefore—and the same holds good for any type of percipient reference—is not in the ruby, let us say, as physical object beyond the confines of the body; it is referred to the object of reference which is, for our reflective thought, co-related with that physical object.

I put the position as briefly as possible. Of course some of my friends, the advocates of direct apprehension, tell quite a different story. The colour, they may say, is in the physical object awaiting apprehension until someone chances to apprehend it. That is their story, not mine. And it is mine, not theirs, I am trying to tell in such wise as to render it, if I can, at least comprehensible.

§ 3

I said rather dogmatically—so far as what is admittedly an hypothesis may be labelled dogmatic—that at the genetic outset and on some first occasion (if in so complex a business one can get down to some first occasion) we may apply the formula $(a - z)$, $(d - w)$, and so on, where the first letters stand for a pattern of recipience on stimulation, and the other letters stand for some pattern of effector distribution which takes effect in a definite form of behaviour.

As salient examples of recipient stimulation I took touch, temperature, taste, smell, hearing, and vision. I might well have included pain also, in so far as this is initiated by the stimulation of specialised nerve-ends. Then we should have also to include percipient pain-arrows having primary reference to the external world. Here, however, it may be said that no one dreams of referring pain to the object of perception. It is referred to our feelings in subjective awareness. That, no doubt, is so when we come to years of reflection. But it may not be so—I think it is not so—in early childhood. One can only go by what children say. When a brave and tender-hearted little fellow said: "Pin hurted; poor pin"; he certainly seemed to refer the pain

to the pin which we sophisticated folk speak of as " its cause." Many other such cases can be adduced by those who note carefully the early language of childhood. And as *we* attribute the pain we feel to the pin as " its cause," so do we attribute certain behaviour, such as swift withdrawal, to the pain as " *its* cause." If, however, we take the recipient line as a whole, we should include the effector distribution no less than the receptor pattern. It is not yet behaviour ; but it is part and parcel of that which begets behaviour ; and it is the recipient line as a whole that has its percipient concomitant.

Having now indicated the nature of percipience as concomitant with recipience in my usage of these words, we have next to consider what light may be thrown on the passage (as I think emergent) from percipience to perception, if we utilise to the full a biological treatment of behaviour. I have already urged that one factor in naïve perception—that which one may call the place-factor—demands for its genetic interpretation what I have spoken of as arrows of behaviour. As we proceed we shall, I think, find that it is through arrows of behaviour that all the complexity of the elaborate meshwork of perception is subtly interwoven.

One who attempts to render a sufficiently comprehensive and, if it may be, comprehensible account of what happens is here faced by a difficulty in exposition. We have seen that a receptor pattern, say b or c, initiates a prescribed recipient line which ends in an effector pattern, y or x. There follows a definite form of behaviour. Let us symbolise this by a capital letter. Then our formula will run $(b - y)$Y or $(c - x)$X. But Y may be far more complex than y ; X far more complex than x. This is because y or x, as the case may be, " touches off " (to borrow a Transatlantic expression) a highly elaborate and closely integrated *system of behaviour* Y or X interpretable in terms of what is technically called a " proprioceptive system." Behaviour of pretty nearly the whole body may be implicated in such a system. Should you, on getting out of bed, chance to step

on the " business end of a tin-tack," you may have sad occasion to realise how widespread throughout your body is the capital letter of proprioceptive behaviour.

But the matter for emphasis, here and now, is that such behaviour is genetically prescribed. It is not perceptively acquired—learnt, as we say. It just comes on some first occasion because that is the way in which a living organism of high rank in the scale of life is biologically built. So the point for us, here and now, is that all this must be included in any adequate treatment of behaviour.

Your further interpretation, then (it may be said), is to be frankly and avowedly behaviouristic. Much depends, however, on the sense in which this word is used. It will be well, therefore, to devote a little space to the answers to the question : What does behaviourism imply ? Even this is too wide and general a question to be discussed in brief space. So, for our present purpose, it is better to ask more narrowly : What does behaviourism imply *with special regard to the concept of cause ?* I here use the word " cause " because in this context it is very much in evidence.

I speak with diffidence with respect to the opinions of others lest I should misrepresent them. I think, however, that Mr. J. B. Watson, who has done so much to render the word " behaviourism " current coin of speech (in his sense), might say : I base my interpretation on scientific causation as the *confrères* of my youth conceived it. Thus conceived it is physical causation. My life-long polemic against psychology as commonly understood—and especially introspective psychology—is against mind as causally effective. Whatever so-called mind may be, it is never causally effective.

To this Mr. W. McDougall (if I report him correctly) replies : I, too, advocate a doctrine of behaviour, fully entitled to be called behaviouristic, according to which mind is the centre of efficient causality. Mind is not only a cause ; it is *the* cause in all that pertains to living organisms, since it is mind which animates the body. To the question : Who

did it ? in this context the answer is always : The Mind of that living organism which behaves did it.

If I do not misrepresent the opinions of these distinguished opponents I have the wrong-headedness (from their point of view) to agree with neither of them. I must therefore plough my own furrow, even if it be a lonely one. So long as I am dealing, as I am here and now, with those modes of relatedness which, as I think, fall within the domain of science, I have no dealing with efficient causality (agency). What Mr. McDougall includes I exclude. But, in terms of relatedness, mental relations, I urge, have every whit as rightful a claim to be ranked among effective relations (p. 45) as have relations of the physical kind. What Mr. Watson excludes, I include.

§ 4

My thesis, whether it be called behaviouristic or not, is that through the biological centring of behaviour on some physical object as a source of influence on the body there is gradually developed in the course of individual life an object of perceptive reference co-related with that physical object.

Let us, however, try to get down to some observable facts, say in the human infant, the nearer the outset of life after birth the better. He has been, of course, for some months a going concern ; but at birth he goes with a difference owing to new modes of stimulation in patterns which entail new forms of behaviour. Among these new modes of stimulation, absent before birth, are those which give rise to recipient patterns in the retina. Let me try, then, to tell very briefly a plain tale of the salient steps in the development of his vision.

In an infant a few days old the wandering gaze, as yet no more than seemingly aimless staring, is seen to cling to some softly illuminated thing. Let us assume that this is the first occasion in this child's life on which this instance of $(a - z)$ occurs. If it be a typical occurrence in the case of all infants, one can say : Given such a pattern of retinal recipience ; such is the form of behaviour we observe.

Later on, as the days pass by, there are distinguishable steps in the further development of vision which thus becomes more and more definite. The eyes, with some head-movements, in due course turn to, are accommodated for, are focussed on, and follow the thing in its motion if this be not too fast.

In the infant it is seemingly rather a slow business. But we must take the facts of observation as we find them. And we must remember that human vision, like the human perception to which it so largely ministers, is a very recent and very complex outcome of progressive evolution in one specialised branch of the mammalian stock (see Professor Elliot Smith's "Bowman Lecture," as reported in *Nature*, 28th April, 1928).

In any case the facts under observation afford instances of what I call a plain tale. Some such sequence as I have summarised is just a description of that which observably happens. Here interpretation is reduced to a minimum. But *our* aim is to interpret. Such interpretation is in terms of hidden events within the infant. Broadly speaking, it will be either physiological or psychological. The former I call body-story; the latter mind-story. My contention is that these two stories deal with one set of events in co-related physical and mental relations.

On the basis of the above plain tale our aim, then, should be to tell a body-story of what happens when the infant's eyes cling to, turn to, are fixed on, and follow the thing; a mind-story of how there comes to be an object of visual perception co-related with that thing.

Now what happens in body-story, so far as it can be told, is very complex. The more one knows of physiology the better can one realise how amazingly complex it is, and how much still remains to be learnt. And yet the net result in plain tale seems pretty simple—first the clinging of the gaze, then movements of the eyes on stimulation of the retinal margin so as to bring the thing to the retinal focus; later on, fixating, and following the movements of the thing.

Without departing far from this plain tale, the inferable order of development seems to be: first retinal patterns of stimulation initiating recipient lines accompanied by a specialised (visual) type of percipience; secondly a form of behaviour prescribed by the effector distribution of the recipient lines in accordance with the inherited organisation of the body—this, too, accompanied by such awareness in behaving as shall minister to the development of an object of perception.

But is there, as yet, for the infant, such an object of perception as may justify us in using this expression? I think not. At any rate, there is a further step which now calls for emphasis. Not until some *other* mode of stimulation, and some *other* form of behaviour centre on the thing, is there a *second* line of percipience which, so to speak, intersects the first line and thus gives the next stage in the mental construction of an object of perceptive reference. Let another form of behaviour be handling of the thing on touch.

We must take an example at a much later stage of the child's development—some four months or so later. According to Miss Milicent Shinn's observations on her niece, the plain tale is on this wise (see her *Biography of a Baby*). Eye-behaviour and hand-behaviour centred alternatingly on the same thing placed conveniently within reach; but for some time quite independently. The gaze did not centre on or range over the thing while the fingers were playing with it. Then, at the age of, say, four and a half months, came a critical phase at which, pretty suddenly, visual percipience and eye-behaviour, tactile percipience and hand-behaviour, so "intersected" at what thus became a common centre of reference (with thereness) that thenceforward it was for the child much more definitely, but still incipiently, an object of naïve perception. Thenceforward, in common parlance, the sight of the thing suggested finger-play; handling of the thing suggested ranging of the eyes over its contour. May one not say that the field of vision had acquired *meaning* for that of touch; touch had gained

meaning for sight ? If so, it is through behaviour that the object of perception becomes a centre of meaning under reference.

Thuswise, as I believe, we reach that stage in the genetic process which introduces what seems to be essential to the evolutionary passage from percipience to perception. For now, with the advent of meaning in mind-story (which I think has the " tang " of something emergent and new), we have an instance of that which is picturesquely spoken of as " revival of past experience." In whatever way we interpret that which observably happens, this " revival " (in some sense) on later occasions of some part at least of what has happened on previous occasions, itself calls for interpretation.

§ 5

If we keep as near as we can to plain tale, what we observe as we watch the child of some four to five months is that, when the critical change has occurred, on sight of a given object there is handling ; on touch there is ranging of vision over it through the behaviour of head and eyes. Thus there seems to be a partial *cross-over* of behaviour under stimulation. Whereas before the critical change " this " mode of stimulation gives " this " form of behaviour, and " that " stimulation gives " that " behaviour ; after the critical change " this " in some measure gives " that," and " that " gives " this." In generalised and symbolic terms on the early occasions near the outset of life we have $(a - z)Z$, and $(b - y)Y$, but on later occasions we have $(a - y)Y$, and $(b - z)Z$. That is what I mean by cross-over.

This is just my way of putting what seems to happen in the child's body. It is for the expert to tell in more technical terms what provision there is in some part of the brain for such cross-over from one initially prescribed neuron-route to another. Here is an intricate episode in body-story which as yet lacks, no doubt, finishing touches. It is common knowledge, however, that in the brain there is provision not only for a great number of prescribed neuron-

routes from specialised receptors to their effector distribution ; but also for connecting or linking one such route with another. In our illustrative example the prescribed route leading from retinal stimulation to eye-behaviour, and that from touch stimulation to hand-behaviour, are at first conducting the traffic of recipience independently but in a liberal sense simultaneously. Such, worked out in further detail, seem to be the conditions under which a connection between them is opened up for further traffic. It is already a possible connection on structural lines since such is the inherited mode of organisation of the brain. But only when both routes are in traffic is it functionally opened up for further cross-over traffic. What is spoken of as a " synaptic " connection is established. And when this occurs in that which is technically called a " conditioned reflex," the observed behaviour of the child is different from that which was in evidence before the synaptic connection between the two recipient lines of traffic was established.

In some such way as this, here reduced to a bare outline sketch, one may tell in body-story what seems to happen under partial but reciprocal cross-over. The two forms of behaviour, that of the eyes and that of the hands, are both still in plain-tale evidence. But they are no longer independent ; the two forms are inter-related ; more and more do " hand and eye " behave in harmony as prescribed, and cross-over traffic is systematically reorganised in the course of individual life.

§ 6

Turn now to mind-story, for that is our chief concern in dealing with perception. Here I suggest that, co-related with physiological cross-over, there is mental cross-over from, say, the visual to the tactual line of percipience.

Consider first one line of percipience, say the visual line. Remember that the co-related line of recipience in the nervous system has, as its prescribed outcome, behaviour of the eyes—though, no doubt, also a prescribed posture of the

head and body. Remember, too, that there springs into being perceptive thereness for vision. Similarly, in respect of the originally independent tactual line with its prescribed outcome in manipulation and prescribed posture of the body. Here, too, there comes into being perceptive thereness for touch.

Now let these be reciprocally related under cross-over. As there are two forms of bodily behaviour both centred on the physical object, so there are two lines of percipience both centred in that which is thus becoming the object of perceptive reference. There is no longer a visual line and a tactual line, each independent of the other, as there were before cross-over. There is one object of "vision and touch" where the percipient lines now intersect. The visual place on the one line, and the tactual place on the other line, are now for perception the one place where the object of reference is located. Visual distance and distance for hand-reach are progressively inter-related—to say nothing of distance to be covered by moving forward to bring the thing within reach when the whole story is more fully told.

The crucial problem in mind-story, however, is the genetic origin of meaning under reference.

Let us first revert to body-story as it may schematically be told in a little further detail. Here the emphasis falls on recipient lines. Physiologically such a line is a chain of neuronic events. It has a receptor starting-point and an effector destination. Behaviour is the further outcome of effector recipience. But the recipient line, or neuronic chain of events, passes through the brain—a highly specialised part of the upper brain where cross-over occurs, but let us say the brain in this sense. The line is therefore divisible into three sections: (1) from the receptor origin to the brain (the afferent limb); (2) in the upper brain; (3) from the brain to the effector distribution (the efferent limb). Cross-over is at some switch-point within the brain. Hence, under cross-over, what we have in body-story is: *This*

afferent limb connected at the switch-point in the brain with *that* efferent limb. In our example we have: This afferent visual limb connected at the switch-point with that efferent limb the effector outcome of which is manipulative behaviour; and: That afferent tactile limb connected with this efferent limb the effector outcome of which is behaviour of the eyes. Thus may we interpret in body-story the plain-tale evidence which runs: At sight manipulation; on touch direction of gaze.

A co-related mind-story is of necessity conjectural at so early a stage of mental development. So young a child is not yet introspective. If he were, he could not communicate to us the results of his introspection. None of us "remembers" what "passed through his mind" in his own infant days at the age of five months. Any interpretation must therefore be based on some hypothesis. I can only tell the story based on mine. Thus it runs:

Co-related with any prescribed recipient line as a whole, from receptor pattern to effector pattern, is the percipient reference of that line. Neither precedes the other; each is concomitant with the other. There is no "prospective" reference. And prior to cross-over there is either the whole visual line, or the whole tactual line, or both independently. As recipient, each runs its prescribed course to an effector destination. But after cross-over each in some measure runs to the other's destination. Hence, in mind-story, there is double reference—that of the afferent limb which we may call direct reference; and that of the efferent limb which we may speak of as cross-over reference. This cross-over reference is the meaning which is supplementary to direct reference.

Under direct reference the child actually sees, as we say, the object of vision; under cross-over reference the sight carries supplementary touch-meaning in the absence of any stimulation of the tactile receptors. But in the normal procedure of the child, touch-meaning is swiftly followed by tactile stimulation. In common parlance the child

" expects " the feel of the toy just *before* the fingers actually touch it ; the look of it just before the gaze is fixed on it. Supplementary or cross-over reference, as meaning, *precedes* by a little the more robust direct reference under receptor stimulation. So, in such a context, I speak of supplementary reference (which comes only under cross-over) as prospective. At the level of naïve perception all meaning is prospective. The stage of reminiscent (or retrospective) reference has not yet been reached.

It may perhaps now be seen what I had in mind when I spoke (p. 82) of certain arrows of percipient reference as " weak." They afford the genetic foundations of imagery. But perceptive cross-over is also in evidence.

Cross-over also affords the natural foundations of that which is dramatically explained in terms of so-called " teleological causation." There may not yet be a definite end in view, such as the word " teleological " implies. But there is, within the field of reference, a prospective factor which is effective in the guidance of behaviour ; which counts in the interpretation of events ; but which does not imply a so-called " alien influx into nature " from some " disparate order of being." And this is what " teleological causation " is often said to imply.

Such, in brief, is the mind-story as I read it. It hinges on cross-over reference. It illustrates " mind at the crossways." In so far as it accounts for prospective reference it opens up, so to speak, an avenue to that which, reflectively, we call the future—to that which is coming in normal routine, but has not yet come on this occasion. It carries us beyond what Professor Stout has called " the blind and ignorant present."

Such a mind-story is no doubt open to criticism. Has any mind-story of episodes in infant life as yet been suggested which is *not* open to criticism ? I submit that this story provides an evolutionary and genetic interpretation of that which is given in plain tale at least as well as any other.

§ 7

Now suppose that, as the life of our child proceeds on its course, what he sees and handles is a dark-brown stick of chocolate. Need one state in detail in what respects, under plain tale, his behaviour is different from that which we observe when the thing is a light-brown stick of wood? Probably in due course both have been conveyed to the mouth. To finger-touch and prescribed hand-behaviour has been added lip-and-tongue-touch and mouth-behaviour no less prescribed. New recipient lines entail new behaviour-outcome centred on the thing. Under co-relation, new percipient lines centre in that which becomes a richer object of perception.

But the chocolate specifically stimulates olfactory and gustatory receptors with their recipient lines to effectors both motor and glandular. Behaviour of muscles and salivary glands centre on the thing directly or more indirectly New percipient lines of smell and of taste centre in the object. There is much more complex and intricate cross-over in the brain; much added cross-over meaning. Smell, for example, begets chocolate-expectation in terms of finger-touch and mouth-touch, of sight, of taste, perhaps warmth or coldness, and so forth. There is prospective reference along many lines, succeeded in normal routine by stimulation of the receptors on the co-related lines. One need not enlarge on the two-fold story we should seek to tell. Does not the object of reference (this and many others) grow for the child? Has it not more and more meaning under reference? Is not any object for the child a progressively developing construct?

Now just add this. The parent or nurse says "Choc." Another line of recipience; another co-related line of percipience. On what does this auditory line of percipience centre? It certainly seems to centre largely on the chocolate to which such varied behaviour is all the time directed. It seems to be linked up with the rest of the cross-over business.

It seems to carry meaning for the child—meaning which attaches to the object of perception. I do not say that there is no reference to the mother or nurse who says " Choc." Reference is getting more and more complex. But I think that the main line of reference is to the object of perception co-related with that physical object on which the behaviour of the child is centred. And yet the source of influence on the auditory receptors is not the chocolate, but in this case a sound which comes from mother or nurse.

If this be so—and it seems to be so—wide possibilities are opened up for the further construction of objects of reference which have meaning for behaviour. Consider, for example, how, in later life, when reflective reference comes on to the scene—consider how the significance of words, especially words directive of behaviour, seems to be closely attached to that which the words indicate. When the child is beginning to understand language, and himself to speak, there seems to be a phase at which the name seems to be, for him, verily part and parcel of that which is so named.

CHAPTER VI

SUBJECTIVE ENJOYMENT

§ 1

I INTRODUCED in the foregoing chapter the notion of cross-over. I asked that it should be taken as just my way of putting things; just my way of stating that which, as I believe, actually happens.

As an example of cross-over in infant life I cited the observations of Miss Milicent Shinn on her niece. I have reason to believe that in all essential respects her description is true to the facts. What happens? A critical stage of infant development is here in evidence. Before that critical turning-point is reached there is at sight of a thing such behaviour of head and eyes as shall minister to keeping it in view; on touch of a thing such behaviour of arm, hand, and fingers (including in due course "opposable" thumb) as shall minister to clasping and grasping it. And these two forms of behaviour are seemingly independent. But when this critical stage is reached, and thereafter the two are not independent, but are closely inter-dependent, what we then observe is: At sight, handling; on touch, such behaviour of head and eyes as shall keep it in view. The object of vision has become, we infer, also an object of touch; the object of touch has become also an object of vision. No longer are there two independent somewhats for different modes of percipience; there is one object of naïve perception located in one place through that centring of behaviour thereon which gives it perceptive thereness.

This critical turning-point I speak of as cross-over. Here, one may say, there is Mind at the Crossways. There is cross-over of reference from one "sensory field" to the

other ; there is cross-over of behaviour from that prescribed within one field to that prescribed within the other field.

Thus far I depart but little from what I speak of as plain-tale description based on close observation, which no doubt includes the initial steps towards that further interpretation which, as reflective folk, we must seek.

Such an example may serve to show what I mean by cross-over. But it is only one example among many. Is it, then, the first example of cross-over in the life of an infant ? No. It is a comparatively late example. It illustrates, however, a canon of interpretation applicable to all examples. This may run : (1) Before cross-over, in any given receptive field—say, that of touch, taste, hearing, vision—a given receptor-pattern initiates an observable form of behaviour within that field and appropriate thereto ; (2) after cross-over a like receptor-pattern initiates a form of behaviour within some other field and appropriate thereto. Hence, under cross-over there is a transference of percipient reference from this field to that ; and there is observable behaviour appropriate to that field. Generalise this and we may say that as perception (which genetically comes only under cross-over) is developed, step by step, there is provision for transference of reference from any receptive field to any other, and like transference of behaviour. In respect of reference, and in respect of behaviour, all the several fields are thus rendered closely inter-dependent.

If this be provisionally accepted as a canon of interpretation on which we may proceed, the question arises : When does this transference under cross-over first occur ? That must be ascertained by careful and critical examination of the plain-tale evidence. But we want to get down to " principles of interpretation." In accordance with these principles (if they be accepted) we may say : Broadly speaking, and subject to further refinement in detail, given any two fields of behaviour, say a sight-field and a taste-field, which are in a liberal sense simultaneous, there are the requisite conditions under which transference from the one

field to the other may be in evidence. Since, then, quite early in infantile life after birth, these requisite conditions obtain, even then cross-over is beginning to play its part in the development of body and mind.

Thus we are led on to interpretation in further detail under body-story and mind-story. In body-story what I have spoken of as the " requisite conditions " are discussed under the heading of the " conditioned reflex." On this topic the literature, under the fine lead of Pavlov, is now wide and extensive, and illustrations of that which I speak of as cross-over in behaviour are many and various. Much still remains to be done. But enough has already been done to justify one in saying that an adequate physiological interpretation of cross-over under the heading of conditioned response to stimulation is coming more and more clearly into view.

To the writings of experts, especially those of Pavlov, the reader must turn for the further application of the notion I speak of as cross-over to the progressive integration that obtains in the functional processes of the central nervous system. This, however, may here be added. Physiologists *as such*—those who interpret in terms of body-story as such —have no concern with reference, percipient or perceptive, on the part of the organisms they study. And if they do introduce side glances at mental relations, they may regard it merely as a so-called " epiphenomenal " accompaniment of those physiological processes which it is their special business to interpret. What they here mean by " epiphenomenal " is that, if there be such accompaniment, it counts not a whit ; it has no effective part or lot in a change in the course of events.

Now I confess that in my younger days I flirted a while with epiphenomenalism. But now that, for better or worse, I am wedded to concomitance my days of flirtation with her are over. The trouble, however, is that there are some, as I gather from criticism and correspondence, who are under the impression that the wife I have taken to my bosom is no other than epiphenomenalism. Her name only is changed.

That is not so. The consort I now espouse is quite other than her with whom I dallied for awhile.

According to epiphenomenalism mental relations play no effective part in this world. Is that the doctrine I am preaching here and now? Nay, rather what I seek to emphasise is my belief that mental relations should be admitted to full rights of effective partnership in changes that occur under cross-over. Do I say that percipient reference does not count? Nay, rather my contention is that percipient relations count every whit as much as do the recipient relations of physical influence with which they are concomitant.

It is, however, no part of my present purpose to enter into a polemical discussion with advocates of the epiphenomenal hypothesis. I have enough on my hands to make clear, if I can, some of the implications of the hypothesis of concomitance.

We have seen that, under concomitance, the notion of cross-over is applicable alike to reference in mental regard and to cerebral processes in bodily regard. Let us now concentrate attention on mental regard. Then an implication of cross-over is that there comes on to the scene that which I spoke of above as prospective reference (p. 104). What does this mean? It does not mean that there is on the part of an infant in arms any reference to that which he regards as "the future." My belief is that, at the level of perception, there is no reference to the future (or the past). Not until the reflective stage of mental development has been reached is there any such reference. But the trouble is that we reflective folk can only interpret what happens in terms of such reference. What, then, does this so-called prospective reference on the part of an unreflective infant mean?

What I mean by it can best be illustrated by an example. It seems that quite early in the life of an infant the plain-tale evidence justifies the inference that on sight of the feeding bottle there is taste-reference begotten of normal routine in what one may call recurrent bottle-situations. But actual taste, due to stimulation of receptors in the mouth, has not

yet come *on this occasion.* None the less taste-reference has come. There are what I have spoken of as weak arrows of percipience (p. 82). At sight there is supplementary taste-meaning. This "meaning" comes through cross-over of reference concomitant with cross-over of recipient lines in the nervous system. And since it has reference to what will come in normal routine, but has not yet come on this occasion, I speak of it as prospective reference, although the word "prospective" needs further definition.

It seems, then, that what I thus mean by prospective reference is in being only *after* cross-over. And it seems that there is entailed that reversal of order in time to which allusion was made in an earlier chapter. Initially in the order of genesis taste-behaviour *follows* recipient taste-stimulation; but after cross-over taste-behaviour—readily observed if one watches the infant's lips—*precedes* recipient taste-stimulation. As precedent it is also prospective.

If my interpretation of the manner in which place-reference arises be accepted, it serves as a telling illustration of reversal of order. It will be remembered that, according to this interpretation, perception of thereness is genetically consequent on behaviour. But when, from infancy onwards, we have learnt to locate our objects of perceptive reference, all further behaviour centres on them as thus located. *Then* we behave to them as already there. *Then* perception of thereness no longer only follows on behaviour. *Then* behaviour follows on perception of thereness as it does in our current daily life. *Then* there is reversal of order. If one may elliptically combine the twofold story of body and mind—of bodily behaviour and mental reference—one may say: *Then* (after cross-over) mind, through prospective reference, takes the lead in the development of our infant as the weeks and months roll by. Mind plays an effective part "at the Crossways."

§ 2

I sought in the last section to apply the notion of cross-over

to affairs of the mind no less than to affairs of the body. It must be remembered, however, that the affairs of the mind are not picturable in the same sense as are the affairs of the body. By saying that affairs of the body are picturable, I here mean that they afford objects of visual perception, or of visual imagery founded thereon. In other words, they imply perceptive reference. Although even here there is much that eludes the meshwork of perception—much that is added under reflective reference—still one can actually see, or, failing that, can visualise in imagery, what is going on. And that which we thus see we interpret reflectively in terms of spatial and temporal relatedness in the space-time frame of a world reflectively transformed.

But when we seek to deal also with reference in terms of mental relatedness this reference as such cannot be pictured ; nor can it be interpreted in terms of the same space-time frame, since that frame, as we are repeatedly told, is so constructed as to deal with the closed system of physical science. In it there is no provision for mental relations of any kind.

Our province of inquiry, however, is not only the closed system of physics, but the mental system that obtains within the living organism—a wider and less abstract system in which provision must in some way be made for percipient relations at the least. And the point for emphasis here is that these percipient relations, as affairs of the mind, are not picturable in the same sense as are the affairs of the body. As we watch an amœba we can in some measure picture the physical occurrences under stimulation, recipience, and consequent behaviour ; but we cannot in like manner picture percipient reference as such in purely mental regard. If we watch an infant, a child, an adult, we can still picture the more complex physical occurrences, say, under cross-over ; but we cannot in like manner picture any mode of mental reference—percipient, perceptive, or reflective. These affairs of the mind are unpicturable.

And yet, made up as many of us are, we *do* like to picture

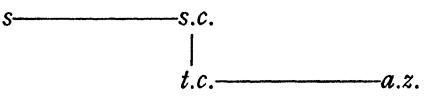
what goes on. Perhaps, as a legacy of the predominantly perceptive phase of our mental development, we feel that we have not quite got hold of what goes on until we have pictured it in some fashion. And so, as best we can, we picture the unpicturable. I have done so in " arrows of reference " and the like. But in doing so I am quite frankly and avowedly talking the language of metaphor. In doing so I know the risk I am running, and face it. I am using verbal pictures with a spatial application, which is open to serious criticism, from my own point of view, if it be taken literally. But so long as it is not taken literally, it may, I think, be helpful, especially to those—and they are many—for whom pictorial imagery is an aid to reflective thought.

If, then, I speak of cross-over in percipient reference from one " sensory field " to another, I try to describe in picturesque terms that which, as I believe, actually happens in the affairs of the mind, though I cannot actually see or picture *this* kind of cross-over. But *this* kind of cross-over in mind-story is co-related, under concomitance, with *that* picturable kind of physical cross-over in the brain. And when in either story it has been established—sometimes slowly through repetition, sometimes swiftly and perhaps once for all—it persists, for awhile at any rate, it may be for life. To this persistence, so long as it lasts, we may apply the word *retention*. That which is thus retained is the set of conditions requisite for cross-over.

We are wont to couple together, as closely connected, " retention and revival." What then about *revival?* I think that it is consonant with common usage to restrict this word to that which happens in mind-story. On this understanding revival is an affair of the mind. But on the interpretation with which we are here concerned, this revival is co-related with affairs in the body. And these affairs are picturable. Let us, then, picture them in a diagram. We need some illustrative example. Take a not unfamiliar episode in the life of an infant. The nurse gives him on three successive evenings a teaspoonful of raspberry jam. On the

third occasion he seems to " expect that the jam will be nice." In expressing it thus we are probably putting our reflective shoes on his unreflective little feet. But I take it that we do believe that there is on the third occasion some measure of taste-revival of the actual taste of jam in the mouth on the previous occasions. And in support of this we may adduce the added zest with which the infant literally " goes for " the jam on the third occasion.

Now for a diagram of the kind of process that goes on, as I believe, in his nervous system—crude, no doubt, but serviceable for illustration.



Here *s* is the reception of sight-stimulation ; *s.c.* the excitation of the so-called sight-centre in the brain ; *t.c.* that of the taste-centre ; *a.z.* the effector pattern which leads to behaviour with " added zest." The vertical line from *s.c.* to *t.c.* is that of physiological cross-over. Note that there is no stimulation of taste-receptors in the mouth since we take our snap-shot of the process before the jam is in the mouth on this third occasion.

Now in mind-story we speak of the revival of the nice taste. The question before us is : What is the bodily concomitant of this mental revival ? On the interpretation I offer the answer is : The bodily concomitant of this mental revival is that which physiologically happens after cross-over (and only *after* cross-over), at least in *t.c.*, or, as I believe, in the whole effector limb *t.c.—a.z.*

Let us, however, focus attention on mind-story. Then I say : If there be no mental cross-over there is no revival. And since mental cross-over occurs within the " experience " of each infant in the course of his development, there is no revival of parental or ancestral " experience."

It will be remembered that at the close of the last section I urged that mental cross-over entails that which I spoke of

as reversal of order. The naïvest of naïve perception, in the early weeks of infancy, for example, demands for its interpretation this reversal of order. In it there is always prospective reference which, through revival, precedes, and in that sense anticipates, the course of events. And the bearing of this reversal of order on the subsequent trend of mental development is momentous. At the reflective stage of that development it takes form when we say that end in view precedes attainment in outcome through action (so-called " teleological causation," p. 104). We are at present, however, considering only the perceptive stage of mental development in the infant. And what I wish here to emphasise is that, even at this stage, just as revival of reference is distinctively mental, so too is reversal of order in reference no less distinctively mental. If there be in nature no such mental relatedness as that which I speak of as reference, there is no revival, no reversal of order. One may offer a physiological interpretation of their bodily concomitants ; but that is not to offer a physical interpretation of affairs of the mind.

§ 3

Affairs of the mind are, I believe, always concomitant with physiological processes in the body. As affairs of the mind they are often discussed under the heading Experience, which may be taken to imply : (i) Somewhat to which there is reference on the part of someone, and (ii) someone on whose part there is reference thereto. If we say that day by day the infant's experience of the objective world of reference grows fuller and richer, the emphasis falls on the somewhat. We take the infant as someone for granted. But if we say that day by day his perceptive discrimination grows more acute with wider range, the emphasis falls on the someone as discriminating. Here we take for granted the somewhat with which the so-called " faculty of perception " deals. It is a matter of emphasis under legitimate abstraction, since neither is separable from the other in any concrete instance,

and each is, let us say, *correlative* with the other. For if there were not somewhat perceived, there would be no perception on someone's part; and if there were no someone perceiving it, the somewhat would not be perceived.

We come down, then, to the familiar distinction between the *object* of reference and the *subject* for whom it is such an object—between what is experienced and the experiencer thereof. Both alike are, as I believe, mental—the object of reference (let me stress the words *of reference*) no less than the subject. And both alike have as their concomitants physiological processes in the body.

I shall try in what now follows to keep as close as may be possible to the level of perception as it is exemplified in the infant, though some reflective reference on our part cannot wholly be excluded, and though much that I shall say has application also at the reflective stage of mental development. On my interpretation, as we have seen, perceptive reference presupposes percipience. In my usage this latter word ("percipience") is restricted to touch, temperature, taste, smell, hearing, vision, and such-like modes of what is commonly spoken of as sensory experience. But this sensory experience is twofold. Under objective reference it gives, however indefinitely for location, somewhat touched . . seen; and in subjective experience it implies someone touching . . . seeing. In each case an objective 'ed has as its correlative a subjective 'ing. And, for reflective thought, these are distinguishable though inseparable.

I have asked leave (p. 47) to restrict the word "awareness" to the 'ing side of the account, and to speak of awareness *in* touching . . . seeing, not awareness *of* the somewhat touched . . . seen. I know that some will say: What you ought to mean by awareness (as we do) is some mode of acquaintance with the objective world. But may I not ask that where I try to state clearly the signification I attach to a word, that word shall be read with the meaning I attach to it? Is this an unreasonable request—one which applies also to my restricted use of the word "percipience"?

If, then, in our infant at birth, or shortly after birth, we start with sundry types of percipient reference, we start also with correlative types of awareness in touching, tasting, seeing, and so forth. But if under reference this be all that we can label objective, it does not follow that this is all the awareness which we should label subjective. It may contribute only a tithe or far less to the infant's total awareness. He may be palpitating with awareness in many other ways—in all those ways in which his body is palpitating with life. In addition to the six or more types of awareness correlative with percipient reference, there is, on my theory, a deep-seated background of awareness which is not that of experiencing in specialised sensory fashion and is not correlative with any percipient reference.

At any given moment of the infant's life there are thousands of vital processes that run their course in accordance with the total organisation of the living body. Concomitant with all these is a no less organised system of awareness. I call this system that of subjective *enjoyment.* This forms the foundation of the subject or self of enjoyment.

Professor Alexander has shown how the word " enjoyment " may be taken over from familiar speech and adapted for use in more technical discussion. The way in which he has adapted it for the purposes of his thought is on record. I, too, for many years have found this word adaptable. It seems that certain passages in the *Ethics* of Spinoza endorsed for him, as they suggested to me, its adaptability. Since, however, for him enjoyment, and, as I understand enjoyment only, is distinctively mental, while the objective is no less distinctively " non-mental," whereas for me both are in correlative ways mental ; it is clear that my treatment of enjoyment must in this respect differ from his.

Apart from this, we are both faced with an initial criticism. In the daily usage from which a familiar word is taken over, enjoyment is pleasurable. We expand the concept for more technical use so as to include also that which is the reverse of pleasurable. We include both positive and negative

modes of " affective tone," much as, contrary to popular usage, the physicist includes under " acceleration " negative slowing down no less than positive speeding up. There is, no doubt, an affective difference when an infant is tasting sugar and bitter aloes respectively. This difference one does not deny. All that one says is that common to both there is enjoyment in tasting—or on other occasions enjoyment in hearing or in handling. Whether this or that mode of enjoyment is pleasurable or the reverse opens up a further question, no doubt of much importance since the behaviour of the infant is quite different when there is awareness in tasting bitter aloes and sugar as the case may be.

This behaviour is an incident in the life of the body. It has concomitant awareness in thus behaving. My thesis is that subjective enjoyment is concomitant with *the whole life of the body.*

Consider this life of the body. What is it on the theory I offer ? It is a hierarchy of concurrent physical, biochemical and physiological process-events in ascending order of " fellowship." This life is within the body. My belief is that concomitant with the bodily events that, taken all together in substantial unity, constitute living are the hierarchical modes of awareness that, taken all together in substantial unity, constitute the system of enjoyment—constitute the someone who is the subject who enjoys, who is perceiving an objective world and has enjoyment in perceiving it. It comes, then, to this : Just as life in the body is a hierarchy of events of the biochemical type, so is subjective enjoyment the concomitant hierarchy of modes of awareness, in us adults at all levels from reflectively thinking downwards, many of them sub-conscious, in some sense of this word, but none the less contributory to enjoyment, for example, in feeling fit or the reverse.

Hence, on this hypothesis, the infant at birth is already body-mind. We do not start with a body which is subsequently enminded ; nor do we invoke a mind introvenient from a region beyond space—a mind whose dramatic

business it is to organise the body and utilise its motor organs to gain some end through behaviour. That is a dramatic explanation. As in bodily regard the infant at birth is an organism, so, too, is it an organism in mental, or at least in " other than physical," regard. And, before birth, there is no phase in the course of embryonic development at which the future infant is not an organism *in both regards*. Nor is there any phase or stage of evolutionary advance along the whole line of human ancestry in respect of which a like statement does not hold good.

§ 4

Let us pause to look back on the position we had reached in respect of objective reference. Taking a few salient episodes in the life of an infant, I sought to render an account of the manner in which there is a passage from modes of percipience, as yet unconnected, to the centring of their reference in that which thus becomes an increasingly definite object of perception localised in place. The critical turning-point in this passage, according to my interpretation, is cross-over. It is co-related with the physiological cross-over of recipient lines in the brain. But if there be not also cross-over in mental reference—and there seems to be little or none in many of the lower invertebrates—there is no advance from percipience to perception ; there is no " meaning " ; there is no " prospective reference " ; there is no such " reversal of order " as to allow for that which I shall hereafter speak of as " fore-experience " in mind-story of events that are coming, but have not yet come on some given occasion.

Cross-over in percipience from one sensory field to another is, on this showing, that without which no tissue of perceptive reference can be woven. But, as we saw in the foregoing section, correlative with percipient reference is a contribution through awareness to subjective enjoyment.

The question then arises : Is there cross-over in sensory

awareness no less than in sensory reference ? I believe that there is. But cross-over is admittedly an hypothesis in terms of which the facts of experience may be interpreted. Let us, then, try to get down to the facts of experience. The question then is : Quite apart from interpretation in terms of cross-over, is there anticipatory awareness in experiencing, say, in tasting, no less than prospective reference to that which is soon to be experienced, say, tasted ?

We are dealing with what we judge to be the perceptive experience of the infant. But how does one get at the infant experience ? Can one get at it directly ? The only experience one can " have " directly is one's own. To get at another someone's experience one must " put oneself in his place " under imputation. So one says in effect : In this jam-episode I shall take it for granted that the infant's experience is perceptively more or less like my own. One comes down, then, to one's own perceptive experience as that in terms of which the " imputed " experience of the infant must be interpreted.

Hence each one of us must speak as he finds. I find in my own experience anticipatory tasting (foretaste) when, for example, I raise a cup of coffee to my lips ; and prior to actually lifting it from the saucer, I find in my experience fore-awareness in so behaving as to lift it. There is foretaste in revival and fore-experience in behaving. These two examples of what I find will serve as well as a dozen. They are not quite on the same footing. In foretaste there is, so far as we know, no stimulation of taste-receptors, but in fore-experience of behaving there may be preparatory twitchings of the muscles, and therefore not revival only. Let us, however, assume that there is also some supplementary revival of experience in behaving.

The trouble is that someone may say : That may be your experience, but it is not mine. What, then, is his ? It is for him to say. But, if I report them correctly, there are those who do say something like this. We, too, distinguish between what you speak of as subjective enjoyment in

experiencing and the object experienced, or, as we say, apprehended. But for us there is no difference in experiencing as such ; all the difference lies in what is experienced or apprehended. Perceiving is just perceiving. If one perceives such qualities as colour, or sound, or scent, or taste, one just perceives *them*. It is *they* that are different, not the perceiving of them. And it may be added that as qualities of some physical object they are non-mental. The taste of sugar or of bitter aloes is in the thing tasted, not in the mind which apprehends this quality or that. Affective tone, pleasurable or the reverse, may be mental ; but that is another matter.

It seems, then, that though we may both speak of the facts of experience, they interpret them in one way, whereas I interpret them in another way ; while the unreflective infant does not interpret them in any way. We may talk of getting down to the facts of experience beneath the veil of interpretation, but we cannot do it. The veil of interpretation always intervenes. We try to make it as diaphanous as we can with more or less success. But through this veil the facts of mental development in the infant are partially disclosed, and beneath this veil the facts of our own daily experience are partially hidden.

Now I think that the crucial difference between this interpretation and that depends on the answer to the question : What part does mind play in perceiving ? Does it by apprehension just take what is given by physical objects ; or does it through reference give somewhat other than that which it receives under physical influence ?

I trust that the answer I give to this question is neither halting nor ambiguous. We always give more than and other than we take. But I hope that it is clear that I do not assert that it is the only answer that can be given.

Let me now put my position with respect to cross-over in subjective enjoyment a little more formally. My belief is that though objective reference to somewhat and subjective awareness on the part of someone can be and should

be analytically distinguished under that legitimate abstraction which plays so large a part in our reflective thought, still they can only be sundered under vicious abstraction. For if the 'ed and the 'ing are correlative in naïve perception, there is no 'ed without its correlative 'ing ; no 'ing without its correlative 'ed. If, then, there be cross-over in the objective field of reference, there is also cross-over in subjective enjoyment.

It must be remembered that, on the hypothesis with which we are here concerned, the 'ed no less than the 'ing is mental. What I am dealing with is the 'ed of objective *reference*. On this understanding there is no cross-over from mental to physical or from physical to mental. Nor is there any cross-over from the 'ings of subjective enjoyment to the 'eds of objective reference. The infant's awareness in seeing the object of reference which we call the red jam and in tasting or foretasting it does not so cross-over as to become a sensory quality of the object in the field of vision or of taste. Nor does the colour or the savour of the object of reference so cross-over as to become a mode of awareness in subjective enjoyment.

The bearing of this on the so-called " bifurcation of nature" is worthy of parenthetical notice. It is not for me to say what this means. But if it mean that there is a notion abroad (to which this damning expression should be applied) that there is somehow a transference of somewhat mental to the physical object, and that this is " unbelievable," then it is for those who believe in it to take up the cudgels of argument in its defence. My withers are unwrung. On my hypothesis there is no transference from the mental to the physical *or* from the physical to the mental, let us say under direct apprehension.

It may perchance be said : Is it not your own contention that, under concomitance, there is transference or cross-over from the physical or physiological to the mental ? Do you not yourself say that there is cross-over in the brain, and then, transferring this notion to mind, proclaim that there

is cross-over in mind ? Now you seem to have three cross-overs—in body, in objective fields of reference, and in subjective enjoyment.

If this be said I can only express my regret that, after taking some pains, I have put my position so unintelligibly. What I want to emphasise is that there are *not* (save under vicious abstraction) three cross-overs but, in the concrete unity of body-mind, just *one* cross-over. Body and mind are concomitant ; but there is no cross-over between concomitants. Reference and enjoyment in so referring are correlative ; there is, however, no cross-over between correlatives. But, under that which I regard as legitimate abstraction, it is permissible to deal now with the nervous system, now with objective reference in mind, now with subjective enjoyment, and still to believe that in the synthetic unity of body-mind the three-fold aspect of one critical process which may be called cross-over, is a cardinal hinge in the development of the human infant. For if, in the mind-story concomitant with body-story, there is just as much cross-over in awareness as there is in perceptive reference, every step that renders our infant's world of perception more fully organised, correlatively contributes to fuller organic richness in the realm of his subjective enjoyment.

§5

I have spoken of cross-over in mind as distinguishable from, but inseparable from, cross-over in body. This is implied when I say that they are concomitant. I presume that you know " in a general way " what I mean when I talk of body and mind, though you may still be puzzled as to what I mean by concomitance. I have, however, throughout been dealing with body and mind " in a particular way "—that is, in terms of relatedness.

On these terms the infant's body is an organised cluster of physical events which are intrinsically related (p. 24) within this cluster ; extrinsically related to other physical

events which run their course beyond the confines of this cluster. But this cluster has a history. Traced forwards the infant's body will become that of an adult man or woman with changes, structural and functional, to be duly recorded. Traced backwards there is disclosed such a sequence as justifies us in saying that the infant's body has become what it is in the course of embryonic development from the fertilised ovum. Of course the evolutionist goes a long way further back than this. But for our present purpose it suffices to trace the history of the body thus far back and no further. It may, however, be said: All this is familiar enough. But it seems to us rather odd to speak of the fertilised ovum as the body. Is it not rather that which at some stage of embryonic development will become the body? Then at what stage? Is not this a difficult question to answer? If an answer be given, is it not under a convention? Then, if the question should arise, one might say: We will agree to speak of the body when this or that phase of development is reached.

But what, just now, we are specially interested in is the infant's mind considered "in a particular way"—that is in terms of relatedness. Here the question does arise: At what stage of "bodily" development from the fertilised ovum onwards may we speak of mind as concomitant with certain physiological processes? And here too, I submit, the answer is a matter of convention.

At an earlier stage of our inquiry (p. 26) I found difficulty in dealing with mental relations. I sought to distinguish them as different in *kind* from physical relations. I urged that one kind of relatedness is not derivative through any evolutionary process from any other kind. If this be so, mental relatedness is not derivative from physical relatedness. From what, then, is that *mode* of relatedness we commonly call mental derivative? From what, for example, is reflective reference in relation to that which is disclosed in plain tale derivative? I suggested that it is derivative from other such modes of relatedness of the same

kind which stand, so to speak, on lower rungs of the ladder of evolutionary ascent. But if these lower modes are not what we commonly call mental, what were we to call them? I had to fall back on the awkward expression "other than physical." This was to include what we commonly call mental *and* far more primitive relations of the same kind which under common convention we should not call mental. It may include, as we have seen, the "other than physical" concomitants of biochemical relations. And then it is hard to draw a line between these biochemical relations and physical relations which are, as I think, emergently lower in mode.

Now when, later on, we tried to come to closer grips with that kind of mental relatedness I have discussed under the heading of reference, I distinguished three ascending stages —percipient, perceptive, and reflective. If we label them p, p^1, and r, then we have in ascending order (i) p, (ii) $p+p^1$, (iii) $p + p^1 + r$; for we adult folk are reflective, perceptive, *and* percipient. The human infant a few days old is in some measure perceptive, in large measure percipient. The amœba (let us assume) is percipient only; and if the amœba, why not the amœbiform ovum?

Under the conventional usage of common speech should one attribute mind to the amœba or to the human embryo at some stage of development prior to the advent of perception? I think not. But if not, why not? Because *ex hypothesi* there is at the stage of percipience no prospective reference, no anticipatory enjoyment, no meaning attaching to behaviour. And all this is just what is, I think, commonly regarded as distinctive of mind. If this be absent at the stage of percipience there is at that stage nothing distinctive of mind, as this word is commonly used under current convention.

It may, however, be said: There is no living creature, animal or plant, that is not in some degree perceptive and that does not in this degree exhibit what is distinctive of mind. It is sheer hypothesis that there is any such being.

Of course it is. It is the hypothesis under consideration. But it is no less hypothetical that all living beings are in some degree perceptive. Which hypothesis is the more probable is a matter of expert opinion based on the available evidence in this province of inquiry—closely analogous to the expert opinion of the physicist in his special province of inquiry.

Revert now to the question: What does one mean by body? What by mind? Take body first.

One may mean by a body a system of events of physical kind in a living organism at any stage of its life history. On these terms one would speak of the body in the case, let us say, of the fertilised ovum as the first stage in the individual life history of this or that man. But this may not be one's meaning. One may mean by body that which is in evidence when some later stage of the life-history is reached. If so, that stage must in some way be characterised. Those who agree to characterise it in this way may then say: At this stage there is a body; but before this stage is reached there is not yet a body.

Turn now to mind. One may mean by a mind a system of events of " other than physical " kind in a living organism at any stage of his life-history. On these terms one may speak of the mind of the fertilised ovum as the first stage of the individual mind-history of this or that man. But here, too, this may not be one's meaning. One may mean by mind that which is in evidence when some later stage in mind history is reached. If so, that stage must in some way be characterised. There are many who do characterise this stage as that of perception. Those who agree thus to characterise it may then say: At this perceptive stage of development there is a mind; but before this stage is reached there is not yet a mind.

This latter usage is that which is commonly accepted under current convention. But I submit that one is free to adopt either usage so long as one make clear by the context which of them is, so to speak, in focus at this stage of one's inquiry or at that.

There is, however, a third meaning of the word " mind "—that which implies mental *agency*. Some of us prefer here to use the word " spirit," and to speak of spiritual agency under that which I distinguish as dramatic explanation. But since the word " mind " is commonly used in both contexts—that of natural interpretation, and that of dramatic explanation—let us accept this current usage, seeking to make clear in which of two different senses the word is used on this occasion or on that. At this stage of our inquiry—where scientific interpretation in relational terms is in focus—any consideration of mind as an agent is not yet in focus.

CHAPTER VII

GUIDANCE OF ACTION

§ 1

I HAVE tried to tell the story, as I read it, of the passage from percipience to perception in the infant mind. In this context I use the word "mind" in a sense wider and less restricted than that which has the sanction of conventional usage if I am right in supposing that in accordance with this usage mind must at the very least be perceptive.

If we take the infant as we find him, I submit that we find him as that which may be hyphened as body-mind. As body, in this context, the infant is an organised system of physical relatedness, with intrinsic relations within the body and extrinsic relations of the body as a whole to a physical "environment." As mind he is an organised system of "other than physical" relatedness, with such relations as we have considered under the headings of subjective enjoyment and objective reference. Physical relations and mental relations are quite different—so different that neither is derivative from the other. The body does not at some stage of its development take on, through emergence or otherwise, a new "property" henceforward to be called mental. The body does not acquire a mind as a "characterising feature" which thereafter it possesses. Nor does the mind at some stage of its development acquire a body and enter into possession of it. Mind and body are concomitant. Neither is derivative from the other; neither "possesses" or "is possessed by" the other. They share effective relations common to both.

What we have to deal with, therefore, is body-mind as inseparably one under concomitance. On this understand-

ing the infant *has* not but just *is* body-mind to be considered in two-fold relatedness. Under legitimate abstraction we may discuss that which we observe, or infer from our observations, now in terms of physical relations, now in terms of mental relations. But what we are discussing all the while is the infant in this two-fold relatedness—neither kind without the other, neither kind save as concomitant with the other.

Now the traditional view of those who approach the study of the infant through the avenue of physics, is that all causation is physical causation. For better or worse I have broken with this tradition; have broken therefore with epiphenomenalism (p. 109). If this be not realised what I have presently to say on guidance of action must inevitably be misunderstood. I beg that it *be* realised that my canon of interpretation, couched in relational terms, runs: Given such and such kinds and modes of relatedness, extrinsic and intrinsic, physical and mental, such is the behaviour of the infant. What has to be realised is that, when one breaks with traditional methods of treatment, percipient and perceptive relations in the infant count every whit as much as do physical or physiological relations.

So much to make understandable this plank in my platform of interpretation. I revert, then, so as further to clear the ground for what follows, to ascending stages in mental relatedness under reference. They are in ascending order: (i) percipient, (ii) perceptive, (iii) reflective. The infant, as I believe, has not yet reached the reflective stage. But it is permissible here to look forward to this stage which he will reach in due course. What is the distinctive feature of this third stage? I shall hereafter submit that at this stage there is an end in view to be attained and choice of means to its attainment. There is, no doubt, more than this under the transformation which reflection entails. But let this suffice just now.

In the infant, then, who has not reached this stage there is as yet no end in view, and therefore no wish—in the

common usage of this word—for its attainment. There is, however, that prospective reference which characterises naïve perception. But at an earlier stage of embryonic development, perhaps till birth, there is no prospective reference, since, so far as the available evidence goes, there is as yet no cross-over bodily or mental. Probably as yet, prior to birth, there is not even such percipient reference as we call taste, smell, hearing, or sight. Nor is there as yet such behaviour as begets the naïve perception of thereness.

These three modes of reference—percipient, perceptive, and reflective, in embryo, infant, and adult—are in ascending order of evolutionary advance and of development in this or that someone under "recapitulation" of that advance. I revert, then, to that which I regard as the guiding principle in evolutionary interpretation (p. 70). Given this or that form of behaviour in the organism at the percipient stage, we should not assume that there is that prospective reference which characterises a later stage; and given this or that form of behaviour in an organism at this later perceptive stage we should not assume that there is such an end in view as characterises reflective procedure (*cf.* my *Introduction to Comparative Psychology* (1894), p. 53).

No doubt this runs counter to much current doctrine. For on an interpretation quite different from that which I am here concerned to advocate something hard to distinguish from an end in view is widely regarded as distinctive of Life which is identified with Mind.

It is not my present purpose to enter into a polemical argument with those who advocate this method of interpretation. I seek only to make sufficiently clear how radically different it is from that which I advocate. This may be illustrated by comparing my account of cross-over in the infant shortly after birth with what M. Bergson says in a like connection. On my interpretation cross-over in the brain is concomitant with cross-over in mind. Neither is, in terminology still current, the cause or the effect of the

other. In technical phrase there is no " interaction." What says M. Bergson ? " In our opinion," he says, " the brain is no more than a kind of central telephone exchange. . . . It really constitutes a centre where the peripheral excitation gets into relation with this or that motor mechanism, chosen and no longer prescribed " (*Matter and Memory*, pp. 19, 20). *Chosen and no longer prescribed.* No longer prescribed in accordance with the inherited organisation of the infant ? Yes. But chosen ? There lies the rub. We are told that certain " sensory cells " in the infant's brain " allow the stimulation to reach *at will* this or that motor mechanism of the spinal cord, and so to *choose* its effect." Now these sensory cells are brain-cells. And M. Bergson says of such a cell : " I do not understand, shall never understand, that it " has " a miraculous power of changing itself into a representation of things." I am in like case. The body-story of a complex cluster of cells in the brain does not " change itself " into the mind-story of reference. Thus far there is at least some measure of agreement. But the motor effect in behaviour is, we are told, *chosen at will.* What, then, are we to understand by choice ? Here, at any rate in one passage, M. Bergson is quite explicit. " A choice," he says, " involves the anticipatory idea of several possible actions " (*Creative Evolution*, p. 102). This seems to imply that at the " switch-points " on the lines where cross-over occurs, " Mind at the Crossways " guides the traffic in the brain in accordance with that one of " several possible actions " which subserves the end in view. Why am I unable here to agree ? Because *in the infant's mind* there are, as I believe, *no ends in view.* To go further than this—to consider whether Life or Mind has such ends in view—would open up a discussion of the whole fabric of M. Bergson's philosophy. So I go no further than this. But, even so, two questions are raised. (1) Is there good evidence that the infant's field of reference includes ends in view of any sort ? (2) Does guidance of action, under relational interpretation, necessarily imply such a field of reference as includes them ?

§ 2

I proceed on the hypothesis that to both these questions the answer is: No. (1) There are, on the available evidence, no good grounds for supposing that the field of reference in the infant and in most animals (to give some of them the benefit of a doubt) includes ends in view of any sort. (2) Guidance of action does not necessarily imply that some end in view must be present in the field of reference.

No doubt guidance of action in adult human folk does often imply the presence of an end in view in the field of reflective reference. And some would say that then only should we speak of guidance of action as "conscious." Since, however, I shall use the expression "conscious guidance," at the perceptive stage, where there are as yet no ends in view, I must be prepared to make clear what I mean, and I can best do so in the light of examples. Let us then consider some episodes in the life-history of such animals as have not attained to the reflective stage of mental development. An oft-quoted statement of Bethe's may here serve as an introductory text. "An animal," he says, "that is able to do the same things the first day of its existence which it can do at the end of its life, that learns nothing, that always reacts in the same way upon the same stimulus, possesses no consciousness."

Granting that there are such animals, perhaps as an open possibility some insects, that throughout life "learn nothing," it is implied that there are other animals that do "learn something." Of them, I take it, one may say: An animal that is able to do some things at the end of its life which it cannot do the first day of its existence, that learns something, that does not always react in the same way to the same stimulus, thus affords evidence that it "possesses consciousness."

This statement is modelled on that of Bethe. Taking them together it seems that in the central "learns nothing" in the one, and "learns something" in the other, we come

to close quarters with that which we are bidden to understand by " possessing consciousness."

I have followed Bethe in speaking of the beginning and the end of life. Let me re-phrase with some difference of mode of expression so as to include any mid-period of life. Where, under like external stimulation, there is like form of behaviour on the first occasion *and on all subsequent occasions* no evidence is afforded of conscious guidance of action ; but where on some later occasions, under external stimulation like that of the first occasion, the behaviour is observably different in form, this affords evidence of such guidance.

A chick that on the first and perhaps two or three subsequent occasions, pecks on sight at any small object, but on later occasions does not do so and behaves in some different way, exemplifies the latter of these statements. So we say : Since the behaviour is different there must be some relational interpretation of this difference. If, however, in accordance with the former of these statements, there were *no such difference*, it is clear that it would be nonsensical to ask : What is its relational interpretation ? The emphasis is on observable *difference* of behaviour.

What we observe—in that liberal sense of the word " observe " which includes some supplementary inference—in our chick on some first occasion is, let us say : Seeing, pecking, seizing, tasting, tossing on one side with a shake of the head, or, in one word, ejection. Now suppose that there were no change of behaviour. What we should then observe, not only on this but on all subsequent occasions, would be : Seeing, pecking, seizing, tasting, ejection ; again : Seeing, pecking, seizing, tasting, ejection ; and again : Seeing, and what follows thereon. The whole business would be repeated on each occasion *da capo*. Of such a chick, if such a one could be found, some of us would say that it affords no evidence of guidance of action in this episode of its life-history. Bethe would say that such a chick " possesses no consciousness."

Now, though there may be no such chick, it does not

follow that there is no such animal. And if such animals there be—animals with *da capo* sequence of behaviour in *all* episodes throughout their life-history—we may agree with Bethe that *these* animals " possess no consciousness " or, at any rate, show no evidence of conscious guidance of action.

But even in an animal that does show evidence of conscious guidance in many episodes of its life-history, there may be other episodes which, taken by themselves, do not seem to afford evidence of such guidance; for instance, the way in which a cat " rights itself " and alights on its feet when it is dropped or falls from a sufficient height. So far as I can judge on the basis of many observations, this behaviour is so closely similar that we may call it the same on the first and on all later occasions.

Stress is here laid on the *first* occasion with which subsequent occasions are compared. Is there a first occasion on which the several muscles concerned in this form of behaviour are in action? Have they not been used in other ways from birth onwards? Probably they have. But the stress is also on *this form* of behaviour. And the careful observer can make pretty sure that this occasion *is* the first on which the kitten is dropped or falls from some little height; that, so far as he can observe, the form of behaviour on this first occasion and on all subsequent occasions, is the same and illustrates *da capo* sequence; and that in this behaviour he finds no evidence of conscious guidance.

Is, then, the kitten that thus behaves unconscious? That depends on the sense in which the word " conscious " is used. Since the form of behaviour is initially prescribed and is repeated *da capo* under like prescription, there is no evidence of conscious guidance under prospective reference. But do many of us believe that the kitten is unconscious in the sense that there is *no* percipience, *no* mental reference to a given situation even on the first occasion, *no* change in the current course of subjective awareness? In that sense of the word the kitten is, as most of us believe, thrillingly conscious.

Should we not distinguish these two senses in which the word " conscious " may be used ? If the kitten behaves " automatically " in this episode it is open to us to say that there is no conscious guidance of action and that the kitten behaves " unconsciously " in this sense, without implying that the kitten is " unconscious " in the sense that there is no experience in such " automatic " action.

The body-story of action in the falling cat is very complex. It is the story of what happens in a typically proprioceptive system (p. 95) ; and the adequate stimulation to the prescribed response is given through falling which entails differential flow of fluid in an " organ of balance " embedded in the skull in close connection with the organ of hearing. Here are the receptors which initiate recipient lines. In so far as the " automatic " behaviour is prescribed, the mind-story is at the percipient stage of mental development. Only indirectly is the objective reference which is concomi tant with the receipt of stimulation, and the awareness in behaving in a manner prescribed, caught up into the field of perceptive reference in such wise as to contribute to conscious guidance.

§ 3

Let me now restate in the form of a generalised rubric. Where, under like external stimulation, there is a like form of behaviour on the first occasion and on all subsequent occasions—in *da capo* sequence, as I put it—no evidence is afforded from which we may infer guidance of action ; but where, on subsequent occasions, under external stimulation like that of the first occasion, the behaviour is observably different in form, this does afford evidence of guidance of action.

An instance was adduced from what may be observed in a salient episode in the very early life of a chick. Let us follow this up in some further detail with guidance of action in the focus of attention.

One selects for illustrative purpose an observable phase in

the life-history of the bird—that phase which is preparatory to nutrition of the body. It starts with seeing the object—any small object, but let us say a rice-grain. This is swiftly followed by behaviour or action, widely distributed throughout the body and calling for proprioceptive interpretation in body-story. Apart from this, what one observes on some first occasion is clinging of gaze while the chick takes a step or two forwards and then pecks at it when he comes within range, often with such accuracy as to seize it. There follows stimulation of receptors in the mouth. Of this more anon. It is probable that it is the total pattern of visual stimulation within which the rice-grain is central, and not only the central rice-grain, that issues in the pecking response (gestalt theory). Until, on stepping forward, there is just *this* visual pattern the chick does not peck, which implies that *that* visual pattern, when the rice-grain is, as we say, out of range, elicits a different motor response—that of stepping forward ; but the two modes of behaviour have intimate connection, presumably proprioceptive and on the percipient level of mind-story. It seems, too, that, just preparatory to pecking, there is a pause, sometimes readily observable, in postural attitude. There are plenty of other details. For example, one should not take the chicks out of the incubator drawer too soon after hatching. The experience we speak of as need of food or hunger appears to be a contributory factor. But what I have set down may suffice.

Now, on my interpretation all that may be observed, and as I think legitimately inferred, on such a first occasion is at the percipient level of mental development. But it may all be interpreted with fascinating facility, if one credits the chick with ends in view, wish for their attainment, and selection of means thereto by choosing the appropriate " motor mechanism." Putting oneself in the chick's place one might say : I'm hungry and in need of food ; so I use my eyes to look out for something to eat. There is a rice-grain. But it is out of range ; so I use my legs to bring me

within range. Now I have done so. But I must steady myself for the stroke lest I fail to seize. And so on. Similarly, putting oneself in the place of the kitten, one might say: I'm falling. If I don't right myself that will mean a nasty knock. To escape this I must make every effort to alight on my feet.

I put the matter very crudely, leaving those who accept the principle involved to water it down or strengthen it up to their taste. They may strengthen it up by saying that nutrition or self-preservation is the end in view. It is the principle involved—the method of interpretation—that I seek to illustrate. That the chick episode, or the kitten episode, can thus be fully accounted for I entertain no doubt. Then why not so interpret it ? Because I find no evidence that kitten or chick has reached the stage of mental development at which these, or indeed any, ends in view are in being.

It may, however, be said (i) that Nature has such ends in view ; or (ii) that Life which is Mind has such ends in view ; or (iii) that Self-preservation has such ends in view. I regard these and the like as what I call dramatic explanations of those occurrences of which I seek to render a natural interpretation.

We left our chick in the act of seizing a rice-grain. But he will peck at anything that is central in the visual pattern which (in elliptical phrase) affords adequate stimulation, perhaps the glass-headed knob of a small steel pin, perhaps a ladybird beetle, perhaps a bead of water, perhaps an ink-spot—I say advisedly *anything* within certain limits of size. But let it be a grain of boiled rice. Then on stimulation in the mouth it is promptly swallowed. Given this mode of (let us assume) taste-stimulation ; this form of behaviour is prescribed—no less prescribed than is the pecking behaviour at sight. If, however, the taste is different—nasty, as we should say—such as that which is seemingly afforded by a ladybird beetle, the prescribed behaviour is different. It is not that of swallowing, but that of pretty violent ejection.

So we extend our observations on a group of young chicks, strewing before them a varied assortment of small objects to see what happens Each chick at first pecks at any one of them—this, that, and the other, as it "catches the eye." But there is observable difference of behaviour to different objects when they are taken into the mouth. Some are swallowed on seizure, others are ejected on seizure. And in each case we might have such *da capo* sequence as I have already described.

But that is not what one observes. Objects which *we* should classify as belonging to the "swallow group" are still pecked at, seized, and swallowed at sight. But objects belonging to the "ejection group" are no longer ejected on taste; they are rejected at sight, or seemingly simply ignored. There is no stimulation of receptors in the mouth; but there is, *under revival and consequent reversal of order*, objective taste-reference in the mind; that is, in the field of perceptive relatedness. I feel pretty sure that the observable sign of this in behaviour is aversion of gaze as contrasted with clinging of gaze. If the object of reference be "nice" the gaze still clings to it till the peck comes in due course, with seizing and swallowing as the sequel. But if the object of reference be "nasty" there is aversion of gaze. There is arrest or suppression of the behaviour to which clinging of gaze is preparatory, and diversion of behaviour to other forms of expression in life-history. This, however, though it comes under the heading of guidance of action, is a matter of detail. I seek here to emphasise what I deem to be essential.

§ 4

What seems to be essential in this oft-told tale, which, familiar as it is, raises quite a number of crucial questions, is, in one word, foretaste. There is, however, no foretaste save under mental revival and under reversal of order no less mental. No physical interpretation of one or the other can be rendered. For both are matters of experience; and

experience, as mental, has no part or lot in that closed system which physicists claim as their special province of inquiry. But our special province of inquiry is mind. And in prosecution of that inquiry I have been led to accept the hypothesis of concomitance. Hence it is open to me to tell two stories of the living organism—a body-story in terms of physical relatedness and a mind-story in terms of mental relatedness. And it is open to me to say that what I find in both stories is that which I speak of as cross-over and that there is no revival with reversal of order in such an organism as the chick (or the human infant), save under cross-over in both stories.

So it comes to this. I have sought to interpret the evolutionary development of perception under cross-over; and now I seek to interpret the evolutionary development of guidance of action under cross-over. There is, I have urged, no perception without prospective reference; there is, I now urge, no guidance of action without prospective reference. Combining these two I urge that all guidance of action is within a field of perceptive relatedness which includes a prospective factor the genetic origin of which is through cross-over subject to concomitance.

The emphasis here falls on a *prospective* factor, in the field of perceptive relatedness. Of course, in us whose transformed life implies ends in view within a field of reflective relatedness, there is reference to the future—to a good time coming when, if all goes well, our ends in view will be fulfilled as the outcome of our action. And those who interpret the behaviour of the chick a few hours or at most a few days old in like terms may say that he too looks forward to the time when foretaste shall be fulfilled and the rice grain or the juicy maggot will be in the mouth. They may regard it as savouring of intolerable subtlety so much as to suggest that the chick knows nothing whatever of a good time coming.

As I have already said (p. 111) one has to use some such expression as prospective reference and then to add that this does not imply any reference to the future. What can this mean? It means that what for us is the future is part

and parcel of our transformed world of reflective reference, and that for the chick, since there is no such transformed world of reflective reference, there is no future as part and parcel thereof. The difficulty is to read oneself into the mind of the chick a day or two old; to divest oneself of every shred of the garment of reflective thought; and yet to describe, in terms necessarily reflective, that which is prior to the advent of reflection. I try to do so in terms of prospective reference; and I interpret in terms of reversal of order. But I have to add that the chick—or the infant in arms—knows nothing whatever of the one or the other.

But though he knows nothing about it, in this sense of the word "knows," there is, I infer, prospective taste-reference (one must use some such expression) which precedes the later phases of action and contributes to its guidance since it forms part of the perceptive field of relatedness. And it so contributes with a difference according to the affective tone of foretaste, nice or nasty as the case may be.

The question then arises: How comes it that some objects are nice and others nasty? The answer in mind-story, I think, is that we do not know and, I venture to add, are never likely to know. We must loyally accept these differences in affective tone—pleasurable, as we commonly say, or the reverse. Still, the further question arises: With what biochemical processes in body-story are they concomitant? Here I can only say that I for one do not know. This may express sheer ignorance on my part; or it may mean that no answer to this question with which I am acquainted is such as I can unreservedly accept. But here I do not add that we are never likely to know. All I say is that, whatever the answer may be, the biochemical processes are not, in my theory, the so-called cause of the difference in affective tone; nor are they in like sense caused thereby. They are just co-related under concomitance. And I submit that the answer, whatever it may be, should provide for such difference in affective tone as I for one should attribute even to the amœba.

Without descending to the lowly level of the amœba, I proceed on the assumption, if such it be, that such a difference there is within the experience of our chick, and that it is illustrated when we speak of the object of reference as nice or nasty. Then what we infer from plain-tale observation is difference of behaviour according to whether, let us say, a plain-boiled rice grain is nice or one soaked in quinine or quassia is nasty.

Divide a batch of chicks into two groups, A and B, and prepare two sets of rice grains, plain boiled and soaked in quinine. Scatter among the varied assortment of "somewhats" presented to the A group plain-boiled rice, and among the "somewhats" presented to the B group medicated rice. They are quite indistinguishable to the eye, and therefore afford the "same visual stimulus." But chicks of the A group soon eat up all their nice rice grains; whereas chicks of the B group, after seizing once or twice, leave all their nasty rice grains uneaten. Now put all the chicks together in one batch and scatter plain-boiled rice grains among the "somewhats." Those chicks which belonged to the A group eat them freely; those that belonged to the B group neither peck at nor seize a single rice grain. Does not the presence of foretaste attaching to the object of reference give the clue to the observable difference of behaviour?

But the point for emphasis here is that foretaste, which we may speak of as positively toned, is linked up with "this" behaviour with respect to "this" object of reference, and foretaste negatively toned with "that" behaviour with respect to "that" object of reference. For *as objects of reference* plain-boiled and medicated rice grains are quite different. The positive behaviour which goes with positive affective tone is "towards" the nice object; the negative behaviour which goes with negative affective tone is (as Hobbes would have said) "fromwards" the nasty object. We have in the one case "appetition"; in the other case we have "aversion," if it be only aversion of gaze.

The mental concomitants of this appetent or aversive behaviour in body-story are contributory to the total experience in mind-story, alike in objective reference and in subjective enjoyment. In the field of objective reference is the rice grain just there, seen and foretasted. In subjective enjoyment is seeing, locating, foretasting. But there is also behaviour with reference to that which is seen and foretasted, say, in pecking at it and seizing it. And, if I may judge from my own experience in a situation sufficiently analogous, where, for example, I raise a cup of coffee to my lips, there is what I may speak of as fore-experience of the coming behaviour in drinking it, before I actually drink it. And this fore-experience is affectively toned.

If this be so, in concentrating attention on foretaste as nice or nasty we fail to do full justice to the affective situation as a whole since there are also other affective factors. And if this be so we should say that what, as affectively toned, contributes to the guidance of action is nothing less than *the total fore-experience of the time-being.*

This, however, is only part of the total experience of the time-being—that part which, through revival and consequent reversal of order, contributes to guidance of action. The total experience may include what we commonly speak of as the emotional state. But only under revival and reversal of order does " emotion " contribute to guidance. This may seem a hard saying ; so let me illustrate by adducing another episode in the early life of a chick.

A young bird a few days old ate " with special zest " juicy maggots. I placed three or four of them amid an assortment of " somewhats." Just as he assumed the posture preparatory to seizing one of them I fired (out of sight) a toy pistol with detonating cap. He started and turned aside with that characteristic " fear-response " from which we infer an emotional state. Presently, I repeated the procedure. He seemed to grow " shy " of maggots. Soon, after ten or twelve occasions, on some of which my " shot " may have been after and not before seizing (and

this makes a difference), it was no longer necessary to repeat the procedure. Thenceforward, so long as he was kept under observation, though no sound was made, that chick ate no maggots.

Such observations on this chick and half-a-dozen others need confirmation and extension; but they are, I hope, sufficiently trustworthy to serve for illustrative purpose.

It is not the emotion in the experience of fear-response on the first or subsequent *da capo* occasions that contributes to guidance of action. That action is prescribed. It is the fore-emotion in fore-experience present only on the occasions which are no longer *da capo* that is a *sine qua non* if there be guidance. It is emotional reversal of order that counts in guidance. And this reversal of order comes only with mental cross-over, when the maggot which has acquired this supplementary "meaning" (p. 103) is in the field of perceptive reference.

The physiological story of the bodily concomitants of such a primitive emotion as fear is extraordinarily complex. As now deciphered in animal life the important part played by hormones and endocrine secretions is difficult for the expert, still more for the interested layman, to picture in detail. I cannot here attempt to tell this story even in bare outline. Not only has the fear-response in motor behaviour to be reckoned with. This is only one factor. There is also the factor which is comprised under the heading of visceral response, initially prescribed. I must be content to put the matter very crudely. Along many recipient lines, diverging in efferent distribution, the pistol-shot reverberated, so to speak, throughout the whole body of the chick. Heart-beat and circulation, breathing and blood oxygenation, peristaltic contractions in the alimentary canal, excretory processes there, internal secretions and their effects elsewhere, were presumably all in some measure enhanced or diminished. Such or suchlike are the bodily concomitants of that which is experienced in mind-story as the emotion we call fear.

§ 5

In trying to render comprehensible what I mean by guidance of action I have expressed the opinion that it cannot be interpreted in terms of physical relatedness only. Nor can it be interpreted in terms of mental (or " other than physical ") relatedness only. As I may be allowed to put it, with italicised interchange of emphasis: Neither can an interpretation of *guidance* of action be given in terms of body-story only ; nor can an interpretation of guidance of *action* be given in terms of mind-story only. If I be asked : Why not ? I reply : Because the " only " in each case is based on vicious abstraction. If we deal with the living organism as a whole—not as body only, nor as mind only, but as body-mind—we should substitute " also " for " only " in some such positive statement as this : An account of action under guidance should be given not only in terms of one story ; it should be given also in terms of the other story. But only under the distinguishing analysis of legitimate abstraction *are there two stories.* In concrete synthesis there is just one story, that of the organism in twofold relatedness, physical and mental, where both kinds of relation, mental and physical, are effective under relational treatment.

In all this, it may be said, we are floated off into the tenuous atmosphere of theory. That is so. Quite frankly I am offering a theory in terms of which I interpret guidance of action—the theory which I speak of as concomitance. It is this theory which I am concerned to advocate to the best of my ability. I have spoken of it so often under body-mind terminology that to vary the monotony I will now speak of it in terms of action-experience. Then I should say that at no stage of the life-history of any organism, and at no stage of the evolutionary history of organisms, is there action without experience or experience without action. Only under vicious abstraction can we sunder the one from the other. But under quite legitimate abstraction we may

focus our attention now on action and now on experience, and we may discuss either under its appropriate heading, so long as we say nothing which implies that the one which is out of focus is not in existence or being.

Now, what observably happens we describe under action and interpret in terms of physical relatedness, extrinsic and intrinsic. In focussing attention on action we regard it as part of the go of physical events—that part of this go which occurs within the confines of the organism, as a centre of action. In purely physical regard events within this centre and beyond it just "go" in a manner which we loyally accept as "in accordance with the order of nature." But what chiefly interests us is some change of the manner in which they go. And with regard to this change in manner of their go in the organism as centre of action we ask: Under what change of physical relatedness—change of external "conditions" and change of internal "state"—does this change in the manner of their go appear in the evidence?

In all this we deliberately abstract from experience. We keep within the closed circle of physics. I regard such abstraction as legitimate. But under abstraction no less legitimate we may focus attention on experience. Then in place of the closed circle of physics we have a closed circle of experience. This I have discussed in a previous chapter (p. 63). The point here is that under this abstraction the "external world" has being in some field of reference. For the infant it is no more than perceptive; for us adults it is reflective also.

Within this world of objective experience is that to which we refer as action. It is action as it "appears" under that observation and that attention which are themselves modes of experience. We do not transgress beyond the closed circle of experience. But experience is always on the part of an individual someone, you or me, this infant or that chick. Each of us is the sole centre of "first hand" experience. Still, each may "impute" like experience—in a very broad sense of the word "like"—to other someones.

Such imputed experience is at "second hand." It falls under the heading of "reference" and under a special caption of "reference by imputation." And, whatever may be the genetic account of its origin in the course of individual development and of evolutionary progress, there, sooner or later, it is; and not only is it there, but all interpretation of experience other than one's own presupposes the validity of reference by imputation and hinges on how much or how little this or that interpreter feels justified in imputing, say, to the infant or to the chick.

In illustration of what I mean take such an episode in chick life as "three birds after one worm." What do you impute? Shall I surmise at a venture something that may be thus stated? Each of them wants that worm and won't be happy till he gets it. But that is not all. Does your imputation include also something more, which may be thus expressed? Each imputes to the other two the like experience of wanting the worm, and sees to it that their wish to secure it shall not be satisfied. I must leave you to say.

I think that most of us would say that we should, at any rate, impute to each chick guidance of action, in some sense of this phrase; that this implies experience, in some sense, on his part; and that such experience is, in some sense, mental.

Now what I have urged is that unless there be *fore-experience*, as I called it (implying revival and reversal of order), I, for one, am unable to interpret guidance of action. Thus we come back to action-experience as a whole under the co-relating hyphen of concomitance, but now with the stress on fore-experience. On the first occasion of any distinctive form of behaviour, say, pecking in the chick, and on subsequent occasions in so far as they are *da capo*, there is hyphened action-experience. But such experience takes no part in conscious guidance; and so, though we may dislike the word, we may say that such behaviour is "automatic," in accordance with one of the dictionary definitions of an automaton—"a living being regarded as without

consciousness." On such terms one may say that fore-experience is essential to guidance of action; that it affords a criterion of the presence of consciousness; and that it may be interpreted in terms of cross-over alike in action and in experience.

It is sufficiently obvious that there are difficulties that arise in any mind-story interpretation of experience which do not arise in the body-story interpretation of action. In a word, they are the difficulties inherent in all *imputation*. It remains to comment very briefly on those further difficulties which are in large measure due to our having three words, "mind," "consciousness," "experience," which may sometimes be used interchangeably and sometimes with a difference, though unfortunately there may be little agreement as to what in each case this difference is.

For those, if such there be, who use the three words interchangeably the meaning they seek to convey would be much the same whether they said: The history of consciousness is the history of experience to which we apply the adjective "mental"; or the history of experience is that of mind to which the adjective "conscious" is applicable. But for those who use them with a difference neither of these alternative statements would express what *they* wish to convey. They might say perchance: Mind through experience possesses consciousness; or, Mind through consciousness gains experience. Yet others might protest that nothing of this sort rightly expresses the essential difference implied in the correct use of each of these words. My point is that, if one may judge by consulting the vast literature of the subject, no definite trend towards some common agreement is yet in sight.

Each of us takes his own line with more or less inconsistency in usage. If I be asked to make suggestions (which probably no one else will accept) they must be taken as merely tentative. On these terms I should say: Let us speak of experience in the widest possible sense. That best conduces to relational treatment without precluding

treatment *d'un autre genre* in dramatic terms of agency. Thus under relational treatment one can discuss the field of experience in such wise as to include both objective reference and subjective enjoyment. Let us, in technical discourse, use the word " mind " in an equally wide sense, so as to embrace the whole gamut of mind-story, when our aim is to emphasise the radical distinction between mind and matter (or energy) and, in its adjectival form, that between the mental and the physical. Let us restrict the use of the word " consciousness," preferably in its adjectival form (for example, in conscious guidance) so as to make it distinctive of the perceptive stage of mental development ; and let us speak of that which lies below this level as subconscious ; of that which lies above this level as self-conscious at the reflective stage of mental development.

You and I who have reached the level of reflective self-consciousness have experience at all three levels—at the base-level since very much of our own experience is subconscious ; at mid-level in our current perceptive experience ; and at top-level when there is reflective control of action, then to be spoken of as conduct. It is experience at top-level that most of us mean, in a literary and conventional sense sufficiently clear from the context, when we say that such and such procedure is distinctively mental and betokens mind on the part of one who, as we shall see, may be in the full sense an agent.

CHAPTER VIII

Reflective Procedure

§ 1

If, with emphasis on the world as a going concern—a world of events in action—we regard any living creature as a going concern, guidance of action is the characterising feature of the perceptive as distinguished from the percipient stage of mental development. Guidance of action implies that there are, in the world as a going concern, relations "other than physical"—mental in the broad sense of the word—and that physical relatedness only does not suffice to enable us to interpret the manner of go in all world-events. Under relational treatment mind, in the living creature, is co-partner with body in rendering the go of some world-events such as we observe it to be. In a word, mind *counts* in the world's evolutionary progress.

Perceptive guidance of action implies not only current experience, but precurrent fore-experience under that revival which entails reversal of order in the affairs of the mind. And this fore-experience presupposes prior current experience on some previous occasion or occasions on the part of the individual someone. Each someone has his own percipient experience on which, if he be also perceptive, his own fore-experience is founded. In this sense there is no inherited fore-experience. What is inherited is such body-mind organisation as provides for the genetic origin of fore-experience under cross-over.

Both percipient experience and perceptive fore-experience imply reference as a kind or mode of mental relatedness. Under cross-over there is interweaving of the threads of percipient reference. And through this interweaving, which

becomes more and more intricate as the development of perception progresses, that which we reflective folk call a world of objective reference takes form for the perceptive someone. It is for him a world of perceptive acquaintance, not yet a world of reflective knowledge. I have spoken of this world of knowledge under reflective reference as a transformed world (p. 61). When we pass from perceptive behaviour to reflective procedure we pass from the untransformed world of reference of the infant, and of most animals, to the transformed world of reference in which our adult life is spent. It must be remembered that since our province of inquiry is mental development we should try consistently to keep within the field of someone's experience—that of this animal, this infant, this adult—with emphasis on his field of reference. This we may do, under legitimate abstraction, without prejudice to belief in the existence of an external world of physical objects independent of anyone's reflective reference thereto or belief in the creative activity of agents human or other.

Revert now to that guidance of action which was considered in the foregoing chapter. The position I sought to maintain was this. At the perceptive stage of mental development there is abundance of action—behaviour in the wide sense—often very elaborate and complex, as in many insects, which, so it seems, is not subject to conscious guidance, and can be interpreted without imputing fore-experience to the living organism whose behaviour is observed. On this stage there supervenes that at which there is perceptive guidance of action.

The position we have next to consider is this. At the further stage of reflective procedure which we reach in adult life, and at some stage of our child-life, there seems to be more than can be interpreted in terms of such guidance as we have thus far kept in view. There is that which I ask leave to speak of as control of conscious behaviour in the reflective conduct of affairs. In a sense somewhat technical, such conduct of affairs is " self-conscious " since a self of

reflection—a then-self, future or past, as well as, and one with, a now-self of enjoyment, comes into the picture; as do imputed selves of someones other than oneself. At the percipient level, then, one has action without guidance; at the perceptive level, behaviour subject to conscious guidance; at the level of reflective procedure, control of conscious behaviour in the conduct of affairs with a picture of oneself (so to speak) in the field of reference. It goes without saying that in our adult life very much action without guidance, much conscious guidance, and (let us hope) some reflective procedure, march on all abreast, knit together as constitutive of the someone's mind.

If that which I speak of as the self of reflection have being in the someone's field of reference (it is present in my field of reference as I write) it " counts " as a factor in the relational interpretation of my conduct of affairs. One can still apply our canon of natural interpretation. One can still say: Given such and such a field of mental relatedness, including a self of reflection as a factor therein; in such wise will be the conduct of affairs. And this one may still say without prejudice to a dramatic explanation (as I call it) in terms of the human spirit as a partaker in creative agency.

Let us now ask: Can we express in one word that which seems to be of radically fundamental import when we pass from perceptive behaviour to reflective procedure? I sought to express in the one word " fore-experience " that which I deem to be of radically fundamental import when we pass from action without guidance to perceptive behaviour. I now suggest as one word of like import in all reflective procedure, " *fore-plan* " in the conduct of affairs. Just as it is the aim of careful inquiry in any given instance of perceptible behaviour to ascertain *what* is the fore-experience imputed, so it is the aim of careful inquiry to ascertain *what* fore-plan is imputed. And in each case the " what " is that which most interests the psychologist and his readers—the " what " in all its intimate details. My far duller task is to get down to that which underlies all these more intimate details. I have

been led to believe that underlying the details of all perceptive behaviour there is some sort of fore-experience, and that underlying the details of all reflective procedure there is some sort of fore-plan.

It should be clear that I mean a fore-plan *in mind* on the part of someone whose conduct of affairs is in evidence—such a fore-plan as each of us claims in his own conduct of affairs; such a fore-plan as I had in mind when I sat down to write this chapter. This will no doubt be modified as I proceed with my task. I may have to rearrange, recast, and perhaps rewrite. But till my task is completed it will still be a fore-plan in process of modification. Our aim here, however, is to get down to far simpler fore-plans than this, such as may characterise the early steps in the genetic development of reflective procedure.

I can best illustrate under supposal, though not wholly supposal; since it is based on observations made by Dr. Lindsey many years ago. ("A Study of Puzzles," *Am. Jour. of Psych.*, vol. viii., p. 431.) Picture a small field within view from overlooking windows. A ball is dropped in the grass. Children of tender years are bidden (under conditions of a game) to find the ball, which cannot be seen by the child until he is within six feet of it. The track of the child as he looks for the ball is plotted by the observer at the window. In each case this track is at first vaguely sinuous, with frequent researchings of parts of the field already searched. Sooner or later the child finds the ball, is patted on the back, and gets a prize—the shorter the time the better the prize. The time may vary from 10 to 40 minutes or more till the child stumbles on the ball by good chance.

But suppose that some child, say, on the third occasion, no longer shows a sinuous course, but after a while in some way "quarters the ground"; suppose that on subsequent occasions he soon or at once does the like and on each of these occasions finds the ball (wherever it may have been placed) in less than 5 minutes—what then? Would not this afford presumptive evidence that on the third occasion a

plan of conduct in these little affairs had come into this boy's mind; and that thereafter he worked to a fore-plan in mind? Would not this exemplify an incipient step in reflective procedure? Might one not on the basis of many such observations be able to say: This occurs at the age of x years and not earlier?

The question would then arise: How comes it that plan and consequent fore-plan, then, seemingly pretty suddenly, spring into being? It is hard to answer this question. One may fall back on analogy—for some valid, for others wholly invalid—and say that a plan for the conduct of affairs "crystallises" in mind—or, as I should suggest, "emerges." Could not most of us adduce instances of happy occasions when after much fumbling over some problem a plan of its solution quite suddenly crystallises out or emerges? One then says: Will it work? One tests it by using it as a fore-plan of further reflective procedure.

§ 2

If someone ask me whether on such and such an occasion I had a fore-plan in mind or not I think I can say Yes or No, if I am able to avoid the pitfall of "rationalisation"—that is, attributing to myself on that occasion a fore-plan which was not present, but which I think "must have been" present to account for what I said and did. But if I be asked whether someone other than I had on such and such an occasion a fore-plan in mind or not, then, apart from his telling me Yes or No (and even then in some measure), I am in face of the difficulties attending "imputation" (*cf.* p. 146). And if I be asked whether a two-year-old boy has ever on any occasion a fore-plan in mind, my reply will depend on whether I feel justified in imputing to him that which is for me a distinctive feature of those someones who have reached the reflective stage of mental development.

Granting that we may provisionally accept plan and fore-plan in mind as distinctive of reflective procedure, this must

be regarded as only a preliminary line of approach to a transformed world of reference and to conduct of affairs therein.

Let us make a fresh start and plunge into the current stream of this world transformed in our ordinary daily procedure. I have already dealt with some episodes in the life of an infant or a chick. Take now an episode in adult human life—my own, for example.

I am a someone who is both perceptive (which includes percipient) and reflective. At the perceptive level there is in mind on any normal occasion abundance of current experience and of revived fore-experience. But there may be also some plan and fore-plan at the reflective level. We have now to focus attention on what seems further to characterise reflective procedure as illustrated by some episode of a kind pretty familiar.

I chance as I work to overhear the word " concert." Up springs a flood of fore-experience. I look forward to going to one next Tuesday at the X hall. This fore-experience may be perceptive only—such as the infant may have on sound of " choc." But " next Tuesday " and " at the X hall " are distinctively reflective. They imply a plan of space-time in mind. Part of my fore-experience is fore-enjoyment pleasurably toned—such as the infant may have when he sees a teaspoonful of raspberry jam. But is there no more than that ? Is there nothing which bears the hall-mark " reflective " ? If so, what is it ?

I am speaking of an actual occasion when I was making notes for this chapter. The word " concert " and what followed thereon broke in on my reflective thought on how best to characterise some salient features of reflection. But it served to illustrate part of my plan of treatment. So I jotted down a few memoranda. On sound of the word the first thing was : Must remember to telephone for a taxi. This was clearly an incident in an executive fore-plan. Then, as a matter of fore-experience, including fore-enjoyment, came something like this : I am seated in comfort, my wife

by my side; I see the spacious, well-lit hall. The members of the orchestra are taking their seats; I hear the great chord from the organ, the instruments tuning up and coming into accord, with many excursions up and down the scale, but all in harmony; and so on. Further details would be wearisome, and these few are trite enough.

What do they illustrate? Incidentally they serve, I think, further to illustrate the contention (*cf.* p. 142) that the pleasurable thrill of fore-experience, with fore-enjoyment, does not reside, so to speak, in this, that, or the other expected item (comfortable seat, wife by my side, and the rest), but in nothing less than the total fore-experience now of what will be actually experienced then, if all goes well. But this does not bring out the essentially reflective factor which I seek through this little episode to illustrate. How can I so put it as to direct special attention to this reflective factor in mental procedure? Seated at my desk I am here-now; but the concert-hall business is there-then. And yet reflectively I am there-then; and it is here-now! There is not only perceptive reversal of order where fore-experience under revival slips in just a little before the actual experience comes under routine. This there is, though the fore-experience is much further ahead of experience. But there is more than this. There is on the part of myself here-now a reflective "picture" of myself there-then. Such reflective-picture of the then-self on the part of my now-self of current experience is characteristically reflective. It is, however, so much part and parcel of our normal reflective life that we are prone to impute something of the sort to the infant or the chick. But if the chick and the infant are perceptive only there is on their part nothing of the sort, and such imputation is erroneous.

Now there are, as we shall see, peculiar difficulties in the interpretation of the self of reflection. Let us for the present postpone their consideration. That leaves us with here-now and there-then. If I venture to say that even there-then is characteristically reflective, what can I mean?

We adult folk are so deeply immersed in a world transformed under reflective reference that it is hard for us to realise that there was, as I believe, a stage in our own mental development when we lived in a world of naïve perception as yet, for us then, untransformed; that most animals pass the whole of their life in a world for them untransformed; hard, too, to grasp what can be meant by one who says that in this untransformed world of perception there is reference neither to the future nor to the past.

Since I am one who does believe in the truth of this strange statement, it may well be asked of me what I mean by it. No future to which there is reference at the perceptive level of mental development! Have I not again and again laid reiterated stress on my belief that with fore-experience comes reversal of order? Is not this reversal of order "in time"? Does not this imply knowledge of and belief in the future? Assuredly it does *on my part;* and, as I believe, on your part. But that is not here and now in question; for we are reflective folk. The question before us is: Did we at the age of eighteen months, when we had abundance of fore-experience, believe in the future? Was there *for us* at our *then*-stage of mental development any knowledge of a future in which to believe? Like questions may be asked with respect to animals—the lamprey, the lizard, the lark; the lamb, the leopard, the lemur—substituting "*for them.*" Believing is a subjective attitude in a mind transformed; it has as its "objective" a world transformed. In a mind which is *as yet untransformed* there is no such subjective attitude; nor is there a world transformed correlative thereto.

The emphasis is on "a mind untransformed," and on the world untransformed to which that mind has reference. One's difficulty is to read oneself into the mental attitude of someone who lives at this perceptive stage of reference. Such a someone, an infant, for example, lives, as we say, "in the present." We who have reached reflective status live also in the future and the past. For us there is reflective

reference now to the future and now to the past. But that to which there is such reference is a time-scheme of the course of events. Given a time-scheme we interpret what happens with reference thereto. The questions I ask are: Has the infant or the cow—has any someone who has *not* attained to reflective status—a time-scheme of past-present-future? Is not such a time-scheme somewhat which is distinctive of a world transformed? If it be distinctive of a transformed world, is it not distinctively a mode of *reflective* reference? Has it then any being in a field of perceptive reference? If not, may one not say that in the untransformed world of perception there is reference neither to the future nor to the past? Are not what we speak of as future and past thought-concepts beyond the reach of the perceptive cow or the perceptive infant?

I must not labour the matter further, though past and future bulk large in all reflective procedure. I will leave it as part of the wider question: Is there in the course of mental development (for it is mental development with which we are concerned) so marked a change from a mind perceptive only to a mind which is reflective also as to justify one's speaking of the latter as a mind transformed with correlative transformation of the world of reference in and for that mind?

§ 3

I have suggested that a fore-plan in mind is a characterising factor in all reflective procedure. Such a fore-plan implies an end in view; and an end in view always implies that reference to the future which we have briefly considered.

In what now follows I mean by "end in view" that which is in mind as in some way to be "attained" through reflective procedure. I mean in what follows a *reflective* end in view—nothing less than this. But there is, as we shall see, always more than this.

One might take in illustration some highly elaborate and

complex end in view, such as I have in mind in writing this book. I prefer to consider a relatively simple end in view at a far earlier stage of mental development. Some episode in a small boy's life will best serve my purpose. I select one that is pretty simple and yet, I think, sufficiently characteristic; one, too, in which what he says is an aid to us in imputing to him what, as we put it, is "passing through his mind."

He sees other boys riding their bicycles. It seems pretty good fun and quite the thing to do; jolly useful, he may say, in getting to and from school. Unable to ride, the boy feels rather an outsider; not quite in the swim with others of his age. Till he can ride, what chance of being given, perhaps next birthday, a bicycle of his own? So, on some such grounds as these, he wants to learn to ride. It looks easy enough; but he finds it not quite so easy as it looks. Give it up? No. I'll stick to it. What Tom Smith can do, I can do; and a bit better. Soon he can ride passably well. But not yet like Sam Jones. He *is* a nailer. Still, some day! Why not? Even *he* said, yesterday: Not so bad for a youngster. And he *can* ride.

Here I impute to the boy distinctively reflective procedure. I impute to him, too, the capacity of imputing to others experience much like his own. There is plan in mind taking form in large measure as executive fore-plan. Every step in gaining practical experience through behaviour is translated into fore-experience in so behaving. He is learning on perceptive lines. But he looks forward to the time when he himself will ride as well as does Sam Jones. In so far as he does this his procedure is not perceptive only. It is reflective also.

In so far as his procedure is reflective the boy has not only an end in view, but seeks *means* to reach an *outcome* which shall tally with the end he had in view. It seems that riding is the end he has in view; riding the outcome; and riding (doing this or that) the means. And all three, thus analytically distinguished under legitimate abstraction, so far

constitute a progressively developing plan in his mind with emphasis on end in view as fore-plan. But, on further analysis, the means is itself resolvable into end means and outcome on the understanding that it is, and is in some measure recognised as being (i.) subordinate to, and (ii.) contributory to, the major end in view. I am not suggesting that the boy submits his procedure to any such analysis as this. That comes at a later phase of reflective thought. But I do submit that even at his stage of reflective development the use of the brake, for example, is recognised as contributory to the end of slowing down, and that if, in outcome, he has not slowed down enough he realises that this is because he did not use the brake effectively. I do submit that, in so far as his procedure is reflective, end, means and outcome are all three present in the field of reference. The boy looks forward toward end in view, but also glances back from the outcome so far reached, if not simultaneously in some strict sense still within that which is spoken of as the " specious present."

It is noteworthy (i.) that the actual outcome is seldom, if ever, quite the same as was the end in view; (ii.) that the boy does not quite know what was his end in view until he reaches the outcome; and yet (iii.) that he can often say: This outcome is not quite the end I had in view. He is all the while learning through behaviour and utilising what he has so far learnt for further behaviour. To put the position picturesquely: he seeks that he may find; but not until he finds does he quite know what he sought, though he may say: This that I find is not quite that which I sought. So he starts afresh. He tries and tries again, until, if ever, the outcome he reaches accords with end in view to be attained.

It seems, then, that at the modest level of reflective procedure at which our boy stands, he has in mind a space-time plan in which events, future and past, are, so to speak, laid out to scale; in which " there-then " takes some such pretty definite form as " in the avenue to-morrow " I shall try again to ride without touching the handle-bar; or " in

the road a fortnight ago " I had a bad skid and a spill. It seems that he does " picture " himself in the avenue to-morrow and himself with a bruised knee on the road awhile since. And it seems that he does have in mind end in view, means, and outcome. I submit that if his conduct of cycling affairs is reflective, he has in mind nothing less than this—writ smaller perhaps, but with these factors as essential.

No doubt our boy—who is but a little fellow—may ere long have something more in mind with reflective reference to his riding—some tincture of " theory " as well as " practice," as we say. And, by asking an older boy a few questions, one may seek to ascertain what may be the range of this something more. Take two questions as samples. (1) Which way do you turn your handle-bar and front wheel when a sudden shock of wind, or a careless companion, makes you heel over to the left ? (2) How is it that one can quite easily retain one's poise when the bicycle (with only two wheels, front and rear) is running at a fair speed, but cannot easily do so when it is going very slowly ?

If the first of these questions be asked of a good many boys of ten or twelve years, some will say that they turn to the right ; others that they turn to the left. Bid them, with a little judicious instruction, spend an hour or so in finding out which they actually do in practice—all, or nearly all, will thereafter tell you that they turn to the left. You then perhaps say : Left-leaning and left-turning go together. When you turn a sharp corner to the left, do you not lean to the left ? All will reply without hesitation that they do so ; and some may add : " I might have thought of that."

Thus you might lead up through a little talk to an answer to the second question. You might say : When you are running freely along a straight road, you don't pedal ; perched on the bicycle you let it go ; the go will carry you straight on. Now if some push make you heel over to the left, you turn to the left ; but you don't know why you do so. May it not be that when you turn *to* the left the go of your body straight on slings you up *from* the left ? You probably

overdo it, so that your go carries you over too far. This you correct by turning to the right, and so on, until you regain your poise and keep a pretty straight course. Does not the sinuous track of your wheels on the road bear this out?

Why, then, does the speed at which you drive your bicycle make so much difference? May it not be because, as you slow down, there is less and less "go," until the time comes when there is not enough left to pick you up? And so on. You are helping the boy to bring his fore-plan in practice and a theoretical plan of the physical go of events into relation, and to realise how far they are in accord.

A sharp sixth-form boy, with an inquiring turn of mind, may then round on you with a question on his part. Why is it, he may ask, that if all this be so, that little duffer, Harry Brown, *does* it all right, though he knows precious little about "go" and the rest? What *makes* him do it all right? If in your reply you speak of subconscious experience which accompanies the stimulation of receptors in the semi-circular canals of an organ of balance hidden in his skull (*cf.* p. 135), the sharp boy may ply you with further questions which will keep you pretty busy.

§ 4

When our small boy has learnt to ride passably well we say that he knows how to ride. But we might add that this is practical knowledge only. Later on, as we have seen, he may supplement this practical knowledge by theoretical knowledge in progressively increasing measure.

The question then arises: What is the relation between practice and theory? This, however, is too large a question for us here to consider. One can but touch the fringe of it. Both play a part in the conduct of affairs in our adult life. Both are in being only at the reflective stage of mental development, since then only is there conduct of affairs as contrasted with perceptive behaviour, no matter how complex this may be, for example, in animal life. Both afford

evidence that a plan "crystallises" or "emerges" in the someone's mind, and thereafter (under reversal of order) precedes—as fore-plan—the conduct of affairs on later occasions.

Now, if it be permissible to substitute "knowledge" for "plan in mind," then one may say that, whereas unreflective behaviour is based on no more than *acquaintance with* objects of perceptive reference, reflective conduct is based also on *knowledge* as a plan of procedure; and one may substitute "fore-knowledge" for "fore-plan" in the subsequent control of conduct on later occasions. On these terms it is questionable whether theoretical knowledge differs in principle from practical knowledge save in its wider sweep and range. The presence of some knowledge-plan renders all reflective practice at least nascently theoretical.

Be this as it may, let me, here and now, abstract from such theoretical knowledge as there may be in the reflective field of reference notwithstanding the prominent part that it plays in all our adult interpretation of the conduct of affairs. That still leaves us with the practical fore-knowledge exemplified by our boy who knows how to ride passably well.

Emphasis has already been laid on the presence in his mind of end, means, and outcome in subtle inter-relations. These fall within his field of reflective reference. But the boy is also a system of subjective enjoyment. In saying that he "wants" to ride a bicycle as other boys do we impute to him the subjective attitude of wishing—in brief, "a wish"; impute to him, too, those "feelings" which, on the testimony of our own awareness, and of what he tells us, we speak of as satisfaction or the reverse.

Now we cannot sunder reflective reference from subjective enjoyment save under vicious abstraction. We can, however, under legitimate abstraction, so distinguish them as to bring the ictus of attention on the one or the other. In discussing end, means and outcome the emphasis was on reflective reference. At most some subjective enjoyment was implied. But when we say that the boy wishes to

learn, and is satisfied (or dissatisfied) at any stage of his progress, the emphasis is now subjective—on wishing or being satisfied on his part.

One commonly tells what happens with initial and final emphasis on subjective enjoyment. One says, for example, that the boy wants to ride as others ride ; he won't be happy till he gets what he wants—ability to do so. He starts with a wish ; he ends, let us hope, with satisfaction. This statement, as it stands, is so trite as to call for apology. But, as it stands, it fails to strike a distinctively reflective note. It ignores the characterising feature of reflective procedure—that of so bringing wish and satisfaction into relation that neither is what it is without reference to the other. The wish is not only to ride well, but to get satisfaction in doing so ; and the satisfaction in doing so is realised as the fulfilment of the precedent wish. Any wish I entertain carries with it anticipation of fulfilment ; the satisfaction is recognised as the fulfilment of the wish. Furthermore, it is *my* wish that is to be fulfilled if I attain the end I have in view ; *my* satisfaction that attends the outcome which through my choice of means has been reached.

So, too, though with far less reflective, and (some may say) sophisticated gloss, is it in the case of our cycling boy. At first he looks forward to a future then-self who can ride like Sam Jones ; at last he looks back on a past then-self fumbling through a prentice period of dufferdom. None but a being capable of reflective procedure can do anything at all like this. Reflectively, and reflectively only, can one do what one is doing, as the most obvious matter of course, as a being transformed in a world transformed—can one " contemplate " a then-self (that of last week on the golf links, or that of the day after to-morrow in the concert hall) as the self that *was* then, or *will be* then, but *is* no longer or not yet, the current now-self of the passing specious present.

It may be said that all this seems to imply that only at the stage of reflective procedure is there any knowledge of self.

Since both these words may be used with a varying range of signification, one must ask: What exactly do they here mean? Are both of them co-extensive with experience in the broadest sense of this word? If so, has not even the amœba knowledge of self? In this broad sense any living organism, in so far as it is in mental regard a system of experience, is, in virtue of that experience, a self.

Now I see no serious objection to the use of the word "self" in this broad sense so long as one makes sufficiently clear what one means. But I think it well, with due warning, to reserve the word "knowledge" for use *only* at the reflective stage of mental development. And on this understanding the self of which one has knowledge is no longer one's self of experience. It is a self of reflective reference. It is a self which tallies with, is a concept of, or a transcript from, or a transformation of, the now-self in current experience. But it includes also the then-self of experience reflectively assigned to the past that is no more, or to the future that is not yet existent.

It is on this understanding that I express my belief that none but a reflective being has knowledge of self; express, too, my belief that a known self has being only *in* a world reflectively transformed *for* a mind no less reflectively transformed. But I also express my belief that this doubly transformed world is not "an ideal figment," but "real," in the sense that it is progressively opened up to our widening view as we tread the pathway to reality.

To put the position in the briefest possible form, the physical world is a world transformed, or even transfigured, under the ruling concept of space-time; our conduct of affairs in this world is reflectively transformed under the ruling concept of self.

For the conduct of affairs, and *in* the conduct of affairs, plan and fore-plan are suffused with this ruling concept of self; *my* end in view, the means which I select, the outcome I reach, betoken the presence of a self of reflection in the picture. There is wish on *my* part; on my part satisfaction.

I impute the like to others; impute to them, too, like imputation to me. In a valid sense the life of reflection is the life of a being not only conscious but self-conscious; not necessarily self-centred, under that meaning of the word which we may have in mind when we speak of a girl as a "self-conscious puss," always posing to herself and courting if not the admiration at any rate the notice of others.

A plan and fore-plan for the conduct of affairs no longer a matter of routine; within that plan reflective reference to his own future and past; subtle interplay between looking forward and looking back; under reference, end, means, and outcome closely inter-related; under enjoyment precedent wish and subsequent satisfaction; seeing in the wish that which may be fulfilled with satisfaction and in satisfaction fulfilment of the wish; seeing in the means a requisite chain linking outcome and end in view; all this—no doubt more than this, but nothing less than this—characterises the evolutionary and, as I believe, emergent passage from perceptive behaviour in the infant to reflective procedure exemplified in the boy's conduct of affairs when he is learning to ride a bicycle with passable skill. This, at any rate, in our illustrative example is distinctive of pretty well established reflective procedure.

Some may ask: Is not all this exemplified, at least in essentials, when, at a far earlier age, the infant is learning to crawl? Have we not here also a precedent wish to crawl and subsequent satisfaction in doing so with passable skill? Have we not here also end in view, outcome, and means to its attainment? Have we not here also a fore-plan in mind? My belief is that we have not. We have only progressive routine under such guidance of action as was considered in the last chapter. There is as yet no reflective procedure with control of conduct. I find no convincing evidence that this is present. And since I feel bound to base my conclusions on the evidence as I read it, my considered verdict is: Not proven.

§ 5

That all that happens in the crawling episode of a child's life *can* be interpreted with pleasing facility *if* we impute to the infant the capacity of reflective procedure I freely admit. But keeping in view my evolutionary canon (p. 70), I submit that, under genetic interpretation, we should not impute the higher capacity if the lower ability, at the perceptive level of mental development, enables us to render an adequate and sufficient account of what we observe.

I admit also that the leading words I have used with signification I have sought to make clear, *may* be used with meaning quite different. The word " wish," for example—qualified perhaps by " sub-conscious "—may be so defined as to empty it of all, or well-nigh all, that gives it a distinctive footing in reflective procedure.

The trouble is that if one agrees, as a matter of convention, thus to reserve the word " wish " for use at the reflective level, one is faced by the question: What words, then, is one to use at lower levels? I am not prepared to give a satisfactory answer. I can only make a tentative suggestion which, perhaps, no one else would accept. At the mid-level one might use the word " want." The infant wants to crawl. He wants the cake of Pears' soap outside his bath. The chick wants the juicy maggot. The want implies fore-experience, but not a fore-plan of the conduct of affairs.

It is not easy to suggest a word appropriate for use at the yet lower stage of merely percipient action. But perhaps the word " need " might serve under suitable definition. It would then mean a felt need, a need within experience, a need as a mode of awareness. On these terms the amœba, subject to the state of organisation at the time being, needs food, and needs it with a special quality of awareness. But on these terms he does not want to get this or that food-particle; nor is there a wish to attain this end in view.

Need, then, in this sense, is common to all three levels:

want is common to mid-level and top-level; wish is restricted to the top-level of reflective procedure. A wish is more than a want; a want is more than a need. But the greater includes the less; hence every wish is based on a want, every want is based on a need. For the word "need" one might substitute "urge," were it not that for many this word has quite other implications. Still, if it were permissible to do so, one might say that our boy experiences a deep-seated urge to ride a bicycle on which his wish to do so like Sam Jones is founded. One may use the word need (or urge, as a synonym) at all levels; want at mid-level and top-level; but wish at top-level only as distinctive of reflective procedure.

What I seek to illustrate by the foregoing paragraphs is that if one accepts a three-level doctrine, *some* accordant adaptation (not necessarily *this* adaptation) of current terminology is desirable.

Let us now restrict our attention to reflective procedure, still bearing in mind that it pre-supposes and is based on perceptive behaviour. Some of this lower behaviour—not all of it, but the net result of much of it in so far as *ad rem*—is brought under control in the conduct of affairs. One may speak of a being—let us say an adult human being—who is capable of such control as an agent, in dramatic regard, but subject to the reservation that only in so far as he exercises this control with purpose is he then and there an agent. If a man behaves in such and such a manner as a matter of mere habitual routine he no longer exemplifies, then and there, reflective conduct of affairs. He acts unreflectively and in that sense instinctively. He is not then and there an agent, though he has been an agent in establishing a routine which has become habitual. We are approaching the dramatic concept of agency.

Though he may not express it in these words, our cycling boy of six or eight years already regards himself as an agent; regards himself, too—though under no such sophisticated phraseology—as a centre of creative activity. The notion is

there; and it is inseparably linked with—one might even say one with—the notion of self. *He* can do this or that. Sam Jones can do this or that. It is *they* who so adjust their pushes and pulls (p. 41) as to drive the machine and direct its course "at will." They are "free" to go hither and thither in pursuit of the obvious end in view—to get there. The agent other than himself is always a someone who does something, like unto himself as a someone who does something. As agents we are actors on the scene of life and view that scene and the part which we and others play in it dramatically. And thus to view it dramatically is a reflective attitude far more primitive than to view it scientifically. But prior to reflective procedure there is neither the one attitude nor the other.

We are thinking—be it remembered—in terms of mental development. If there have been such progressive evolution of individual minds as I have tried to portray, there came on to the scene at long last in the course of some millions of years, self-conscious agents capable of reflective procedure. Ends in view on their part as persons, with all that such ends in view imply in the field of reflective reference and in the correlative system of subjective enjoyment, in due course dawned on the widening horizon of minds thus reflectively transformed in a world for them reciprocally transformed.

Is this transformation scene susceptible of natural interpretation in terms of relatedness? My belief is that, if to mental relations be accorded full rights as factors in relational treatment (but not otherwise), they can be so interpreted. One can still apply our canon of evolutionary interpretation. In respect of any given instance, one may say: Given such and such a reflective being in such and such a reflective field of relatedness, including such and such ends in view with all that these imply; such is then and there his conduct of affairs. To this it is no valid objection to say that in no given instance do we know what all these "such and such's" *are*. Is it not *our* end in view to ascertain what they are, so far as the vast complexity of the problem permits?

If, however, new ends in view be emergent, one cannot foretell what the conduct of affairs *will be* on some future occasion even in one's own life, since no emergent is predictable before the event of its occurrence in a system of events still in the making.

May I now substitute for " reflective being " the word " person " ? Notwithstanding all the difficulties in rendering clear all that the concept of personality implies, I think I may do so, in our present context, if I say that what I mean by a person is one who has ends in view, and seeks means to their attainment in the conduct of affairs. I am quite prepared to add : Perhaps more than this, if I be allowed to emphasise : *Nothing less than this.* Then I may say : Given such and such a person in such and such circumstances such (bar emergence) will be his conduct of affairs. On these terms the infant in arms is not yet a person ; but our boy cyclist is already a person. Each of us at some stage of his development has become a person ; and thenceforward his personality shows wider and fuller development as his ends in view grow richer in range. On these terms a person is a product of evolution, emergent or other, and, as such, all that he does is susceptible of natural interpretation.

One more question. Does each one of us, in becoming a person, become also an agent ? Yes and No. Yes, if we emphasise the word *also* and take the word " become " to mean that he then reflectively realises that he is an agent. No, if we emphasise the word *become* and take it to mean that as creative agent he is a product of evolution, emergent or other.

I revert to the point of view presented in the introductory chapter. I said at the outset : There are two ways in which one may account for any event. One may explain it as due to the act of some agent. Or one may interpret its occurrence as in accordance with the order of nature. The former I begged leave to call a dramatic explanation ; the latter a natural interpretation.

My philosophical creed is that any event, and the whole

system of events, may be interpreted in terms of evolution, and that any event and the whole system of events may be explained as due to the creative activity of God. There are difficulties, no doubt—difficulties which are as old as human thought ; difficulties which I am unable to overcome. This, however, is not the place to say more on this head (*cf.* Chapter XII.).

Save for occasional reminders that we were abstracting from dramatic explanation in terms of creative agency, I have, from the second chapter onwards, dealt only with natural interpretation. But when we come to the interpretation of reflective procedure on the part of a person, it does seem to me that, even if personality may be regarded as the outcome of evolutionary process, human persons may also be regarded as actors who play their parts in the drama of existence with some measure of creative activity.

If this be so, I think it is legitimate to use the word " person " in both contexts, and to say that one who has become a person under natural interpretation is *also* a person as, within limits, a creative agent in the conduct of affairs. But, on this understanding, I submit that nothing less than one who has ends in view and seeks means to their attainment under control of conduct, takes part in the drama of existence as a creative agent.

CHAPTER IX

Progressive Organisation

§ 1

The position we have thus far reached is this. In following the course of the evolutionary progress of mind we have been led step by step from percipience, through naïve perception, to reflective procedure, and thus to the person with ends in view who selects means to the control of conduct. We then come into touch with those who say that one who acts with ends in view and affords evidence of control is a personal agent, a centre of creative activity.

Is there anything contradictory in the claim that he is a natural person, the outcome of evolutionary process, and the further claim that he is also a personal agent, a centre of creative activity, unless it can be shown that these two claims are logically inconsistent ? Since I see no such inconsistency, I can and do regard both claims as valid.

On these terms the word " person " may be used in both contexts, in that of natural interpretation and in that which I called in the introductory chapter dramatic explanation. But this does not imply that as a centre of creative activity he is a product of evolutionary process. For as agent he is not a product of evolution, but the producer of certain new developments in the natural course of world-events. What, in my usage of the word, *is* implied is that nothing *less than* a person—one who has ends in view and selects means to their attainment—should be recognised as a creative agent. I do not say " nothing more than this." I leave that question open. If Life be a creative agent, then Life is nothing less than a person. If God be a creative agent, then God is nothing less than a person.

May I here accept the word " spirit " for exclusive use in the context of agency ? Then, while leaving it open to others to speak of Life as *Spiritus creator*, it is open to me to speak of God as *Spiritus creator*. It is open to me to claim that there is nothing inconsistent in the belief that the progressive constructiveness in nature is susceptible of natural interpretation and a further belief in the creativity of God as personal agent.

In saying this, however, I am looking ahead too far. I seek only to make it quite clear that in proceeding to consider some aspects of the progressive organisation which we find in the constructiveness in nature we have here and now no concern with the question: Who or what organises? That question does not arise within the domain of evolutionary interpretation.

But within this domain a pertinent question does arise. It may be thus formulated: If there be emergence *in* mind, is there also emergence *of* mind? And if so, from what is mind emergent? My belief is that, though there is emergence in mind, and emergent development of this or that mind, yet there is no emergence of mind from that which is nowise mental. That means that there is no emergent step from the physical to the mental.

Since this runs counter to much current opinion, there is a plain issue between alternative hypotheses in the domain of natural interpretation. To focus this issue let us ignore such distinction as there may be between emergent and not-emergent evolution; let us, in physical regard, keep within the range of physiological process; and let us take consciousness in the sense of awareness as a distinguishing character of mind. Then, in accordance with much current opinion, when some requisite stage of physiological complexity is reached, consciousness appears on the scene. In other words, conscious awareness is in some way evolved from physiological transactions in which there was heretofore nothing of the kind. Crudely stated, mind, on this hypo-

thesis, is the natural outcome of the progressive evolution of "matter and energy."

One might suppose that it is a question of evidence whether this is so or not. Of what sort is the evidence in support of one hypothesis or the other? I take it that the evidence in the sense intended is that afforded by the observable behaviour of this or that living organism. It is on this evidence that one imputes consciousness to any "someone" other than oneself. Hence we are brought face to face with the difficulties of imputation (*cf.* p. 165). And we are led to realise how hazardous is all imputation—hazardous even when we impute such and such motives to another human being; still more so when we impute (or do not impute) ends in view to a year-old child, or guidance of action to an infant when first his gaze clings to some softly illuminated object. In a sense all imputation is in some measure—often in large measure—speculative.

I accept this position. I submit that the evidence afforded by observable behaviour is not such as to justify one in asserting *either* that all physiological processes have conscious concomitants, *or* that some physiological processes have no conscious concomitants.

On this showing you ought (it may be said) to accept neither and remain "avoirdupoised" between them. None the less I believe that all physiological processes have concomitants of the mental order. On what grounds? In the first place a fairly long and close acquaintance with what one can observe leaves me with the conviction that physical relations and mental relations are so different in kind that neither can, as I put it, be emergent from the other. That, however, is merely a "general impression" or a "pious opinion."

Secondly, since on my interpretation there is fore-experience at the perceptive stage of mental development, this seems to me to justify the inference that there is a prior stage at which current experience may be imputed to the living organism as percipient only. If no precedent experi-

ence, then a subsequent fore-experience. Such is the hypothesis on which I proceed.

But if one accept an hypothesis one must not play fast and loose with it. On my hypothesis I am precluded from saying either (1) that such and such prescribed behaviour is physiological only and that the co-related percipience may be left out of account; or (2) that such and such conduct which was heretofore reflective is now physiological only and has become a bodily habit in the further discussion of which no account need be taken of mental concomitants. For this may imply, and for many does imply, that what was physiological only does become mental and that what was mental—for example, some acquired habit—does become physiological only.

§ 2

What is commonly spoken of as habit is so well illustrated in the procedure of the boy who is learning to ride a bicycle that a plain-tale recital of the observable facts is unnecessary. The habit, as such, is a form of routine in his behaviour; and we say that this routine is learnt or acquired in the course of the boy's daily procedure. In the cycling episode it is acquired subject to a plan in mind which is also an executive fore-plan of conduct. The habit-routine may thus be regarded as a translation of the executive fore-plan into an established form of behaviour in course of execution as the boy rides with increasing skill and ease.

May we say the like of the habit-routine which is acquired by the child in learning to crawl at an earlier stage of his life-history? I think not. Though others may do so, I am not prepared to impute to the child a few months old an executive fore-plan in mind, though I do impute to him fore-experience in the guidance of action which takes form as an established routine of behaviour.

It seems, then, that on genetic grounds we may distinguish habit-routine acquired under guidance of action, with fore-experience only, from habit-routine acquired under

control of conduct, with fore-plan also. The one is precedent to reflective procedure; the other is consequent on reflective procedure. In the boy's cycling, the habit-routine is consequent on reflective procedure. If there were no riding as an end in view, there would be no executive fore-plan to be translated into this established form of habit-routine. But we must look into the matter somewhat closely. There is little doubt that very much in the detail of the boy's habitual procedure—the use, as we say, of hands, arms, legs and feet; the balance of bodily poise—was acquired under perceptive guidance of action long before he thought of riding a bicycle. They already had perceptive organisation. But they are progressively reorganised, under reflective control of conduct, in subservience to the end in view, that of riding well. And I take it that the attainment of "good form" as a cyclist is itself part of the boy's end in view. It falls within his intention.

Now what seems to happen in the perfecting of skill is that all unnecessary redundance of motor output, so plentiful and embarrassing to the beginner, is eliminated. But though he wishes to get rid of it, he finds it difficult to do so. He has in large measure to hope and trust that improvement in riding will "come with practice."

If all goes well it does come, and his wish is fulfilled with satisfaction. But is its coming subject to his reflective control, save in the sense that he deliberately sticks to steady practice? It seems not. He has to await its coming. What, then, does come? That which comes with practice is a reorganisation of factors contributory to effective skill and a suppression of all the factors which render the behaviour less effective. What comes is a reorganisation of a cross-over pattern analogous to that which occurs in the establishment of habit-routine under perceptive guidance of action. But why should one say "analogous to that"? May one not make bold to say that it is just that?

One is too prone to suppose that when reflective control of conduct appears on the scene of mental development,

perceptive guidance of action is forthwith served with notice to quit. Far from this being so, reflective control of conduct directed to the attainment of some end in view sets the scene for the further development of perceptive behaviour under guidance of action. And I think it may be said that all motor habits of bodily skill as such are at the perceptive level and are only *indirectly* under reflective control.

That does not mean either (1) that motor habits of bodily skill are " physiological only," or (2) that reflective control is mental only. In both cases there is co-relation of physical and mental relations. In our present context there is no implication that at some stage of habit-development what was mental ceases to be mental and becomes " integrative action of the nervous system " only, or merely the smooth running of a motor mechanism which may now be left to go of itself. Nor is there any hint of the strange doctrine that if there be some hitch in this go, conscious awareness is thereby " generated "—as was commonly taught in my youth.

I see no objection to saying that much habit is " sub-conscious " if the word " conscious " be so defined as to mean *reflectively* conscious. But surely much habitual action is conscious in the wider sense that it is within the field of perceptive awareness in behaving. One can bring " a concept of or a transcript from " this awareness in behaving into the field of reflective contemplation (p. 164). In this sense one can watch the progressive development of some form of skilled behaviour in one's own experience. And then some of us find—I think the finding is not uncommon—that some nuance of skill comes pretty suddenly, and not infrequently comes to stay. The beginner at golf, for example, thinks a good deal about stance, pivot, slow back, follow through, eye on the ball, and the rest of it. And, do what he will, the requisite co-ordination does not come at his bidding. But on some happy day it *has* come. On the next two or three occasions he may be back in the old rut of incompetent foozling. Then it comes again, and yet again.

And so on. Similarly some tricky bit of technique in playing the violin, so long eluding all well-directed effort towards capture, pops up suddenly and says: "Here I am." Few, I suppose, cannot "cap" such instances by adducing experience of their own.

It seems that a new perceptive organisation may "run into pattern" pretty suddenly. And this may be typically illustrative of emergence in mind. But, of course, as they come only with practice, so, too, they must stand the test of further practice if they are to take rank as well-established habits. And the better established they are the more "sub-conscious" they become.

In older phrase, the more "instinctive" they become. This word is regrettably ambiguous, partly because, in the current usage of daily conversation and literary convenance, it so largely takes its meaning from the context. If we say that the boy steers his machine, avoids stones on the road, turns his front wheel to the left when he is pushed over that way, leans to the right when rounding a corner in that direction, and does much else "instinctively," the meaning is that he does what he does "without thinking" or without any longer "having to think." His thoughts are engaged elsewhere. He has "set the stage" for cycling, and can safely leave perceptive habit to "carry on." In this sense "instinctive" is synonymous with "unreflective." In another sense instinctive behaviour means not only that which runs its course without *thinking* or having to *think*, but without precedent *learning* or having to *learn*. The boy's cycling habit is not instinctive in this latter sense. Indeed, none of his habits is instinctive in this sense. It is in this sense that the word "instinctive" is still commonly used in the discussion of the behaviour of animals.

§ 3

Let us take the word "instinctive" as adjectival to behaviour; let us briefly consider instinctive behaviour in

animals; and let us characterise such behaviour as that which runs its course without precedent learning or having to learn on the part of the animal under observation (p. 132). Then, to bring what is now to be said into line with that which has already been said: (1) Instinctive behaviour is an organised pattern of prescribed responses; (2) it is at the percipient stage or level of mental development; (3) it is as such precedent to that cross-over which distinguishes the perceptive stage or level; hence (4) it runs its course in the absence of any relevant fore-experience and *a fortiori* in the absence of any fore-plan of conduct.

Now just as I have taken the cycling episode in a boy's life-history as illustrative of what I deem to be essential in reflective procedure instead of taking some far more complex example, so here, instead of taking some very complicated instance of instinctive behaviour, I shall take relatively simple and familiar episodes in the life-history of animals. For better or worse such is my method of procedure. It is no doubt tamely undramatic; but I venture to think that it is not unscientific. In illustration, then, of instinctive behaviour I take such an episode as the pecking of a chick when first his eye is adequately stimulated, or the swimming of a duckling when he is first placed in water.

In what sense may it be said that the instinctive behaviour of this chick or of that duckling is on the first occasion carried through with orderly routine, but without precedent learning on the part of the little bird? The question may seem simple enough, and the answer no less simple—namely: Because he has no prior experience of doing anything of the sort. There is, however, some ambiguity in the word "learn." Let us suppose that on some second occasion the chick pecks or the duckling swims. Then if one can nowise distinguish, on close observation, what happens on these two occasions we may still speak of the behaviour as instinctive. We may still say that the bird has learnt nothing (*cf.* p. 133). But if we observe that on the first occasion the chick pecks on sight at a lady-bird beetle, and on some later

occasion (say, the second) averts his gaze and does not peck; and if we interpret this as affording presumptive evidence of foretaste (*cf.* p. 140); then we should say that his behaviour is not instinctive *only*. He "profits by previous experience." And then the question arises: When did he learn? Did he "learn" on the first occasion or on the second occasion?

Can one answer this question until one is told *what* he "learns"? In one sense of the word we may say that what he learns is to experience in this way or in that way. In this sense the chick or the duckling is "learning the lesson of experience" on the first occasion. Is what one here means aught more than that he experiences or gets a new form of experience? But is that what is meant when one says that instinctive behaviour is not learnt? One here means that the bird does not so *behave* under guidance of action as to get or to avoid this experience on the first or on any other occasion so long as the behaviour is instinctive only. If on later occasions he *does* so behave as to get or to avoid the repetition of this experience his behaviour is no longer instinctive only. He behaves with a difference; and he "learns" so to behave, not only in the sense of getting new experience (as, no doubt, he does), but in the further sense of profiting by the experience already gotten.

It is only putting the same thing in other words to say that all instinctive behaviour *as such* is prescribed (though it does not necessarily follow that all prescribed responses are instinctive). One may state the matter in several ways. One may say that in instinctive behaviour there is no guidance of action; or that in instinctive behaviour there are no conditioned responses; or that in instinctive behaviour there is no cross-over, and therefore no fore-experience, no inversion of order; or that instinctive behaviour is at the percipient, not the perceptive (still less the reflective), level of mental development.

Let me now emphasise of *mental* development. That a biological interpretation of instinctive behaviour can in large measure be given, and that it is our aim to give it in

fuller detail—this for me goes without saying at further length. But this is body-story only. There is also a co-related mind-story. And from first to last I have proceeded on the hypothesis that body-story does not, at some stage of evolution, emergent or other, so to speak, turn into a mind-story. But that is just what on another hypothesis (*cf.* p. 174) does happen. And has it not again and again been said that instinctive behaviour is biological only, and that mind does not come on to the scene until behaviour ceases to be instinctive ? That is not what I believe, or for many years have believed, to be sound evolutionary doctrine.

To clear matters up—so far as I can do so in brief space—let me make a fresh start.

I start, then, with stress not on instinctive behaviour, but on the *total experience* of the animal that is at the time-being behaving instinctively. This total experience includes, of course, experience in so behaving. In other words, one imputes such experience to the chick as he pecks and to the duckling as he swims. But does one impute nothing else ? Take a more complex episode in the life-history of such a bird as a goldfinch. He builds a nest. He has never built one before. He has never seen a goldfinch's nest, for he was hatched out by a foster-parent in a very different kind of nest. None the less, given suitable materials in an aviary, he builds a nest quite true to type. His behaviour is instinctive ; he has not learnt to build just this kind of nest ; he just builds it. Such is instinctive behaviour.

Here arises a difficulty, not in the plain-tale recital of the observed facts, but in the mind-story interpretative of them. And here the question is : How much or how little does one include under the heading of " instinctive behaviour " ? I reply : One includes at least that *behaviour* which one observes and can describe in plain tale. One first concentrates attention on the behaviour itself as behaviour. Then one passes to interpretation, first, let us say, in body-story ; that is, in terms of the physiological state of the goldfinch and in terms of the external conditions of stimulation from

surrounding things and perhaps other birds (no other goldfinch) in the aviary. There is, no doubt, much that one cannot "get at" in intimate detail—for example, the part played by "internal secretions" in the physiological state of the bird when he builds. Still one can say: Given this state and these surrounding conditions, such is the instinctive behaviour. But neither state nor condition *is* the instinctive behaviour.

Turn now to mind-story. It is an imputed mind-story. I impute to the goldfinch experience in behaving instinctively. I impute to him also experience co-related with his physiological state. I impute to him sensory "arrows of reference" to the objective surroundings in the aviary. And I say: Given this mode of enjoyment in state, and this mode of referring to objective surroundings, such is his mode of awareness in behaving instinctively. But neither enjoyment in state nor reference to objective conditions *is* awareness in so behaving.

Of course, awareness in so behaving is *included in* the total experience of the goldfinch at the time being. But this total experience includes much *more than*—very much more than—awareness in so behaving. It includes *all* that one feels justified in imputing to the goldfinch in that which we commonly speak of as "emotional state," *all* that one feels justified in imputing to him in that which we commonly speak of as his acquaintance with the world in which he lives. On this understanding can it fairly be said in criticism of the mind-story hypothesis under consideration that to mental relations no place is accorded at the stage or level of evolutionary development at which the modes of behaviour are instinctive?

In instinctive behaviour, as such, there is no evidence of guidance of action; still less is there any evidence of a foreplan of procedure. In other words, under more guarded statement, there is no such evidence as leads me and some others to impute either the one or the other to the goldfinch in so far as his nest-building is instinctive. Matters are,

however, complicated in that the goldfinch has already reached the perceptive stage of mental development. Hence in his general behaviour, as he flits to and fro in the aviary, perches here, picks up food there, and so on, there is evidence in abundance of guidance of action. It is the task of the field naturalist to distinguish those modes of behaviour which are thus under guidance of action from those instinctive modes of behaviour which run their prescribed course without guidance of action. On this difficult task of analysis I cannot here enter. Broadly speaking, and taking animal life " in the wild," my opinion, as at present advised, is that instinctive behaviour " sets the tune " and guidance of action adds minor variations. In the nest-building episode, for example, though the behaviour as a whole is instinctive, yet in numberless details—picking up of prescribed materials, choice of suitable site, and so forth—there is some guidance of action, some fore-experience based on " cross-over interweaving " established early in the bird's life-history.

§ 4

When we say that the cyclist's behaviour is instinctive in so far as he does this or that unreflectively, or without any longer having to think about what he is doing, we do not mean that on earlier occasions he did not have to think in this sense. Nay, rather we imply that there was precedent reflective procedure on his part.

But when we say that the goldfinch's behaviour is (not in this case " has become ") instinctive, we mean that he builds a nest without precedent learning to do so. Instinctive in the former sense implies precedent thinking (reflective control) ; instinctive in the latter sense implies that there was no precedent learning (perceptive guidance of action). In both cases the word " instinctive " is adjectival to behaviour. But in the one case the behaviour is *consequent on reflection ;* in the other case it is *precedent to perception.* It seems, then, that in the two cases the

genetic mode of origin of the observable behaviour is quite different.

On genetic grounds, therefore, it is better to apply the word " instinctive " to one or the other. And on genetic grounds I elect to apply it to the behaviour of the goldfinch and not to that of the cyclist.

Not infrequently, however, the word " instinctive " is used as adjectival to " knowledge." Then some would say that whereas the boy has no instinctive knowledge on which his cycling behaviour is based, the goldfinch has instinctive knowledge on which his nest-building is based.

I submit that it is better not to apply the word " instinctive " to knowledge because I think that it confuses the issue. I have no right to lay down the law for others. I merely state (to preclude misunderstanding) that I for one do not use the word instinctive as adjectival to knowledge. I use it always as adjectival to behaviour.

I take it that the word " knowledge," in the sense intended, falls under the heading of that which I have discussed in terms of reference. I distinguish three stages of reference—percipient, perceptive, and reflective, in ascending genetic order. But to none of these should I apply the adjective instinctive. It amply suffices (as I think) to say that instinctive behaviour is that which one observes at the percipient stage of mental organisation. That behaviour which one observes at the perceptive stage of mental organisation is no longer instinctive only. It is in some measure, and in some sense, " intelligent " also.

One may say, then, that there are ascending stages in the organisation of reference and ascending stages in the organisation of behaviour. They go, so to speak, hand in hand under the co-relation of the mental and the physical. They are inseparable, but distinguishable under abstractive analysis. Instinctive behaviour is co-related with percipient reference ; intelligent behaviour with perceptive reference ; rational conduct (let us say) with reflective reference. Of this something more later on.

Some allusion here to the distinction between that which is inherited and that which is acquired is unavoidable. I do not propose, however, to raise the whole vexed question of "the inheritance of acquired characters." In terms of organisation it turns on the subtle interplay of extrinsic and intrinsic relations.

In terms of organisation two streams or lines of advance mingle and combine, emergently or otherwise, when the ovum is fertilised. Here is a new starting-point of further organisation—that of the living organism as a new individual. Each of the two lines of organisation is an hereditary line. But the something new that results from their combination, on fertilisation, is in a sense acquired. And, from that starting-point onwards, there is an intricate interweaving of that which is old under heredity and that which is new under acquisition. Under abstractive analysis, the one is distinguishable from the other. But in concrete synthesis they are inseparable.

In the course of progressive organisation in the individual there occurs the "catastrophic" incident of birth, in mammals, or of hatching, in birds. There is a swift transference of the individual to a different set of extrinsic conditions. Modes of stimulation and response hitherto absent are henceforward present. The field of effective relatedness, mental no less than physical, is strikingly different —so different that here, as interpreters, we make a fresh start.

The word "acquired" now takes on a fresh nuance of meaning. It now means acquired in the life-history of an individual someone *after birth*. This is the popular acceptation of the meaning of an "acquired character." It then means "acquired subject to the conditioning effect of the new field of relatedness subsequent to birth."

Let us take it in this sense. Then, in this sense, I submit that cross-over affords a typical instance of an acquired character. It occurs only subject to the conditioning effect of the new field of relatedness subsequent to birth. Hence

the appropriateness of Pavlov's designation "conditioned reflex."

The question then arises: Is this conditioned response—this cross-over—which is acquired after birth in the parent, inherited by the offspring? Does acquired organisation in one generation reappear as prescribed or inherited organisation in the next generation? This is clearly a matter of evidence. What is proffered as evidence *pro* and *con* has been, and is still being, discussed. As I read the evidence so far to hand my opinion is that cross-over is not inherited. The reader should turn to the far more weighty expert opinion of Pavlov. As I understand, he is not satisfied that the evidence for the inheritance of conditioned reflexes justifies a verdict of Proven.

If this be so, and if one may generalise in our present context, it seems that perceptive organisation in one generation does not assume the lower status of percipient organisation in the next generation. Nor does intelligent behaviour in this generation assume the lower status of instinctive behaviour in the next. None the less it may be said that (theory notwithstanding) this is just what does seem to happen in the normal course of events.

§ 5

Some years ago much was written on Instinct, Intelligence, and Reason. Earlier still, Instinct and Reason were placed in strong opposition—instinct in animals so different from reason in man. Then Intelligence slipped in as a dubious blend or compromise having, as many thought, no independent status.

May I, for the purpose in hand, collate, if perhaps not equate, these three with the Percipience, Perception, and Reflection with which I have dealt at length? If so, I do so with a note of warning. I confess to some lingering suspicion that many who still prefer the good old-fashioned Instinct and Reason do so partly because of their more dramatic

flavour. They conceive Instinct, or perhaps an instinct, as a somewhat that makes the goldfinch behave in this way or that : Reason, or perhaps some rational motive, as a somewhat that makes you and me act reflectively. And they conceive what often happens in the conduct of affairs, as a dramatic struggle, contest, or conflict, between, let us say, the sex-instinct and some moral ideal which right reason dictates. In brief they invoke some kind of agency which organises, whereas here and now we are dealing only with the organisation itself.

Let us abstract, then, from all implications of agency. Let us ask : What are some of the observed facts which are now to be considered ; what do we commonly impute to the someone under observation ; and how runs the interpretation in terms of organisation ?

It seems that when one has learnt reflectively, with some end in view, or for some reason, to do this or that—to manipulate some delicate physical instrument, to use the scalpel in some nice dissection or surgical operation, to wield brush or pencil with sure and rapid touch—there comes a stage at which reflection is, so to speak, disengaged, and, thereafter one can carry on the requisite procedure without thinking, and in one sense of the word, instinctively. There has been established a perceptive, or intelligent, routine of habit, with only such guidance of action as has already taken form under cross-over. More than this, there is seemingly a stage at which even perception is disengaged. There is no longer guidance under cross-over. There is behaviour at the percipient level resembling that which is exemplified (on my interpretation) by the nest-building of the goldfinch.

Now the evolutionary order of advance is first percipience (instinct), then perception (intelligence), and thereafter reflection (reason). But here we have reversal of order (*cf.* p. 82)—first a rational plan of conduct, then intelligent habit, and thereafter behaviour under percipient reference only.

Let us accept this reversal of order. Then at the first stage, under this reversal, we impute reflective process or reason; at the second stage we no longer impute this, *at the time-being*, we impute only perceptive process or intelligence; at the last stage we impute only percipient reference resembling that which is on my view all that we need impute in an interpretation of instinct. The question before us is this: Does such reversal of order imply retrogressive disorganisation?

I submit that it need not do so. I submit that under the reflective control which we speak of as reason there is still *progressive* advance in that organisation of habit which betokens intelligence; still *progressive* advance in that organisation of percipient reference without which no such behaviour as is said to characterise instinct can be interpreted as lying near the foundations of mind in process of evolution.

I am trying to look at this matter from the broad point of view of progressive evolution in the someone. But I do not deny that in the someone there may be retrogressive dissolution or disorganisation, in senile decay for example. That would run counter to well-attested facts. Nor do I deny that there is such rearrangement of items in a precedent pattern, or patterns, as is entailed by reorganisation in a new pattern—when, for example, the golfing habit comes with practice. What I seek to present as at least a point of view worthy of consideration is, first, that reversal of order, though it may entail progressive reorganisation, does not necessarily imply that reason breaks down into intelligence, or intelligence breaks down into that which resembles instinct; and, further, that reversal of order in someone's mental life does not imply that the *original* order of evolutionary genesis was (1) reason, (2) intelligence, (3) instinct. There is nothing which lends support to the doctrine that is sometimes expressed by saying that instinct should be interpreted as "lapsed intelligence."

§ 6

It may be said, however, that we have to reckon with "lapse of consciousness." Here we have data in our own experience on which we may base imputation of like experience to others.

A trivial episode in my own experience may serve as a point of departure. When I was cycling with a friend many years ago he interrupted our talk on John Locke (we had recently passed through Wrington, where he was born) and exclaimed: "Good. Just missed him. But a pretty close shave." "Missed him. Who's he?" "Why, that fat old toad." "Toad. I saw no toad." So we dismounted and walked back. There was the toad squatting quite still. The track of my wheels showed that I had swerved so as just to avoid running over him. But, even then, by no effort could I recall sight of him or what I had done. There seemed to linger no "trace" of prospective reference at the time-being, of fore-experience in mind then and there, of retrospective reference to (memory of) what had happened. I surmise that there was percipient reference—otherwise I cannot interpret my avoidance of running over him. Stimulation and response—yes. But that is body-story. I want mind-story. And as a bit of my own experience I can only surmise what it was. That I was thinking of John Locke is not a matter of surmise. It is a plain matter of retrospective reference on my part here and now to an incident that I can date approximately "summer of 1903."

How do I propose to interpret all this? What stands in need of interpretation? Using the word "consciousness" in the popular, if somewhat vague, sense, I was conscious of Locke; unconscious of toad. How interpret consciousness of this; unconsciousness of that? I could adduce instances in my own experience when, taking Locke and toad to stand for reflective and perceptive reference respectively, I was conscious of toad and unconscious of Locke; other instances when I was conscious of both. These, if I report them

correctly, are facts of my experience on different occasions. How interpret the fact of my being conscious of this, not conscious of that ?

Now it may be said that I was conscious of this or that, or enjoyed awareness in doing this or that, in so far as it interested me, or in so far as my attention was drawn to it. It may be said that I was not conscious of this or that—or so I report afterwards—because it did not evoke memory through some failure of registration, of retention, of revival (*cf. Emergent Evolution*, Chap. V., for my interpretation of memory). Granting that one does not here attribute to Interest, Attention, Memory, any dramatic agency, as was the vogue in old-time " faculty psychology," do not these words indicate the *modes of relatedness* under which one seeks to interpret the fact of experience we here speak of as being conscious ? Can one say more than that under these conditions one *is* conscious ?

I find it difficult to render comprehensible to some folk the position of one who views this matter from a wholly relational standpoint. Let me once more revert to my oft-quoted canon of natural interpretation : Given such and such a state of relatedness within, and such and such conditions of relatedness under external reference ; this is what happens. In our present context what happens is consciousness.

It may then be said that in these relational terms there is no explanation. You merely tell us that there *is* consciousness ; that this is " what happens " ; or, as you sometimes put it, this " just comes." Whence comes it ? And whither does it go—if it does " just go " ?

Let me once again repeat that the statement of what does come, and the statement of those modes of relatedness under which it does come, is the sole and only aim of all evolutionary interpretation. In this matter of conscious awareness someone—you, I, or another, and he only—can say what does come and how it is affectively toned—pleasurably or otherwise.

All experience on the part of any *other* someone than one-

self is subject to imputation. I can tell, as best I can, what did come within my own experience in the toad episode. Only under imputation can I surmise what may have come within the experience of someone else under circumstances which I judge to be in large measure similar. From what transpired I may be led to infer that my companion's conscious awareness was different from mine; I surmise that he had not much interest in what I was saying about John Locke, and was chiefly attending to the toad and its possible fate. Here I impute to him absent-mindedness in matters of philosophy; and he may have imputed to me absent-mindedness in the matter of cycling. The stress once more is on imputation.

Imputation is less hazardous when one is dealing with men of like social status to one's own than it is when one is dealing with apes or with monkeys. It is more and more hazardous as we go down the scale of mammalian and of vertebrate life. It is extremely hazardous in all attempts to interpret such minds as we impute to insects or those animals which we lump together as invertebrates.

If here and now we restrict our attention to birds and mammals, in the former we find some of the most conspicuous examples of " instinct," in the latter the nearest approach to " reason," if not the early stages in its attainment.

On what grounds may we impute (at some risk) reason in the sense of reflective procedure to apes? I should reply: On the grounds that certain episodes of their behaviour afford presumptive evidence of fore-plans in mind. Much of this evidence is based on close observation under experimental conditions where, so far as is possible, the animal's " interest and attention " are enlisted in the procedure. I cannot here even summarise the evidence. I can only give a very brief answer to the question: What is the kind of evidence?

Suppose that in the ape's playground the experimenter arranges a suite of, say, ten compartments, with doors which may be bolted or unbolted under his unseen control. In

each set of experiments the observer has some plan in mind. Let us suppose that tempting food is placed in one of the ten compartments; that the ape can easily push open any unbolted door, and that the observer unbolts the doors in groups of three (1, 2, 3; 2, 3, 4; 7, 8, 9; and so on), food being placed in the middle compartment of the three. Or let the observer mark any three doors with a conspicuous triangle, circle, and square respectively, in this or other order; perhaps introducing colours, red, green, and blue, at discretion. He can thus arrange a pretty wide set of variations.

Now the point is that in any given set he has a plan in his mind. And the question is: Does the ape at some stage of the proceedings, after so long a period during which he chances to open the right door, conduct his search for food with a fore-plan in *his* mind? Does he thereafter act with choice and no longer get what he wants by chance? If so, there seems to be good presumptive evidence of end in view, selection of means to its attainment, and not improbably some tincture of self-reference. The ape affords an example of reflective procedure—not, perhaps, at the level reached by our boy cyclist; near the level of the much younger boy who quickly finds the ball in the field.

So far supposition. Turning now to my opinion as at present advised, it is this: Apes, and it may be some monkeys (if we take into consideration a wide range of experimental inquiry), do afford presumptive evidence of reflective procedure, of reason in that sense. After much "chancery," on the perceptive basis of so-called trial and error on perhaps scores of occasions, there supervenes, often so suddenly as to elicit surprise from the observer—there just comes, and comes to stay, emergently, as I believe, reflective "choicery." Henceforward there is "no more fumbling," analogous, on this higher plane, to the "no more foozling" when the golfing habit just comes.

One more question—though many more might be raised. In current discussions on these matters the word "ideas"

or the expression "free ideas" very frequently occurs. Here there is crying need for close definition. My belief is that all behaviour and all conduct is in response to *a situation as a whole* (*cf.* p. 136). Is a situation as a whole that to which what we call an idea or a free idea has reference? This surely depends on definition. I should so define idea as not to denote a total situation, as such, but to denote some salient feature of a situation analytically "teased out," so to speak, under reflective thought, with this very high-level end in view. I am not "laying down the law" in this matter. I only say: Such is my usage. On this understanding I should not impute to a squirrel the "idea" of a nut that he had hidden somewhere (with an "idea" of locality) the day before yesterday; nor impute to a dog the "idea" of a bone that he had hidden in the geranium bed.

I do not impute to the goldfinch any "idea" having reference to nest, even when he has finished building one for the first time in his life; certainly not to him at the very outset of this episode of his life-history. I am well aware that others, whose opinion I respect if I cannot share it, do so. It is an essential feature of their explanation of the observable facts. This leads straightway to a doctrine of "innate ideas"—straightway to a doctrine of instinctive knowledge which implies ancestral memory.

I have taken the nest-building of the goldfinch as an episode illustrative of instinctive behaviour. There are not a few who believe that, notwithstanding much intelligent guidance of action in thousands of details, the whole elaborate life-history of a bird, for example, with its wealth of subjective enjoyment and its abounding nicety of percipient reference, is based on instinctive foundations. From first to last it is instinct—largely sex-instinct, no doubt—that "sets the tune" to which the feathered world dances and adds a chorus of voice. In the matter of emotional nuance, imputation is peculiarly hazardous. Some may more closely, others may less closely and more cautiously, assimilate the emotions of birds with those of which they themselves have experience.

But those who seek to give an evolutionary interpretation seldom impute to birds such " ideas " as they may impute to apes ; " ideas," that is, which imply that which I have spoken of as fore-plans for further reflective procedure. They are, to say the least of it, doubtful whether, for evolutionary interpretation, there is any call to impute to them inherited knowledge ; any call to revive, in this field of inquiry, the old controversy which centred in " innate ideas."

CHAPTER X

The World Transformed by Art

§ 1

In * this chapter I propose to deal with persons; and especially with human persons.

I have already suggested (p. 171) that the word "person" may be used in the two contexts which I seek to distinguish —that of natural interpretation and that of dramatic explanation. Under natural interpretation each human someone normally becomes a person at the reflective stage of his mental development. There is, then, in this context somewhat that characterises the someone as a person. I have taken that somewhat to be a fore-plan in mind. I believe that any such fore-plan is emergent. And much that I shall say is subject to, and in support of, the hypothesis that we should reckon with emergence in mind.

It may be said, however, that the word "person" as it is commonly used implies much more than this. It implies not only such a fore-plan as a child of three may have in mind, but also such a fore-plan as is conducive (let us say) to the attainment of truth, of beauty, of goodness in right conduct. Here what is distinctive of a person is not only that he has a fore-plan with some end in view, but that he has also a fore-plan with some specific end in view to be suitably defined. No objection can be raised to this so long as it is made clear what one means by a person. To this end one might add a distinguishing adjective and speak of a moral person, an æsthetic person, a religious person, and so on.

On these terms I should urge that these specific ends in

* I here incorporate much of the matter of the Lewis Fry Memorial Lectures on *Science and Drama*, delivered in the University of Bristol, November, 1928, subject to alteration and rearrangement.

view are at a higher level of emergence. It is indeed at this higher level of emergence that we are to pursue our inquiries. We are considering some of the characterising features of adult human persons.

But if we may now include *also* the dramatic context of agency, when they *become* adult persons in the one context they *are* personal agents in the other context. In the one context we lead up to persons in the course of long ages of evolutionary advance; in the other context we start with persons as dramatic agents. Any natural interpretation proceeds from below upwards—from that which is lower to that which is higher in an ascending hierarchy. All dramatic explanation—that is, explanation in terms of agency—proceeds from above downwards; from the agent to that which is due to his creative activity; from the actor to that which in a valid sense he enacts.

Broadly speaking, if we believe in the existence of spirit-agents other than human, an account of anything that happens can be rendered in dramatic terms. In such terms, it seems, as I have said above (p. 1), is the account that is given by primitive folk. They could not, it seems, pursue their customary avocations afield without encountering much that, in accordance with their dramatic outlook, showed how busily at work were fairies, pixies, imps, gnomes, naiads, dryads, and beings of that ilk, however they might be named. The world was peopled by numberless agents of like nature to themselves as actors on the scene.

Some may speak of such explanation as anthropomorphic. I wish to avoid the use of this word. May I say, then, that such explanation implies agents other than human agents? And may I provisionally characterise an agent as a being who acts with purpose, reserving the word "purpose" for use in the context of agency?

Note that these agents who act with purpose, beneficent or malevolent, are taken for granted. The question is not asked: How come there to be such agents—fairies or djinns or other? There they are and what happens is due to their acts.

It is needless to say that the man of science to-day does not account for what happens afield, as he pursues his customary avocations, in any such way. But what about the man of letters ? Is there not a wide field of his literary artistry in which he still retains, and perhaps further develops, the dramatic outlook ? Do we wish him to do otherwise ?

The question, however, arises whether he still retains, and perhaps seeks further to develop, *belief in* the existence of such agents in the sense of beings who act with purpose.

Is what he tells us about them *true*, at any rate for him ; and does he wish to spread the belief that this is so ? He may reply : Yes, this is true. But it is true *in the transformed realm of artistic creation.* Does, then, this transformed realm of art differ widely from the transformed world of science ? And does what I speak of as a dramatic touch serve to earmark this difference ?

What some people mean by the world of science is, as it seems, that which may be described in plain, straightforward, matter-of-fact statements, divested of all metaphorical and imaginative embroidery. We apply the word " prosaic " to such worthy folk ; and they are proud to be so called. It is, they may say, a welcome tribute to their common sense.

Such a one likes to say simply that clouds are passing overhead. He jibs just a little when Coleridge speaks—

> Of those thin clouds above, in flakes and bars,
> That give away their motion to the stars.

Why " give away " their motion ? That does not accurately describe what actually happens. He jibs much more seriously if he chance to read Lowell's lines—

> The rich buttercup
> Its tiny polished urn holds up
> Filled with ripe summer to the edge.

And then he may proceed to ask common-sense questions. He may ask : Why urn ? It is not a bit like an urn, sepul-

chral or other. Can one speak of summer as ripe, though one may say that a gooseberry is ripe ? Is not summer the set of atmospheric conditions under which the gooseberry ripens or the buttercup blossoms ? And in what common-sense fashion can ripe summer be poured into the so-called urn, said to be held up, so that it is filled to the edge, presumably without overflow ? And so on. That way, as some of us feel, lies futility.

It may, however, be profitable to follow up the topic a little further since so much has been written on the antithesis, which many regard as antagonism, presented by Art and Science—that antithesis which was emphasised by Wordsworth and Coleridge. It seems to have received its first expression by Wordsworth in a note to the Preface of *Lyrical Ballads* (1800). Coleridge subsequently in *Biographia Literaria* (1817) enlarged on the text : The true antithesis of poetry is not prose, but science.

I am not aware that either Wordsworth or Coleridge rendered quite clear what in common they meant by science. But I take it the difference they had in mind may be thus illustrated. A Persian poet sings : " The sun sinks down in the ocean and azure-hued vapours arise. It is Nature's incense of devotion perfuming the heavens." That little gem is the work of a literary artist.

But of the same set of facts, as we call them, an account may be given in terms of solar radiation, of evaporation and condensation, and so forth. That will be a scientific account.

Note that Nature's incense of devotion introduces an unmistakable, if somewhat elusive, touch of drama. So, too, with a difference, may we recognise the touch of drama in Longfellow's " The Old Bridge at Florence," beginning—

> Taddeo Gaddi built me. I am old,
> Five centuries old. I plant my foot of stone
> Upon the Arno, as St. Michael's own
> Was planted on the dragon. Fold by fold
> Beneath me as it struggles, I behold
> Its glistening scales.

Thus leading up to the closing lines :

> And when I think that Michael Angelo
> Hath leaned on me, I glory in myself.

That is literature, not science. None the less, I suppose that the man of science could render a passable account of the history of the old bridge at Florence as a material structure and the product of human handicraft.

As one more example I quote the familiar lines :

> When daisies pied and violets blue
> And lady-smocks all silver white,
> And cuckoo-buds of yellow hue,
> Do paint the meadows with delight.

Here is subject-matter for the botanist as well as for the poet. He may tell us that the less familiar of the four examples of the flora specially mentioned are the cuckoo-bud or crowfoot, which belongs to the species *auricomus* of the genus *Ranunculus*, and the cuckoo-flower or lady-smock, *Cardamine pratensis*. And so on. But what has he, as botanist, to say of the last line :

> Do paint the meadows with delight ?

That is pure poetry. Of it one can only say with Mr. Alexander, who quotes this passage, that it shows how Shakespeare " was a reed through which every wind from nature or from human affairs blew music."

There can be little doubt, then, that there is a real difference—a difference, let us say, in mental attitude—which one may call respectively that of the man of letters and that of the man of science.

Each of these differing mental attitudes begets its appropriate modes of expression. Dramatic expression is, as Mr. Alexander puts it, " wrung out of " the poet in subservience to his purpose as literary artist. No doubt the man of letters, poet or prose-writer, may use his artistry of *expression* in support of his advocacy of a dramatic *explanation*. But in so far as he does this he doffs the mantle of the artist

and dons the robe of the philosopher. And when he does this we feel—do we not?—a subtle change of mental attitude?

§ 2

What I speak of as a mental attitude implies someone whose mental attitude it is, and somewhat to which there is reflective reference on his part.

It may, however, be said: That may be a way—perhaps from your point of view a pretty obvious way—of putting the matter. I should prefer to put it thus: I am in presence of some work of art—a picture, a statue, a cathedral, a poem, a symphony. It appeals to me in a particular way.

Let us take such a statement as this as a point of departure; and let us speak of this particular mode of appeal as æsthetic.

That certain things, and among them works of art, do please us in this particular way, and that different works of art, say a picture or a poem, please us in this kind of way *with a difference*, is part of the plain tale of our experience. No doubt we are not always pleased in this particular way or in others, and may often be the very reverse of pleased. It will, however, simplify the issue if we keep to the positive side in this matter. Then we may speak of the state of being pleased as enjoyment. And we may distinguish between our enjoyment as a whole at any given moment, and the enjoyments, or several items of enjoyment, which in combination make it what it is. Thus I should distinguish between how I am pleased by the felicity of thought in some poem, by the felicity of certain modes of verbal expression, and by the felicity of rhythm or cadence. One cannot separate them, for example, in "do paint the meadows with delight." But they, and the like, seem to be distinguishable as components contributory to our enjoyment. Do they so combine as to give an emergent flavour to enjoyment?

If, then, we concentrate attention on being pleased, what is given in this respect is an organised system of

enjoyments, or items of enjoyment, in relation to each other. There is a hierarchy of levels of enjoyment with many emergent nuances till we come down to that primitive mode of enjoyment which we speak of as "feeling fit." And all are organised as a systematic whole.

Now whether we speak of the peculiar flavour of æsthetic enjoyment as emergent or not, a peculiar flavour there is. Contrast your enjoyment in taking a warm bath, or a brisk walk, or a draught of spring water on a hot day, with your enjoyment in reading one of Milton's sonnets, or hearing one of Bach's fugues, or seeing one of Raphael's pictures. There are thousands of ways in which little children and animals are capable of enjoyment. Are they capable of enjoying art products, as such, in the way that I speak of as æsthetic? Animals probably are not; children only when they reach the requisite stage of mental development. Then there comes a new mental attitude. I regard this new attitude as emergent. Why emergent? Because one cannot, as I think, interpret this higher mode of enjoyment by the mere summation of lower modes. It has a new character or quality all its own. How define it? I doubt if one can define it. One has just to feel what it feels like. On the emergent hypothesis one can never define the higher in terms of the lower. One may call this peculiar and specific mode of enjoyment "appreciation of beauty." But that only gives a name to what it feels like, so to say, inside us.

The work of art, however, is outside us in the sense that it is that to which there is reference on our part. *Where, then, does beauty reside—in the work of art that stirs our enjoyment, or in our enjoyment that is stirred by the work of art?*

Opinions differ. Let me select that of Mr. Alexander, because on the plane of art I so largely agree with him. He replies that beauty as a form of "value resides in the relation between the two, and does not exist apart from them." Hence there arises what he speaks of as "the paradox of beauty, that its expressiveness belongs to the beautiful thing itself and yet would not be there except for the mind."

If one may so put it, when we value a work of art we always add to that which Mr. Alexander speaks of as " the material," somewhat of our own enjoyment in appreciating. In literature the material in this sense is a collocation of words and phrases which fall on the eye or the ear. There arises within us a peculiar flavour of enjoyment—as I think emergent. But in ordinary speech we do not say: My enjoyment has this special character. We say that the words or phrases are enchanting, or perhaps that they are enchanted. Words are but bare material; what they signify is given or read into them by the writer or the reader; so, too, is their beauty in expression read into them. Thus, in less or greater measure, the very words " filled with ripe summer to the edge " or " do paint the meadows with delight " have the magic enchantment of poetry.

In dealing with the material that is fashioned by the artist, we have to keep in mind the twofold relatedness that obtains. There is physical relatedness in so far as the bodily organs of sense are in some way stimulated, for example, by light-radiation or by sound waves. There is also mental relatedness in so far as there is reference on our part to the picture or the statue or the poem.

May I now say that in bodily regard we *take* under physical influence, but in mental regard we *give* under reference? If that be so, then what we have to realise is that in presence of a work of art we give far more than we take. One speaks, and no doubt rightly enough, of the sculptor or the painter, the poet or the musician, as, in dramatic regard, the creative artist. In this sense it is he who gives and we who take. But if we take only and give nothing, is that which is merely so taken for us a work of art? We must give, and as agents give creatively, if that which is before us is to be more than shaped marble, or pigments in a pattern, or word-sounds that beat on the ear, or a sequence of tones and overtones. Only he who is in some measure a creative artist at second-hand can go out to meet the appeal of the creative artist at first-hand in whom and through whom there is

something new in the realm of art by which that realm is enriched.

It is the work of art as having æsthetic value with which we are concerned. From it we take the material. And thus far, according to Mr. Alexander, we give nothing. What, then, do we give to the art product as such ? I think the reply is : We give all that renders it æsthetically valuable. We give to the engraving perspective solidity, which as drawn in the flat it does not possess. We give to the replica of the Discobolus life and motion which the bronze or the marble has not. We may give scent to the painted lily, to the painted strawberry flavour, perhaps to the painted blackcap its melodious song. The gift depends on what someone can give.

The matter-of-fact man may say that these so-called gifts are not there. But may not that be just because he is so typically the matter-of-fact man ? The artist, I think, will say that they *are* there *as values in the realm of art.* But they are there as values which as artist he gives. The realm of art, I repeat, is a transformed realm and not merely the drab world of ordinary work-a-day perception. To enter this realm there must be a transformation of mental attitude. And this transformation, I think, is emergent.

§ 3

I now seek to bring the position we have reached in the foregoing section into touch with my general treatment of the *rôle* which mind plays in nature as disclosed to the eye of reflective thought.

Since there has been much discussion as to whether beauty is objective or subjective a suitable line of approach is through the avenue thus opened up

It will be remembered that the word " objective " is used in two senses. In one sense that which is objective is what it is and as it is in complete independence of the someone who is said to apprehend it. In another sense that which is

objective is what it is and as it is in close dependence on the someone who, as I put it, is in the relation of reference to it.

Let it not here be said that it really matters little whether one says that someone apprehends shape, and colour, and beauty, or says that there is mental reference to them on his part. Both words are here used in such technical wise as to mark a difference that does matter not a little in philosophical discussion.

This is best stated in such relational terms as I suggested at an early stage of our inquiry (p. 64). Let us affix the label *a* to the relation that obtains on the hypothesis of direct apprehension (p. 90); and the label *r* to that which obtains on the hypothesis of reference. Then within a relational bracket we have (1) [someone in the relation *a* to somewhat]; and (2) [someone in the relation *r* to somewhat]. Wherein lies the difference? The difference I think lies in the implications of *a* and of *r* respectively. That which is implied in (1) is that the somewhat remains just the same in all respects whether it is within this relational bracket or not. That which is implied in (2) is that only within the bracket does it become *this* somewhat. Translate these implications into positive assertions. Then, in less technical form: (1) The somewhat is what it is whether anyone directly apprehends it or not; (2) the somewhat is what it is in mental regard only when it is in the field of someone's field of perceptive or reflective reference.

There is here a deep-seated difference of interpretation. This may be applied to the interpretation of shape, colour, and beauty. It may be said: (A) All three are on like footing under direct apprehension; or (B) All three are on like footing under reference; or (C) Colour and beauty are on like footing under reference, but shape is on a different footing under direct apprehension; or (D) Shape and colour are on like footing under direct apprehension, but beauty is on a different footing under reference.

Let me re-state in terms of the relation of the artist to

nature ; and in doing so let me take nature to mean that which is disclosed or revealed in direct apprehension ; and is objective in that sense. Here the artist is the someone and the somewhat is nature. But in accordance with long-standing tradition, we distinguish in nature those " qualities " which have been called primary (*e.g.* shape), secondary (*e.g.* colour), and (nowadays) tertiary (*e.g.* beauty).

Now if we accept (A) all these qualities belong to nature itself. They are in nature to be apprehended (or not) by the someone. If we accept (B) none of these qualities belongs to nature itself. Each is read into nature under reference on the part of someone in accordance with his stage of mental development. If we accept (C) primary qualities only are in nature ; secondary and tertiary qualities are read into nature by the someone. If we accept (D) primary and secondary qualities are in nature ; tertiary qualities only are read into nature.

This last position (D) is that which Mr. Alexander accepts and ably defends. Which of them do I accept ? Unreservedly and whole-heartedly I accept the second (B). This means that nature for me is not objective in his sense ; it is not revealed or disclosed under direct apprehension. For me nature in respect of all its qualities is " objective under reference."

May I here remind the reader that I distinguished three stages of reference ? There was first percipient reference under touch, temperature, taste, smell, hearing, and vision, and in each case there is, under evolution, an ascending array of successively higher modes. Next came perceptive reference when awareness in behaving emergently combines with percipience to give objective position and shape and all that follows. Then came reflective reference with increasing wealth of emergent fore-plans.

Now the artist stands near the top of the evolutionary tree *in all three respects.* His percipience, tactual, auditory or visual, is very highly developed in range and in delicacy. His nicety of perception, with fore-experience, is no less

highly developed. Under percipience and perception, thus subtly combined, his manipulative skill and technique, in this or that field of art production, reach that acme of excellence which wins our admiration.

But high as may be his status in both these respects, still *as artist* it is art-production that is his end in view. To this all else is subsidiary, though also contributory. It is on this end, distinctive of his reflective status, that all his executive fore-plans are centred. The phrase " art for art's sake " has become somewhat hackneyed. Still, it remains true that the aim of the artist *as artist* is art-production, whatever other ends in view he may cherish in his conduct of affairs as a man.

On this showing what for Mr. Alexander, in his philosophy of art, is " the material," directly apprehended as it exists " in nature " independently of someone's reference thereto, is, for me, that which is given under percipient and perceptive reference, " in nature *as objective under reference.*" There is, on my interpretation, no " blending of the physical object with the artist's mind " in some sense in which this may be intelligible. There is no blending in any sense of mental and non-mental components. The blending is that of perceptive and reflective reference, both mental. What Mr. Alexander says of beauty—that " its expressiveness belongs to the beautiful thing itself and yet would not be there except for the mind " and that " it resides in the relation between the two and does not exist apart from them "—I should say also of colour and of shape under reference on the part of someone. As I should put it, paraphrasing his statement: The paradox of reference, percipient, perceptive, or reflective, is that shape, colour, and beauty alike belong (under reference) to the object itself and yet would not be there apart from the mind.

When I am in presence of a work of art there is what I spoke of as an æsthetic attitude towards it. Thus there may be an æsthetic attitude on my part to a well-planned parterre ; but there may be an æsthetic attitude on my part

to the " daisies pied and violets blue " in a meadow. I regard this æsthetic attitude which in each case brings somewhat within the realm of art, as emergent. It is based on a perceptive attitude no less emergent towards that somewhat ; and this presupposes that the somewhat is within the range of my percipience.

There is, however, not only reference on my part ; there is also enjoyment on my part ; and the one is correlative to the other. If, then, there be emergence, where does that emergence reside ? I reply that it resides in the attitude—in the mode of relatedness at the time-being. If there be no such mental attitude, perceptive and æsthetic, then there is no emergence. But it is an attitude in which the emphasis falls *on my part ;* and on my part there is both enjoyment and reference.

If I may revert to the arrow-analogy (p. 53), the arrowhead of attitude is embedded in somewhat ; the feathered end is embedded in someone. Does emergence take its origin in the arrowhead ; in the feathered end ; or in the arrow of attitude as a whole ? Under reference in the arrowhead ; in enjoyment at the feathered end ; within the concrete unity of its being in the arrow as a whole.

I do not wish again to raise the question whether the somewhat in which the arrowhead is embedded is mental or non-mental ; already enough of divergence in interpretation. For Mr. Alexander the somewhat as perceived under direct apprehension is non-mental. For me under any form of reference it is mental. For me even the physical object is a mental construct in the transformed world of scientific thought.

We are, however, now concerned with the transformed realm of art. And here for Mr. Alexander the arrowhead (if he would tolerate the analogy) is embedded in the mental moiety of the blend of the material and the mind. It is what we give to the work of art. But if I am right in so putting it, am I right also in understanding that, for him, there is no emergence in enjoyment which, for him, *is* the

mind ? I may here be wrong. So I had better lay stress on my own belief that there is, all along the line of evolutionary advance, emergence in enjoyment no less than in reference. Thus do I interpret the æsthetic attitude as emergent.

§ 4

Bearing this in mind I now pass to a question on which Mr. Alexander lays much stress. He asks whether the fashioned material is merely the expressive embodiment of pictures or thoughts *already* in the mind of the artist, or whether these pictures or thoughts arise in the mind of the artist *in and through* this expressive embodiment ? The question is subtle, and one may not at first quite catch what it means. Taking literature as an example, Mr. Alexander reminds us that Wordsworth said :—

> Oh ! many are the poets that are sown
> By nature ; men endowed with highest gifts,
> The vision and the faculty divine,
> Yet wanting the accomplishment of verse.

Here the accomplishment of verse is the means of expressing and communicating the vision. But Mr. Alexander asks in effect whether it is not through the accomplishment of verse—through the fashioning of the material which is his chosen medium—that the vision itself is brought into being.

He advocates the latter alternative. He urges that through expression comes vision. Let me quote from him. " The work of art," he says, " is revealed to the artist himself through the productive act wrung from him in his excitement over the subject-matter. Accordingly he does not in general first form an image (if he is a poet, say) of what he wants to express, but finds out what he wanted to express by expressing it. He has, in general, no precedent image of his work and does not know what he will say till he has said it and it comes as a revelation to himself." (*Artistic Creation and Cosmic Creation*, p. 9.)

Commenting on the difference between the practical prose of " I love you and always shall " and the enchanted verse of Burns :—

> As fair art thou, my bonnie lass,
> So deep in luve am I :
> And I will luve thee still, my dear,
> Till a' the seas gang dry.

Commenting on this, Mr. Alexander asks : " Do you think the poet had first in his mind some vision of the eternity of love which would last till the seas dried up, or that in his æsthetic excitement the thrilling words were out of him before he knew ? "

A second example is this. We read :—

" And Ruth said, Intreat me not to leave thee, or to return from following after thee : for whither thou goest, I will go ; and where thou lodgest, I will lodge ; thy people shall be my people, and thy God my God : where thou diest, will I die, and there will I be buried : the Lord do so to me, and more also, if ought but death part thee and me."

Of this passage Mr. Alexander says : " The writer's mind is occupied by the thoughts and images of the devotion of the alien daughter to her husband's mother. Does he, playing with the pictures suggested by that devotion, merely translate the pictures into this perfection of words ? Or does . . . his artistic excitement overflow at white heat into words which reveal to himself as well as to us the situations of life appropriate to that devotion ? "

Such is Mr. Alexander's contention. As it stands it savours somewhat of paradox. But in any paradox there is a central core of truth.

I suppose that if one could trace the life-story of any literary artist one would find it impossible to separate, and hard to distinguish, vision from verbal expression. They develop hand in hand ; and one cannot confidently say of either of them : This leads and that follows. Let us then assume that when the artist reaches maturity they still go

hand in hand. There is a vision which the poet or the prose-writer seeks to express. But in and through this expression *something new*, and as I think emergent, is added to and enhances the vision. The vision itself is thus progressively modified and raised to a higher emergent level. And each "something new," since it was lacking in the precedent vision, is, as Mr. Alexander says, a revelation to the artist himself. In and through this something new the man of letters, and pre-eminently the poet, stands out, in dramatic regard, as creative and original.

He starts with the vision he has thus far reached; he translates this vision into an expressive art-product; but in doing so his vision is enriched by the new which was heretofore absent; and it is this added enrichment that he hails with glad surprise—surprise because it is new even to him. Such is my gloss on Mr. Alexander's text. My emphasis is on *something new*—dramatically creative; under natural interpretation, emergent. Why not both?

It is for the man of letters himself—if one can get him to understand a question that lies rather off his beat—to say whether something new *does* just come to him in and through the very act of translation into expression. Could one call up the shade of Charles Lamb what questions one might ask! Concerning that Quakers' meeting, pray tell us, gentle spirit, all you now can about the "uncommunicating muteness of fishes"; about the "interconfounding uproars" of the wind-gods you name. Were these felicities of expression just "wrung out of you," in Mr. Alexander's phrase, as you wrote and in the writing? Or were they in some form in your mind, hours or perhaps days before, awaiting transcription to paper? And do tell us how that wonderful closing sentence in your paragraph came about: "Negation itself hath a positive more and less; and closed eyes would seem to obscure the great obscurity of midnight."

Allow me to descend for a moment from greater matters to less. An effective after-dinner speaker may tell one that he had carefully thought out beforehand the kind of things he

would say. That was his precedent vision. But when he was on his legs, and steam was well up, he just let himself go. He left out half the good things he intended to say, since the occasion and the circumstances damped them down.

But he said on the spur of the moment far better things which somehow " came into his head," so that he could join in the applause with at least a chuckle and a twinkle of satisfaction. There were flashes of the new and unexpected which did not come when he was conning his notes beforehand, but did come while he spoke, and were " wrung out of him " in the heat of his fluent post-prandial oratory. Again the emphasis is on something new—the enhancing revelation.

§ 5

I pass now to a different matter, though to illustrate it I revert to the " perfection of words " in that wonderful passage from Ruth. One wants to get at that which constitutes the æsthetic enjoyment of the artist who makes, and of us who take, but in some measure give, as appreciators of art—artists, so to speak, at second remove. I said it was hard to define and must be experienced as that which it feels like. But it has reference to the object before us to which we give certain characters which in combination make it what it is in the realm of art. The character I seek now to distinguish is that which one may call the sheer artistry of the art-product. Is that not well illustrated in the passage from Ruth ? In subjective enjoyment there is a reflective and contemplative joy (in that sense intellectual) which is superadded to, and blends with, the more purely emotional joy. Without it, at any rate in some measure, one's appreciation does not reach the distinctively æsthetic level.

For me this is well illustrated in music—partly because in me it is only partially developed. I have enough music in me to get the right sort of thrill—a real and rich emotional joy—from one of Beethoven's " Rasoumovsky " quartettes. I do not say that I am wholly lacking in appreciation of its

musical artistry. That would be going too far. But I have only so much as to enable me to realise the distinctive character of this factor in æsthetic enjoyment in its fulness. In the writings of some musical critics, and of other art-critics, sheer artistry may be so over-emphasised that the factor of purely emotional enjoyment is kept too much out of focus.

Mr. Alexander lays due stress on this reflective or contemplative character of the fully æsthetic attitude, contrasting the beaver or the nightingale, where it is presumably absent, with the architect or the musician, where it is distinctively present. "If the beaver," he says, "instead of building his dam from the urgency of his practical desire, could observe his materials, he would be an architect. If the male nightingale sang for the love of singing, for the sake of the mere sounds he was producing and the delight he takes in their combination, he would be a musician" (*Art and Instinct*, p. 9). In the beaver's dam, in the nightingale's song, there is constructiveness which we speak of as instinctive. We may speak too of the "unpremeditated art" of many forms of instinctive behaviour. But the skylark sings he knows not why. He probably does not, when first he sings, contemplate even the practical outcome; he just sings; still less does he contemplate what, for us, is the "consummate artistry" of his performance. "But," as Mr. Alexander says, "fine art exists when constructiveness ceases to be used in the interest of practical purposes, and is exercised for its own sake; when the satisfaction arises not from practical success, but from contemplation of the product; when the creative product is enjoyed not for the material gratifications which may attend it, but disinterestedly for itself." ("Morality as an Art" in *Journ. Phil. Stud.*, vol. iii., No. 10, p. 148.)

That is well said. I do but put a like interpretation in another form when I say that what the musician can contemplate with full æsthetic enjoyment, and what the nightingale (probably) cannot so contemplate, is the sheer

artistry of that which is in some way "wrung out of him." And I submit that the presence of this contemplative factor in combination with the purely emotional factor (which the nightingale may have in full measure) is one that is constitutive of the completed æsthetic attitude, as such, and raises it to that higher emergent level which distinguishes human folk in presence of any form of art-production.

As one reads the abundant literature of bird-life one is impressed by the great difference there is in the range of imputation on the part of this or that naturalist—the great diversity there is in the nature of the mental endowment with which birds are credited. And it is in emotional endowment that some observers are lavish, others niggardly, in that which they bestow under imputation.

Let it not be supposed that this is only a matter of observation. It is not only a matter of accurate plain-tale description of the manner in which birds behave. This we must have, so far as is possible, in colourless terms. But there follows interpretation in terms of mind-story; and that requires long and special training. Here expert opinion alone carries weight.

Some of us are of opinion that, whether it be emergent or not, such æsthetic attitude of mind as is distinctive of the human artist should not be imputed to birds. But this does not mean that we should not impute to them a wealth of emotional enjoyment. On *this* score, so long as one does not read into the highly-strung excitement of male and female alike—more prolonged in the male, more spasmodic in his mate—emotional nuances too closely resembling one's own, I see no grounds for setting limits to their emotional enjoyment. It may be even richer in affective tone in moments of "ecstasy" than anything one has oneself ever felt. Richer, too, may be the bird's specialised delicacy of perception in touch with a surrounding world for him no less specialised. One must remember that, on his lines of life, he may be more subtly, if not more highly, developed than we are. Beyond our human reach may be niceties of his

sensory or percipient reference, backed up by perceptive reference in carrying out the subsidiary details of behaviour which is none the less in its broad outline and, as a whole, fundamentally instinctive (p. 182). But the old notion that what is instinctive is no more than a strange display of inherited motor mechanism in unconscious action—this old notion dies hard; and it will probably on controversial grounds for long be imputed to those who have been led to reject it as I have.

§ 6

Stress has been laid on the new and unexpected. This from the point of view of natural interpretation, I have been led to regard as emergent. But from the point of view of the believer in human agency this contribution of the new and unexpected is the very hall-mark of the artist as creative.

Must one here say: If this, then not that? May not *this* which is interpreted in one thought-context as emergent, be also *that* which may dramatically be explained in another thought-context as creative? May one not, without inconsistency, accept both emergence and agency; not as identical; not as contradictory; but as complementary?

Our stress will still be on that which is emergent as new and unexpected—that which just comes with glad surprise. It brings new vision under reference. It brings new joy which raises subjective awareness to the emergent level of æsthetic appreciation. But it comes to the artist as constructive maker and builder through strenuous action; it comes in the progressive course of his conduct of affairs within his chosen field of work.

What for many is among the most paradoxical of Mr. Alexander's seemingly paradoxical pronouncements—always I think with a central core of truth—is this; that the natural order of procedure is not first knowing and then acting, but first acting or behaving in some way, and then, as the outcome of such behaviour or action, that which we speak of as knowing.

He speaks with no uncertain note. " All error," he says, " in understanding what knowing is arises from holding the principle that we first know and then act. All truth in this matter depends on our recognising the opposite principle that we know in and through acting." (*Art and the Material*, p. 19.)

What can this mean ? It seems to run counter to all our current procedure. Surely we must first know in such wise as to enable us to act in the light of that knowledge.

I have already considered this matter (p. 81) at the perceptive level of mental development, and may there have said many things with which Mr. Alexander himself would not agree.

Subject to the interpretation I there offered, one must distinguish the original order at the level of precipience, from that reversal of order which is entailed by fore-experience in naïve perception. I now add that we must distinguish this relatively simple reversal or order from that more complex transformation which the emergent advent of executive fore-plans brings with it when the stage of reflective procedure is reached.

In our daily life there is both the simpler reversal of order, and that more complex transformation which renders reflective reference teleological in so far as the field of relatedness includes ends in view. Thus we have to reckon with two stages of evolutionary advance. Let us take them as sequential.

We start with the hypothesis that at the outset of life the original order is first behaving with awareness in so behaving and with percipient reference only, and thereafter that mode of " knowing " which characterises naïve perception. When this mode of knowing comes in due course, quite early in infancy, there is reversal of this original order.

When, for example, one has already learnt, through behaviour of eyes and hands, that an object one sees is out there—and we have all long ago learnt this lesson in early infancy—*then*, under guidance of action, one may direct

one's behaviour to it and its like in the light of what one has learnt; *then*, under reversal of order, one may, on this or that occasion, first perceive an apple, let us say, and thereupon stretch out one's hand to grasp it.

Later on, with the advent of reflective procedure, there is much more than this simple reversal of order. There is increasingly complex re-arrangement of order in subservience to an end in view which we seek to attain. It is difficult to assign limits to this re-arrangement as reflective procedure runs its upward course. It is exemplified in the experimental work of the man of science. It is exemplified in the artist's re-fashioning of a transformed realm of art-production through the manipulation of perceptive material under action or behaviour.

The question then arises whether throughout life, let us say in the procedure of the artist, there is not abundant evidence that, in the incoming of what is new, the original order is still preserved in such wise that it may suddenly crop up notwithstanding so much reversal and re-arrangement of order. Mr. Alexander, as we have seen, contends that there is. He says, in effect, that all knowledge must wait upon action. What I for my part seek to emphasise is that all *new* knowledge, in so far as it comes under reversal and rearrangement of order, waits upon action.

Once more the stress is on that which is new. Let us assume that, in this sense, action brings knowledge; and that, under reversal and re-arrangement of order, this knowledge subserves further action. Then we must ask: What action? The reply is: Action the like of that which has already been carried out. Knowledge enables us to do again, and again, and yet again, what we have, as we say, learnt to do, the results of which, under convenient metaphor, are said to be recorded in knowledge. But of new action there is as yet no record in knowledge. If there were it would not be new. Old knowledge then is powerless to produce new action. On the other hand, new action carries in its wake new knowledge. With regard to what is new

therefore, in the experience of each individual, action precedes knowledge, or, as Mr. Alexander puts it, we learn through acting. Such, I think, in brief and summary form, is the argument.

§ 7

Many years ago when I was a visiting science master in a school, a colleague, the art master, was one of those who could dash off lightning sketches with admirable economy of line. "How do you manage," I asked, "to make it all stand out solid with so few strokes of your pencil in the flat?" "I don't know," he replied; "that's where I feel so palpable a fraud as an art teacher. So far as I can make out one just goes on pounding away and wasting a lot of paper, and all is as flat as the paper itself. And then some fine day this and that begins to stand out. That is a great moment. A bit more practice—say a month or two with a few dozen sketches a day—and all comes right, like this;" and he dashed off a dancing girl with a tambourine.

Seeking to draw him out further, I said: "But she seems to be alive; she dances, and shakes the tambourine. How do you manage that?" "That," he said, "requires much more expenditure of waste paper. You think it is coming? Good. Yes; I hope it *is* coming. And I can remember the very day when it began to come. But I can't always make it come. I wish I could. I still have to wait on my fingers to do the trick for me."

When my young friend said that he had to wait on his fingers to do the trick for him, he sought to give expression to a fact of his experience. And I take it that the fact he sought to express was that though he had some measure of control over his finger-work (as "accomplishment," in subservience to his "vision"), still in some measure his technique comprised a factor of constructiveness the outcome of which he must await, hailing it with glad acclaim when it came. There seemed to be something lower than himself working with him to give the desired result.

Another and a much later reminiscence. A young man came to me for the solution of a problem which pressed sorely upon him. "I'm a bit of a poet," he said, "write lyrics, and sonnets, prose phantasies, and so forth; have done so since I was a kid. They just come to me, not always, but now and then in glad moments of ecstasy. What I want to ask is: Where do *I* come in? Of course, in a sense it is I who do it—at any rate—spout it or write it down. But there's somewhat at work in me or through me that is far greater than I am."

Of my two young friends one emphasised something lower than himself in some way co-operating with him. The other emphasised somewhat higher than himself with which in some way he co-operated.

The something lower than himself may be interpreted in terms of perceptive habit-development, as in the case of the golfer (p. 176), co-related with "patterns" in the lower brain-centres. The somewhat higher than himself may be interpreted in terms of new and unexpected nuances of poetic "vision," co-related with "patterns" of higher brain-centres within the cortex of the frontal lobes. Such at any rate would be the programme of natural interpretation.

Turn now to explanation in terms of agency. Here the implication in the case of each of my young friends was that what he reported as part of the plain tale of his experience could not adequately be explained in terms of agency *if this be restricted to his own activity in so far as he acted with purpose.* Such purpose there was; but there was also much more than such purpose.

There is this, then, in common to a natural interpretation in terms of emergence and a dramatic expression, with underlying explanation, in terms of agency, that in any treatment which purports to be philosophical, we must consider the whole and nothing less than the whole. If our context be the pervasive constructiveness in nature we must embrace the whole gamut of emergence. If our context be

creative activity we must embrace the whole gamut of agency. Bearing in mind that natural interpretation proceeds from below upwards and explanation in terms of purpose runs from above downwards, in the one context we may build up to the most enchanted expression of the passion of song; in the other context we start forth from that which this passion of song seeks dramatically to express. It may take varied forms in the spacious freedom of the realm of literary art. Here is the form that it takes in the words of a poet who lacks neither vision nor the accomplishment of verse :—

Lo, with the ancient
Roots of man's nature
Twines the eternal
  Passion of Song.

Ever Love fans it,
Ever Life feeds it,
Time cannot age it,
  Death cannot slay.

Deep in the world-heart
Stand its foundations,
Tangled with all things,
  Twin-made with all.

Nay, what is Nature's
Self, but an endless
Strife towards music,
  Euphony, rhyme ?

Trees in their blooming,
Tides in their flowing,
Stars in their circling
  Tremble with song.

God on His throne is
Eldest of poets ;
Unto His measures
  Moveth the whole.

CHAPTER XI

From Fact to Reality

§ 1

In the foregoing chapter I had occasion to comment on the difference of attitude of the artist and the man of science. They are, I think, emergent attitudes, one towards that which we speak of as beauty, the other towards that which we speak of as truth. Neither is emergent at the perceptive level of mental development; but each is emergent at the reflective level as a new combination of components, severally present in naïve perception, which itself includes components already present at the lower percipient level.

Of course, the emergent attitudes towards beauty and towards truth respectively may be, and probably always are, in human persons co-present, as is also the no less emergent attitude towards practical utility when this is reflectively realised as an end in view. A person, for example, may be inventor, man of science, and artist. And when he is all three the emergent attitudes towards utility, truth, and beauty may so combine that there may be something more in the compounded attitude than there was heretofore in the component attitudes taken severally. If this be so the something more may itself be emergent. There may be in the reflective attitude that one might express as "first rate in all three respects thus nicely combined" something that introduces a fresh nuance of satisfaction. I say "may be" though there is much in my own experience which I am led thus to interpret. That which I seek to illustrate is how emergence may progressively ascend from stage to stage with increasing complexity and richness.

In any case, I regard the emergent attitudes towards beauty * and towards truth as different. And when this or that person, whether artist or man of science, has both I should say that they emergently combine. I should say that in so far as a man of science regards his truth-product as a thing of beauty, he does so not as man of science, but as artist, and that in so far as the artist regards his beauty-product as expressive of truth, say, to nature, he does so not from the standpoint of art, but from that standpoint which is common to him and to the man of science.

Common to both, I take it, and yet distinctive of the scientific attitude, is that which we speak of as the basis of elementary fact on which the superstructure of truth is founded. Again and again we are told that facts afford the ultimate test of theories. And if one venture to ask what one is here to understand by facts a smile may be raised at so ridiculous a question. Facts, one may be told, are just facts, of which one does not say that they are false. One says simply that they are *not* facts. But an hypothesis for the interpretation of facts may be true or false; and what we commonly speak of as a theory is an hypothesis for which the truth-claim is, for the time-being at least, widely accepted as valid on the part of those who are adequately fitted to pass judgment.

May we say, then, that if facts afford the ultimate test of theories they are indefinable? If so what does this mean? It means, I suppose, that we must be content to point to them so as at least to be able to say: This is a fact; that, too, is a fact. We may then proceed to a general statement. All such thises and thats constitute the domain of what we call fact; on the understanding that, while the statement is general, each this or that, as a fact, is particular or singular.

* I have taken beauty as the typical instance of that which is the "objective" æsthetically. In broader regard not only the beautiful, but the sublime, the grotesque, the ridiculous, and so forth are within the transformed realm of art. To them there are sub-attitudes of the æsthetic order—emergent, as I believe, and each with an indescribable "tang" all its own.

Not infrequently we back up an assertion that this or that is a fact by adding "really." By this we mean, I take it, that any fact is a bit of reality. On these terms, if we analyse reality into constituent bits, these bits of reality are facts. But it is not so easy as at first sight it may seem to say how much or how little we mean when we speak of a fact in "the ordinary acceptation of the word which everyone understands." One may speak of evolution, of emergence, of telepathy, of clairvoyance as facts; of the hardness of a diamond or the softness of putty as facts.

To simplify matters let us concentrate attention on so-called facts of naïve perception, founded on facts of percipience; for such are the facts we have in view when we say that they afford the ultimate test of theories. They are facts of observation under objective reference.

I now ask: At what level of mental development do facts appear on the scene? And I reply: Not until the reflective stage of mental development is reached. This may seem a hard saying. For if this be so there are no facts for the goldfinch that builds a nest; no facts for the rat that "runs a maze"; no facts for the infant in arms in aught that he does.

I do not, however, say that for them there are no items (one must use some such word) of percipient and perceptive reference. I say only that they are not yet facts as I here use this word. As facts they are in someone's field of *reflective* reference; and until they are in such a field of reference they have not the status of facts.

Furthermore, as facts they are set in a field of relational significance. It is this that raises items of naïvely perceptive reference to the status of facts. Hence, apart from its setting in some significant relations to other facts in some context, no fact is what it is as a fact There are no "isolated facts," save only under abstractive analysis.

Revert to that which I have spoken of as plain tale. It is a plain tale of behaviour—a plain tale, for example, of what a goldfinch observably does from start to finish in

building a nest. We want, as we say, to get at the facts. But they are facts in the context of this plain tale ; and only in this context are they " the facts of the case." When we have recorded them to the best of our ability we claim that this or that plain tale is true to the facts.

But it is by no means easy—nay, rather it is very difficult —to give a plain, unvarnished, and unembroidered, tale of the course of events when we seek to keep as close as possible to the data of naïve perception—to state what we observe and no more than that which we observe. It is difficult because so much of piquant gloss must be stripped off before we get down to bare and unsophisticated plain tale. It seems, indeed, that in the normal course of reflective procedure we can get down to plain tale only by a judicious process of ridding it of that which accrues under transformation. If this be so, we do not in practice start with plain tale ; we reach it by reflective pruning. But having reached it, therefrom we make a fresh start.

It seems, then, that only within a field of reflective reference are there plain-tale facts of which, in due course, the more richly significant tissue of transformed scientific truth is woven. None the less it is always some item of percipient reference, perceptively organised in relation to other such items, that is thus raised to the status of fact.

Some thinkers, however, will say that the items of naïve perception are not " raised to the status of facts " ; they just *are* the facts. Theories, they may say, are no doubt " constructs " of scientific thought ; but facts are immediately perceived ; they are *directly apprehended* as they exist in nature ; there they are to be perceived (or not perceived) quite independently of the mind of any observer. In Mr. Alexander's phrase they constitute " the material " (p. 201). What is meant, therefore, when one says that facts afford the ultimate test of theories is that the criterion of the truth of some theory, as stated, is its accordance with the objective facts which are disclosed under direct apprehension.

Thus, we are told, are the facts of nature conveyed to the mind of the observer. It may be so, if we accept the doctrine of direct apprehension. But since I am unable to accept this doctrine, facts, for me, and the perceptive items of reference which are raised to this status, are "representative" only of physical nature. And if physical nature be in some sense independently real, not on such easy terms are we brought into contact with reality.

§ 2

Mr. Alexander urges that, instead of laying stress on a too rigid antithesis "a better insight can be got into the nature of science by considering it as a form of art, and asking how it differs from and how it resembles fine art" ("Art and Science," *Journ. of Phil. Stud.*, vol. i., No. 1). Let us consider this statement and some of its implications.

The differences, he says, are always on the edge of disappearance. One such difference, for example, is that science is palpably *discovery*, prompted by intellectual curiosity; while art is *creation* based on our inherent constructiveness. Here both curiosity and constructiveness have their foundations at the perceptive or the percipiently instinctive level of mental development. Yet this distinction is on the edge of disappearance. For it may be urged on the one hand that science is in the highest degree constructive, let us say of new theories which approximate more and more closely to that which we call the truth of nature; and, on the other hand, that the quest of art is the discovery of new forms of beauty. Still, in this latter respect the difference does not quite disappear. Mr. Alexander's contention is that scientific discovery only reveals what is there independently of all discoverers; whereas the artist's discovery depends on his participation in the creative production of new forms of beauty. The fundamental difference that remains is therefore that science is controlled by external reality, whereas in art there is dual control, that of

external reality and that of a constructive and appreciative mind.

Thus we dig down again to "the material" common to man of science and artist. And here one might reopen the question: Direct apprehension or Reference? I do not propose to do so. Let us leave it at this: There is one or the other at the level of perception. That brings me into line with Mr. Alexander's whole treatment *at the reflective level of value*, save in so far as I lay stress on the emergence of our mental attitudes towards such values as beauty and truth. At *this* level the difference of attitude is on the edge of disappearance. For in the discovery of truth, which is the distinctive quest of science, no less than in the discovery of beauty, which is the distinctive quest of art, the mind is always a participator. Here, too, there is dual control. Truth and reality—that reality which science seeks to disclose—are not identical concepts. "*Truth*," says Mr. Alexander, "*is reality as possessed by mind*, and this it is that makes science not fine art, but like art." Truth is what the mind *makes of reality*; is reality in relation to the mind.

The artist transports us into a new world which is a "blending of material with mind." This realm is real—or at any rate included in reality—so long as neither party is absent. So, too, does the man of science transport us into a new realm, that of truth, which is no less a "blend of material with mind." This realm, also, is real so long as neither party is absent.

Thus art and science, each in its several way, gives entry to a realm that is *transformed*—transformed, I mean, in contrast with the world of naïve perception. It is, for example, spatially transformed. One moves about a room in which there is what we commonly call a square box. In the transformed realm of very elementary and therefore quite familiar science it is a cube, with a geometrical shape and a size constant and all its own. But in the world of naïve perception we *never actually see it as a cube.* As an object of

vision it varies in shape and in size with every change of the standpoint from which one views it.

But so consistently do we *think* in accordance with the transformed mental attitude begotten of science that we persistently *say* that what we see is *really* a cube, and is only *apparently* other than cubical. For the artist, however, as such—so far as he can ignore scientific transformation—it is always the appearance that is in his sense " real." He draws what he sees and as he sees it. Beginners always find it hard to do this. No doubt the artist, too, transforms in his own way. That is part of his business. He may draw the box on a flat piece of paper so that it shall be endowed with all the solidity of perspective. I say " endowed " ; for just as it betokens the scientific attitude of mind to endow the box in one's room with " cubical reality," so, too, does it betoken the artistic attitude of mind to endow the box as drawn in the flat with such perspective as belongs to objects of vision in the work-a-day world of naïve perception. One may call this illusion. But, as Mr. Alexander insists, this is not the illusion that deceives and leads behaviour astray ; it is the illusion that reveals a form of art-value to those of us whose attitude of mind is artistically transformed.

I suppose a typical illusion, as we commonly use the word, is that of the stick which looks bent when it is partially immersed in water. And I take it that such illusion may be said to lead to error—to that which is false and not true, or " really true " (p. 68). And no doubt such an illusion, like that of a mirror image, may often lead behaviour astray. But if we call this error, we should realise that it is error *in practice*. Here what we observe is failure in guidance of action. Illusions in art may also lead to failure in guidance of action or so-called " error in practice "—if, for example, one tries to take hold of a cube drawn solid in the flat.

When one concentrates attention, not on failure as contrasted with success in action or behaviour, but on error as contrasted with truth in thought, the bent stick only intro-

duces error, in this sense, when we start from a world transformed, as the logician habitually does start. There is no error if we start from the untransformed world of naïve perception. In this world what one sees just *is* the bent stick that it " looks." In brief there is neither truth nor error for naïve perception as such.

With some savour of paradox one may say that the transformed world of science leads us away from the more primitive world of practice under perceptive guidance of action. Put less paradoxically, it leads to readjustment of practice, perhaps to a reversal of practice as in moving a " slide " under a compound microscope. But in the transformed world of art we cling close to appearance. Hence what are illusions in scientific regard take rank as values in æsthetic regard.

§ 3

Success in the work-a-day world of practice is for us human folk an end in view. It is thus raised to the reflective level in a " sublimated " field of reference. It is no longer only such success as a goldfinch may attain to in nest-building, or as a swallow may display in catching insects on the wing in full flight ; it is such success as is reflectively realised *as success* in attainment ; such success as the boy may achieve in riding the bicycle, as the man of science may achieve in the conduct of experimental work, as the ophthalmic surgeon may achieve in nicety of operation, as the violinist or the line-engraver may achieve in sheer technique. And as there are distinctive attitudes of mind, I think emergent, towards truth and towards beauty so, too, there is a distinctive attitude towards practice and success therein.

Let us, however, take manipulative excellence as common to art and science. That leaves us with truth and beauty. Here I revert to the question : Is one's attitude towards truth and towards beauty quite different ; or is the difference always on the edge of disappearance ? I think that

man of science and artist alike claim that they are different even when the object of perceptive reference is the same, as in the case of a picture. What the man of science demands is truth to nature, as he says. May one emphasise, for purpose of illustration, truth to scale? But the artist may call this mere "representation," as in the accurate truth to scale of a photograph. What he demands is not mere representation, though some measure of this there may be. That which he demands is "expression." It is in virtue of expression, not representation, that the artist is creative of new forms of beauty. And stress may here be laid on personality. Then it may be claimed that the aim of the artist is to import his personality into his picture and to evoke a like personal attitude in others.

I am on delicate ground and must tread warily. It is, however, no part of my business to enter into a discussion which introduces much nicety in the exact, or sometimes rather vague, use of the words "representation" and "expression." But it is part of my business to consider the exact sense in which the word "personality" is used. To this I now turn.

"In both art and science," says Mr. Alexander, "we are in presence of foreign material which we contemplate in different ways . . . In both cases we mix ourselves with the material on which we work, but while in art we import elements from ourselves into the work and fill it with our personality, in science we so mix ourselves with the material as to depersonalise ourselves" ("Morality as an Art," *Journ. Phil. Stud.*, vol. iii., No. 10, p. 144). Otherwise stated: "We participate in the creation of truth only to keep ourselves out of the product." I take it that the emphasis is on *ourselves*.

Let me here say that I have in this book used the word "impute" in such wise as always to mean the imputation of *mental* characteristics, percipient, perceptive or reflective, to some living organism, man or animal, other than myself. Thus to the amœba I impute percipience and awareness; to

my human neighbours I impute reflective procedure, ends in view, and personality. Mr. Alexander uses the word "impute" in a wider sense which he makes quite clear. He means those characters in a work of art which it owes to the artist and cannot possess in its own right. "Marble is dead, and pigments on canvas are for the most part flat, nor do words as spoken sounds burn. But the statue looks, and for the æsthetic experience is, alive, and the picture has three dimensions, and the flat human figures are heavy and press upon the ground, or though stationary physically are æsthetically in motion . . . Every work of art is saturated with our imputations."

Such is his usage. Mine is different. And the difference is not merely verbal. Or, if it be merely verbal it calls for some further comment.

Æsthetically I may read into a work of art all that Mr. Alexander imputes or, as he sometimes says, imports. But as I use the word "impute," it is on scientific grounds, not on æsthetic grounds, that I impute certain mental characteristics to some living being other than myself. Under the spell of Thackeray's literary art I may read into Becky Sharp a subtle personality. I may read into the portrait of some friend personality which tallies with, and in that sense represents, that which I impute to him in the flesh. But Thackeray's portraiture of Becky and the painter's portrait of my friend are only æsthetically living. And I can impute (in my sense of the word) personality to nothing less than a *living person.* And I do so on evolutionary grounds of scientific interpretation—though perhaps also on dramatic grounds of agency. My æsthetic attitude and my scientific attitude are different. Let me illustrate the difference thus. Under the spell of Mr. Maeterlinck's literary art I can read into his Bees and his White Ants, as art-products, far-reaching ends in view. Æsthetically I can appreciate the creatures of his imagination. But if I am asked whether I *impute* to them, as I think he does, reflective procedure at a high level of mental development, I reply that on scientific

grounds I cannot do so. His charming works have, for me, very little scientific value in the *interpretation* of what happens.

It may be said that the distinction I draw between æsthetic importation and imputation on grounds which are scientific is subtle—perhaps over-subtle. So I will not further labour the point. I am not urging that my usage should be accepted and Mr. Alexander's usage should be rejected. All that I ask of the reader is that he should be at the pains of understanding what I mean by imputing personality to some living person and (apart, perhaps, from some apes) to nothing less than a human person.

There is one more point with respect to the use of the word "person" which is, I think, worthy of comment. We commonly use the word "person" and "individual" as synonymous. I have elsewhere suggested (*American Journal of Sociology*, vol. xxxiv., p. 623, Jan. 1929) that a distinction is permissible. One may regard the individual as *unique* and regard the person as *typical*—that is, as representing a type. As individual one is in a sense private. As person one is in some measure a public character; one voices not only one's own opinion, but speaks as man of science, as artist, as musician, as farmer, as churchman, as Alpine climber, as golfer, and so forth. One speaks, for example, as man of science in so far as, in doing so, one represents, or claims to represent, men of science, weighing one's words with due sense of responsibility. Of course, one still speaks as an individual; but one speaks also as a person representing others than himself.

On this view, which may at least be worthy of consideration, only a reflective being can be a person; an unreflective cow is not a person; an infant in arms is not yet a person. On this view one may be half a dozen representative persons in as many different situations and still retain one's unique individuality. On this view, in philosophical regard, one may say that the individual approaches the ideal limit of uniqueness, while the ideal person is all-embracing in the

breadth of his representation of human attitudes. Was not Shakespeare intensely (or intensively) individual, and withal widely (or extensively) personal?

I revert now to imputation. In a broad sense one imputes personality to other human folk.

I shall next proceed to show how goodness is always somewhat which one imputes to such a person, and to nothing less than such a person.

I have, however, already suggested (p. 171) that a human person, as the late outcome of evolutionary process, may be, and I believe is, also a creative agent. And, since we are by slow steps approaching reality, I seek now to emphasise my belief that, though we may render a natural account of the evolutionary mode of origin of the emergent mental attitudes and manner of procedure in the artist, still here, if not elsewhere in human life, we must reckon with creative agency. If this be so, our concept of reality must include such agency. And we have found reason for surmising that it includes more than such human agency.

§ 4

I have quoted Mr. Alexander, whose footsteps I follow, though mine may stray from his path, in his expression of opinion that "while in art we import elements from ourselves into the work and so fill it with personality, in science we so mix ourselves with the material as to depersonalise ourselves." "And so," he goes on to say, "in truth the personal element gives way to the material one. In morality, on the other hand, we are concerned with the passions of men . . . and the problem which morality has to solve is the fitting satisfaction of these passions, both as within the individual himself and as between individual and individual. . . . Thus in science the personality, and in morals the external material, seems each in turn to vanish in favour of the other ingredient. In art both ingredients are palpable. Science and morality are, as it were, limiting cases of art,

when the control ceases to be divided and is handed over to the other element."

I do not propose to follow the lines of Mr. Alexander's interesting and enlightening address. Indeed, in the vast field opened up I can only select a few salient points pertinent to my present purpose. If we ask with him where personality comes in, we must, I think, with him reply that morality deals always and all the time with persons and, I should add, with nothing less than persons. Morality, like art and like science, implies that the mental development of those concerned has reached the level of reflective reference. Within the field of reference of naïve perception—that of the bird or that of the infant in arms—there are no " arrows of reference " with their points embedded in truth, or in beauty, or in goodness; no feathered ends embedded in persons; no shafts of relations in this wise significant.

But when there are such arrows of reference in adult human folk, under imputation (in my sense) it is at its feathered end that we take our stand at least as a matter of personal emphasis. For though " morality may from one point of view be treated as adjustment in practice to our surroundings; yet these surroundings, when they are external nature, are but secondary to the desires, or, rather, to the wills, which are bent on attaining them. Goodness is an affair of motives or wills," and the will in moral regard is nothing less that the person who wills—nothing less than him in whom is embedded the feathered end of the arrow that points to the good.

It is a matter of emphasis. And there is scarcely a salient word which is used in ethical discussion which does not invite the question which may be thus stated in terms of the arrow-analogy: Is it here and now used at arrowhead of reference, embedded in somewhat, or at feathered end embedded in someone who acts " in the light of " such reference. Take "motive," for example; sometimes it means end in view; sometimes the attainment of this end as the more complex end in view; sometimes what I speak of as

the mental attitude on the part of someone toward these ends in view; sometimes "the direction of the will to attainment. And then it may be urged that all this is the outcome of rather subtle analytic distinction. In the concrete unity of some given episode of the moral life we must deal with the arrow as a whole—point, shaft, and feathered end.

Now it is the feathered end of the arrow directed to the good that is embedded in persons—in oneself as a person, and in others as persons under imputation, while the arrowhead is embedded in the somewhat that is good in that person. But the meaning of the word "good," as qualified by the adjective "morally," must in some way be specified. One may speak of good acts, good consequences, good persons. And then, further to complicate the issue, the word "right" is pretty sure to occur in any ethical discourse, sometimes as equivalent to good; sometimes not so, when, for example, it is said that "the notion of the morally good must be sharply distinguished from that of the right" (W. D. Ross). Here the word "right" may be reserved for the act, of which, it may be said that in itself and as such, it has no moral value. This leaves us with the consequences to be called good in some other sense; but not morally good—good, let us say, as conducing to some "utilitarian" end, such as the greatest happiness of the greatest number of persons.

Obviously we are here in a region of subtly blended issues. In the intricate meshwork of these issues the distinctively moral issue somewhere has place, and, as many would say, the chief place—the place of honour among the values, the most worthful of the trio, truth, beauty, and goodness. It is not my purpose here to attempt to deal with this meshwork as a whole. Suffice it to realise that such an orderly meshwork there is, to be rendered, if possible, more orderly in the advance of evolutionary progress; and that this meshwork of issues and all that it implies falls within the compass of reality.

Remembering, then, that only under analytic disentanglement, and the abstraction it entails, can we distinguish goodness, we may still ask : What is distinctive of that which we so distinguish ? We may still ask : To what is the word " good " here adjectival ?

May one reply, in view of what has been said above, that only to a person is the word " good " adjectival ? May one say that goodness as distinctive of this or that person is somewhat in him to which our attitude is no less distinctive ? May one say that in presence of this somewhat we are " pleased," as Hume put it, " in a particular way " ? Have I made comprehensible what I mean when I submit that this attitude entails an emergent quality of satisfaction such as only a reflective person can enjoy ? And may I say that only under imputation (in my sense) has my neighbour goodness ? And does it follow that the paradox of goodness is that it is in the person himself and yet would not be there except for the mind of someone, say you or me, who imputes that goodness to him ?

How far this can be brought into line with and how far it diverges from Mr. Alexander's interpretation it is for him and for others to judge.

Let me, however, quote him once more, since what he says affords a text for the little I have further to say. " Art, science, and virtue," he tells us, " owe their value and their existence to their satisfying certain needs, certain instincts, which clamour for satisfaction and which these values are constructed in order to satisfy. . . . Yet artistic, scientific, and moral instinct are mere phrases until we have discovered what are the special instincts whose satisfaction constitutes beauty or truth and goodness." They are, he tells us, constructiveness, curiosity, and gregariousness or sociality. But he quite clearly says that " the instincts in question are so overlaid by human characters that they have ceased to be instincts in the proper sense." Then why does he use the word in an improper sense ? Because " they have their roots in instincts which we share with animals."

But as "*humanised* instincts" do we share them with animals?

I refrain from entering further into the vexed question: What *is* the "proper sense" in which the word "instinct" should be used? I have used the word "instinctive" as adjectival to behaviour (p. 177). I have stated that I for one, do not use this word as adjectival to knowledge (p. 183) though others may do so. But (as I understand) Mr. Alexander in this context uses the word as adjectival to need or to some needs. I, for one, elect not to do so.

Of course I do not deny needs, wants, desires, cravings, impulses, urges, or however otherwise they may be named. Nor do I deny that these needs may be allayed, fulfilled, satisfied, and in a sense dispelled through behaviour or, at the reflective level, through conduct. Furthermore, I am nowise concerned to deny that, at the reflective level, these needs are "sublimated" or "humanised" in such wise as to be raised to some more highly emergent status. Nay, rather that this is so is the burden of my contention. But it is also the burden of my contention that these needs, one and all, should in natural regard be interpreted in purely relational terms. In natural regard one should say: Given such and such a need, felt as an impulse or urge; such is the behaviour or conduct at the time-being. In this regard I should not say that the need is that which impels or urges, if that introduces the concept of agency.

I should say, then, that given humanised curiosity the conduct of the man of science is with reflective reference to truth in thought; given humanised constructiveness the conduct of the artist is with reflective reference to beauty in expression; given humanised sociality the conduct of the moral man is with reflective reference to goodness in character. But I should add that these distinctions are the outcome of analysis; and that in the concrete personality of the man as man he is always curious, constructive, and social; he has always a reflective eye, alike in his science, his art, and his morality, on truth, and on beauty, and on

goodness; not on one only; on all three in emergent synthesis.

But as person, the product of evolutionary process, he may be, and I believe always is, also a personal *agent*. And as agent, creative of the new in science, or in art, or in social fellowship, he is nothing less than a person. It is this that seems to stand out clearly in any consideration of morality, however brief, meagre, and inadequate. Here personal agency steps out into the very forefront of discussion. It is here that I, for one, feel an imperative demand not only for an interpretation in terms of natural relatedness (mental attitudes and the rest), but also for an explanation in terms of creative activity on the part of a personal agent. It is to such an agent that we impute goodness. And few would contend that the goodness we impute is beyond the pale of reality.

We are faced, however, by what, following Mr. Alexander's lead, we may call the paradox of goodness. The paradox of moral goodness arises under imputation. We impute goodness to some dear friend. We believe that it is in him; and we act on that belief. And yet it would not be there, under reference on our part, except for us who value it so highly. Of course the emphasis is on *value*. Under relational treatment no value is what it is and as it is apart from someone for whom it "has value." In relatedness value comes to its own as constitutive of reality.

§ 5

There is a sense in which it may be said that discussion of reality is the peculiar business of the philosopher and not the special business of the man of science in this department of inquiry or in that. No doubt we are all, as reflective beings, philosophers of sorts. And the man of science, the physicist for example, will tell us that he is very much concerned with reality—physical reality. But beyond physical reality he does not profess to go. And he may, or

he may not, contend that physical reality is that of which he and his fellow workers have knowledge by direct apprehension, and in that sense real knowledge susceptible of rigid proof and ultimately founded on observation and experiment. He may, or may not, include under reality somewhat other than physical; and in either case he does so, not as physicist but as a man of reflective outlook with philosophical bent.

Under broad philosophical survey reality no doubt includes the world of physical science, but it includes also the physicist himself. It includes us, you and me, and all minds that each of us imputes to living beings other than himself. It includes the whole realm of beauty, and of truth, and of goodness, in all instances of reflective reference. It may include, in dramatic regard, the whole kingdom of spirits as creative agents. It may include, and be included in, the kingdom of God, as *Spiritus Creator*. What is included in, what excluded from, reality, on the part of someone, depends, not, or not only, on the range of that someone's knowledge, but on the range of his *belief*. And whatever may be its range, wide or narrow, this belief itself is included in reality. I here speak of the belief of human folk as persons; and I submit that, however wide may be the sweep of someone's personal belief, he still believes, if I may put it paradoxically, in a reality which, while it includes, none the less far transcends, this limited range.

Such transcendence (in some sense of this word) of that which we commonly speak of as the object of belief gives pause.

We commonly set forth on our quest for reality along the pathway of knowledge. This pathway leads to truth. May one say that the truth which is the object of our quest is a coherent system of facts in a meshwork of significant relations? May one say further that within this system any proposition is susceptible of proof—that it can be demonstrated to the satisfaction of "any reasonable person" who accepts the facts and the meshwork of significant

relations? Then the question arises whether this truth-system which is the goal of knowledge is also the reality-system which is the object of belief. If only to the end of presenting the point of view to which I have been led, let me answer this question in the negative. Let me venture to say that reality as the object of belief is that which is not susceptible of proof, and that in this sense the reality in which one believes, though no doubt it includes knowledge (and all else), none the less " transcends " the truth to which knowledge leads.

One is in difficulties here through the intricate interlacing of diverse but closely allied issues. Hence the words " knowledge," " truth," " reality," " belief," borrow, so to speak, significance from each other. The truth which we claim for inductive generalisations is, I think, a form of belief. When we say that we believe this or that as a demonstrated deduction from some logical or mathematical principle as a postulate this is knowledge as truth. It is the postulate which is an object of belief. But clearly these are matters of definition.

Since I present only a point of view, let me say that what I here mean by a system of knowledge is that which embodies a coherent meshwork of demonstrable truth, such as is conspicuously illustrated in geometry, and such as is exemplified in the professedly geometrical system of philosophy which Spinoza sought to establish in the *Ethics*. Then I ask whether belief in reality does not embrace more than is comprised in a system of proven knowledge.

I must even deal with that which I for my part accept in an attitude of belief or, as I have elsewhere said, of acknowledgment. I acknowledge the existence of a physical world. But if you demand of me proof of its existence independently of me I can give you none. But what about others? Question for question. I ask how it comes about, if proof can be given, that, after centuries of discussion, we are still in the throes of argument whether it does exist in some wise independently of mind or not? And if recourse be had to direct

apprehension, is not this, as a philosophical tenet, based on belief. accepted by some, rejected by others? So here too I ask: How comes it that if it be susceptible of proof neither party shows any sign of convincing the other?

Along a different, but converging, line of approach to reality I believe that you and others are systems of subjective awareness which you and they can enjoy though I am precluded from doing so. I believe too that for you and for them there is a world of percipient and perceptive reference, a world, too, scientifically transformed under reflective reference; for you and for them realms of art and of constructive morality. But all this I cannot prove; and all this scarcely any one is seriously concerned to disprove save here and there some solipsist. Even of him it may be said: While his arguments are irrefutable, no one (not even he, since he argues with others) entertains solipsism as a matter of belief.

I believe also in the creative agency of human persons; but this I cannot prove. All day long I credit such agency to others. But if proof be demanded of me that I myself *am* the agent I claim to be, I am at a loss to adduce *arguments* which convince me that I *can* prove it. One requires proof of activity as real. And has not this question formed the storm-centre of much argument *pro* and *con*? Some say that for them this is a matter of direct experience, perhaps spoken of as intuition (which may mean intuitive belief); but others who have paid special attention to this mode of experience have been led to a different conclusion. They may quote with approval Titchener's verdict of Not proven. "The investigators of the reaction consciousness in all their hundreds of reports," he says, "do not discover an active element." They do not discover conative agency. My point, here again, is that, since there is still argument *pro* and *con*, convincing proof, one way or the other, is seemingly not forthcoming.

Lastly, I, for one, acknowledge the supreme agency of God. But though I profess my belief in a spiritual kingdom of

God, I confess that this too is belief. If I am asked to furnish such demonstrative and indisputable proof as must straightway convince "any reasonable person," I cannot do so. Is it not sufficiently patent that, in this matter of perennial interest, there are the Ayes and the Noes of belief that transcends demonstrative knowledge?

§ 6

In the foregoing section knowledge that leads up to a demonstrable system of truth was taken as the commonly accepted pathway to reality. Thereafter, with some pardonable over-emphasis to bring into prominence a point of view, I submitted that much of the reality which one accepts in an attitude of belief is not susceptible of proof in accordance with that criterion which is applicable to a coherent system of truth freed from all postulates.

If this be so, there must be some other criterion of reality which is supplementary to, and lies deeper than, the criterion which is applicable to truth. What is it? Is it not that afforded by the outcome of behaviour or conduct or action? Is not action deeper than, and more fundamental than, knowledge? Do we not come back to Mr. Alexander's emphatic pronouncement that we know through acting (p. 214)? May we not say that all knowledge is founded on behaviour, and that only under "reversal of order" (p. 82) is the avenue opened up to guidance of action and the control of conduct in the light of knowledge? And even so, is not the criterion of conduct and action that it works and carries us forward to further action? Some may speak of this as a merely pragmatic criterion. But from the point of view I seek here to develop it is a criterion *not of truth but of reality* as object of belief.

If you ask me why I believe in a physical universe, why I believe in minds other than my own, why I believe that I am a personal agent, why I believe that they too are personal agents, I reply: All this I believe as a policy on

which is based my conduct of affairs. These words " as a policy " are lifted from Professor J. J. Thomson's oft-quoted dictum that in science much is accepted " as a policy and not as a creed." From the point of view here suggested I should venture to say " as a policy and therefore as a creed."

Long ago, near the outset of my reflective life, such belief was part of the atmosphere that I breathed under current instruction from my elders. So long as it worked as a policy —so long as it contributed to guidance of action and control of conduct—that sufficed for its acceptance without further question. But as I grew in reflective stature further question did arise. It took some such form as this : Am I not basing my action on that assumption which is a primitive form of belief ? Even so on this basis I continued to act. On this basis I still continue to act. But I no longer regard it as an assumption. So well has it worked as a policy that it has been lifted to the higher status of acknowledgment. And that which I acknowledge implies the specifically emergent attitude of belief at the feathered end of an arrow of reflective reference whose head is embedded in reality.

But the reality at the arrowhead of belief is all-embracing. It includes or comprises all facts in all kinds and modes of relatedness within one bracket (p. 23) from which nothing is excluded. Reality includes all forms of practical utility, of beauty, of truth, of goodness ; includes all modes of reference, percipient, perceptive, reflective ; includes all modes of enjoyment in awareness ; includes all affective tone in the lower form of pleasure and the higher form of joy ; includes all needs and their satisfaction ; includes all behaviour, conduct, action, which conduces to satisfaction. And yet reality comprises more than any one of these taken severally, more than all of them taken collectively. In natural regard it comprises all the constructiveness in nature ; in dramatic regard all the creativity of personal agents. In both regards one may embrace in belief more than as yet one can claim to know.

In discussing, however briefly and lamely, belief and the reality which is its object—or in more technical phrase its objective—one seeks to rise above the subordinate distinctions of abstractive analysis. But these distinctions are embedded in the current language through which our belief in reality is expressed. In the practice of thought and of speech they cannot be ignored.

If, then, one introduces these distinctions, one must go by what people say and by the mental attitude one there and then imputes to them. Again and again one hears someone say : I do not believe that this is really so.

Of Sir William Watson's poem which I quoted at the end of the foregoing chapter, and of many another—for example, of Wordsworth's *Intimations of Immortality*—one may ask : Is this really so ? Is it true ? And of these and of many others it may be said by someone : Yes, true poetry, but false philosophy. And he may add : While I appreciate its beauty, I cannot share the belief it expresses. If he be pressed to tell us why not, he may reply : Not on such poetic fancies do I found my notions of reality.

Must one not then ask oneself : In what context is this or that " not really so " ? In the context of scientific interpretation ? Or in the context of dramatic explanation ? Or in the context of poetic symbolism ? Descend to ordinary forms of speech. If I tell you that gratitude filled my heart to overflowing, you probably understand quite well what I mean. I too know what I mean. I do not mean that this is so in the context of scientific interpretation. In that context my heart is full of blood in passage through my body. Nor do I mean that it is so in the context of dramatic explanation. Gratitude is not an agent who acts with purpose. But I may claim that this is really so in the context of current symbolism. Of this I shall have something more to say in the next chapter.

CHAPTER XII

In Dramatic Regard

§ 1

It may be said that whether one be man of science, artist, historian or philosopher, one should start with that which I have designated a plain tale of events. Let me speak of this as " the material."

But in the foregoing chapter I urged that in presence of the plainest of plain tales we already stand at the reflective level of mental development; that such a plain tale, as " the material," is given only in a field of reflective reference; and that it is reflectively stripped bare of all that renders it more than a plain tale. As such it is a bit of world-history in the making. This is the kind of history that may be told of the planets in their sweep, of the growth of an oak-tree, of the behaviour of bees in a hive or of white ants in a termitary, of operatives in a factory, of men and women going to and fro in the busy streets of a great city, so long as we refrain (if we can) from going beyond the plain tale which gives only " the bare record of bare facts."

Now compare this with that which, by common consent, we call history in the affairs of human life and conduct. Such history is not only plain tale, though it is founded on plain-tale material for which we have to search the records. It deals with human folk *as agents who act with purpose.* And directly one introduces the concept of agency one seeks a dramatic explanation of what is happening or has happened as recorded in plain tale.

There are thus two kinds of history; and both are founded on plain tale. There is " natural history " as an interpretation in terms of physical and mental relatedness.

There is " dramatic history " as an explanation in terms of purpose on the part of the actors on the scene of human life. It is not however a question of one or the other. It is always a concrete synthesis of both. Of any given set of world-events, no matter how complex, there is a natural history in terms of which it may be interpreted, subject to the evolutionary canon I have quoted so often (*e.g.*, p. 44). This canon of interpretation is applicable to the most highly developed social relations of men and women as persons in evolutionary regard.

But if, as most of us believe, they are also persons in that which I speak of as dramatic regard ; if they are also agents who act with purpose ; if they are in some measure centres of creative activity ; then we pass from natural history to dramatic history ; then we pass from interpretation to explanation. Then, having led up to the person as the so-called *terminus ad quem* of a specialised line of evolutionary advance, we start with the personal agent as the *terminus a quo* from which creativity flows. Then, within the limits of human capacity, no longer is a person only the effective outcome of precedent change in the course of world-events in process of evolution. This he still is. But he is also an efficient source of subsequent change in the progressive advance of social life. Then we not only climb upwards step by step till we reach the evolutionary person, we also explain from above downwards, taking purpose on the part of agents as our dramatic starting-point.

I am well aware that my use of the word " dramatic " as adjectival to explanation, in contra-distinction to " scientific " as adjectival to interpretation, may not be acceptable. I can but try to make understandable what I mean.

As an avenue of approach thereto I seek first to link up history as dramatic explanation with " the drama " as a recognised form of literary art-production. I submit that the historian, directly he goes beyond plain tale, is always a dramatist at heart. Can he discuss the episodes which centre round the figures of Elizabeth and Mary Queen of Scots

otherwise than as dramatist ? Does he not explain in terms of purpose on their part ?

But the historian, as such, in so far as he revivifies the past, re-creating its then-current creativity, gives his dramatic version of the acts of human persons who lived and were exemplars of purpose in past times. In history, however dramatic in spirit, there must be nothing discrepant with the natural history of the sequence of events under consideration.

Turn now from history to fiction ; from the historian to the novelist or, to simplify the issue, to the artistic creator of a good short story—true to nature, as we say, that is, free from all questionable extravagance. The skeleton, so to speak, is no doubt an imaginary plain tale. And if that were all we should have only an artistic rearrangement of bare facts—a plain tale at second remove ; an imaginary natural history of imaginary events. But that is not all. The characters are depicted as human folk who are actors in the story, subject always to the dramatic concept of agency.

I said, in effect, that in history proper we permit no tampering with plain tale. But to Shakespeare in his historical plays we allow liberty to do so within limits. As creative dramatist he may in some measure modify the plain tale of history. And in the non-historical plays we grant him full freedom to create a purely imaginary plain tale and an imaginary natural history, subject only to the canons of his art.

In all cases, however, it is with the acts of living agents, primarily human agents, real or imaginary, that what we commonly speak of as drama is concerned. The concept of purpose, embodied in reflective persons, is ever present. And whether the actor walk the boards of the theatrical stage, representing someone other than himself, or play his part in real life, it is as actor, in one or both senses, that his act, the product of his creative activity, calls for explanation of the kind that I distinguish as dramatic.

§ 2

Some apology may be due to the reader for such commonplace comments on matters familiar enough. To what do they lead? First, to a distinction between natural history, to be interpreted in terms of relatedness, and human history, to be explained in terms of the creative activity of agents who act with purpose; secondly, to a distinction between history and literary fiction, the one keeping close to the natural order of events, as material of history, the other imposing a new and rearranged order in accordance with some artistic purpose, as material of literary fiction. The point of view they purport to illustrate may be thus expressed. Into drama as art-product we always read purpose on the part of the agents portrayed. Into purpose on the part of human agents, in the busy streets or the sequestered lanes of our work-a-day world, we always read drama. On the stage of all drama there are persons who act with purpose, or beings regarded as persons who act with purpose. Of drama the key-note is purpose, and purpose implies personality.

On this understanding the interconnection of "drama as literary fiction," in the sense here intended, and "history as drama," is so close that no hard and fast line can be drawn between them. Both deal with personal agents, and primarily with men and women as personal agents. But in drama as literary fiction the personal agent is a product of the artistic imagination. In history as drama the personal agent is one who lives or has lived. In so far, however, as the artist reads into the character he creates what is, as we say, true to life, he is giving us history as drama at second remove, so to speak. And in so far as the historian as dramatist reads into the characters he portrays some expression of his own personality, he does so as creative artist. Can one draw any hard and fast line? Is not all drama in action an expression of someone's personality through purpose? My stress is on someone, for my thesis is that nothing less than a some-

one is an agent, or, reciprocally, that an agent is nothing less than a someone.

Thus far we have taken the human person, whose creative activity is accepted in an attitude of belief, to be the *terminus a quo* in dramatic explanation. But we have also taken the human person as the *terminus ad quem* in natural interpretation, on the understanding that the word " person " may be used in both contexts, or at the point of intersection of lines of thought in two contexts.

What does this mean ? Let me briefly recapitulate the argument.

Under natural interpretation in its modern evolutionary form it is not till a late stage of physical and mental development has been reached that man attains to the status of a person as the word is used in *that* context ; of one who has in his field of reflective reference ends in view and all that they imply ; one of whom we can say : Given these ends in view, as the outcome of evolutionary process, such is his conduct of affairs in social life. Then, and not till then, is he also in dramatic regard a person as the word is used in *this* context ; one who claims to be a creative agent who acts with purpose. From the point of view I seek to develop nothing less than a person who, in the one context, has reached this status under evolutionary interpretation, can realise that in the other context he *is* a personal agent who acts with purpose.

It may, however, be said that the person himself as an agent who acts with purpose calls for explanation. I think that this implies a confusion of issues. No doubt the evolutionary person calls for natural interpretation. But, from the point of view I seek to present, the person as agent is accepted in an attitude of belief as the basis on which an explanation of his acts is grounded. If this be so, to seek an explanation of that which is accepted as a basis of explanation lands one in a vain pursuit of the unattainable along the pathway of so-called infinite regress.

But may it not be said that on these terms no explanation

is given of human agency? It is seemingly just taken for granted or postulated. Of an explanation, which you are pleased to call dramatic, you tell us roundly that no explanation can be given. That, however, is not quite what I mean or all that I mean. Let me put the position I seek to establish thus: Of certain events in human history an explanation in terms of purpose on the part of men and women as agents may be given. But this affords no explanation of many *other* events even in human history. My position then is: No *complete and adequate explanation* of all that happens in the drama of human life can be given in terms of human agency only. One must postulate agency other than human as a basis of an adequate and sufficient explanation of all that happens, or leave much unexplained.

§ 3

Let us now turn to a consideration of what is meant when it is said that the human person, as an agent who acts with purpose, himself calls for explanation. What I think is meant may be better expressed in an assertion differing somewhat in form. It is said, as I understand, that the *acts* of a human person themselves call for explanation.

If this be what is meant, let me approach the question that is thus raised from the side of literary fiction—or let me say in brief of literature. Then I find in some novels and plays not a little to the effect that the hero or heroine is torn this way or that by conflicting emotions.

This one may accept in dramatic regard as the writer's mode of expressing what he seeks to convey to his readers through the medium of language moulded in subservience to his literary art. He gives and we take in the distinctively literary attitude appropriate to the occasion. In this attitude we appraise the fashioning of his art-product. And we grant him literary freedom to fashion it in the manner that he deems artistically most effective.

In this respect, then, as artist he may, on his part, do well

or ill. It is as artist that he makes his æsthetic appeal. And it is as artist on my part, in accordance with my response to his appeal, that I am pleased (or not) in a particular way. If I am pleased in this way I no more hesitate to accord to him full appreciation of the artistry shown in this mode of expression than I hesitate to accord to Shakespeare full appreciation of the artistry of the passage in which he tells us that daisies pied and violets blue do paint the meadows with delight. But in neither case do I take what is thus given under literary expression as an explanation.

If, then, you ask me: Do you believe that this is really so? I reply: Yes. In the context of literature it is really so. It is what the literary artist leads me to import into his art-product. It is analogous to that perspective solidity which the pictorial artist leads me to import into his picture drawn on the flat of his canvas. If I do import one or the other I really do import it; and it is really there for me, as for him, under reference. But it is really there in the transformed realm of literary art. In this realm a description of what happens in terms of a conflict of emotions may be accepted not only without protest but with glad appreciation. But it explains nothing; it may not be written with explanation as the end in view.

Now whether this or that novelist or playwright does or does not take a conflict of emotions as an *explanation* (dramatic in my sense of the word) of the conduct of living persons who act with purpose, it is for him to say. If the question be put to him he may reply: My aim, as artist in literary fiction, is to create characters that are lifelike. But he may add that in order to render them lifelike he must seek and find the foundations of character in living persons, including himself.

In our present context these living persons are admittedly agents who act with purpose. Take some one of them. He is, let us say, ambitious and proud; loyal and trustworthy in practical affairs; at times domineering and self-assertive;

rather greedy, and lax in matters of sex. But the application to him as person of these adjectives explains nothing. And in dramatic regard an explanation is that which we seek. Hence some may say that Ambition, Pride, Loyalty, Self-assertion, Greed and Lust are agents which influence him in his acts. Loyalty may impel him to one course of action and overcome all other agents which impel him to a different line of conduct. Self-assertion in early life may yield to self-sacrifice in later years, and so on. However they may be named and listed, such agents, we are told, there are—agents who, in alliance or in conflict, contend for the mastery in the life-drama of a man who himself is a personal agent.

It may be so. Unquestionably primitive folk believed that was so, at any rate in the broad sense that spirit-agents with purposes of their own hovered round a man and aided or thwarted him in his acts. There are many to-day who, if I understand them rightly, profess their belief that it is so. I do not believe that it is so. Why not? Because I do not believe that any emotion, from the highest to the lowest, is an agent who acts with purpose, and because I do believe that nothing less than a being who acts with purpose is an agent. Save in the realm of literary fiction, I see no grounds for personalising Ambition and the rest.

Let us however dig a little deeper. Then we come down to those instincts which are said to be "the prime movers of all human activity." "The instinctive impulses," said Professor McDougall more than twenty years ago, "determine the ends of all activities and supply the driving power by which all mental activities are sustained; and all the complex intellectual apparatus of the most highly developed mind is but a means towards these ends, is but the instrument by which these impulses seek their satisfactions, while pleasure and pain do but serve to guide them in their choice of means" (*An Introduction to Social Psychology*, 1908, p. 44).

Again I say: It may be so. Mr. McDougall's advocacy has led many to believe that it is so. Why, for my part, do I believe that it is not so? Because I am unable to

accept what seems to me the basis of the explanation he offers—namely, that Instinct, or an instinct, is an agent the expression of whose activity betokens purpose. That seems to be implied in the passage I have quoted, with its stress on "ends," "choice of means"; on "satisfactions" which "these impulses seek." It is implied in many other passages. Speaking, for example, of that which may be called food-hunger, Mr. McDougall says: "All animals are alike in this —that when the impulse of this instinct is aroused in great strength it overrides every other tendency, subduing or preventing even fear itself. Both in this sense and in that it was presumably the first to be differentiated from the primal purposive energy or *élan vital*, the food-seeking instinct may claim primacy over all the others" (*Outline of Psychology*, p. 144). On like terms others may give to sex-hunger primacy, and say that "when the impulse of this instinct is aroused in great strength it overrides every other tendency," and insist on its purposive character as a differentiation from "the primal purposive energy or *élan vital*."

The point for emphasis here is that the instinct which implies food-hunger—the food-seeking instinct—*is itself purposive*, and is differentiated from the primal purposive energy or *élan vital*. It seems then that this instinct and sundry others, including the mating instinct, are agents that act with purpose in some way "differentiated from" the *élan vital* as an agent that acts with purpose.

I do not believe that any instinct is an agent that acts with purpose; nor do I believe that Life, or *l'élan vital*, is an agent that acts with purpose. My beliefs are other than these.

Of course I deny neither food-hunger nor sex-hunger, each co-related with the state of bodily organisation in him who is an hungered. Nor do I deny that, in us human folk, the one may reach the emergent status of greediness, the other the emergent status of lust. But it is the man who is greedy; the man who is lustful. And for him as an agent greed and lust may "bulk large" in the realm of purpose.

Whose purpose? *His* purpose. Of neither greed nor lust can one speak of his purpose. No doubt there are some writers who do speak of Lust in such wise as to lead many to regard him as a dirty-minded demon to be kept at bay only at the shining lance-head of the good knight Censor. But is this an *explanation* of what happens; or is it part of *the artistry of literary expression?* I, for one, do not accept it as an explanation. And when it comes to details, into which fortunately I need not enter, the elaborated art-product of Freudian literature does not win my admiration.

§ 4

I have characterised as instinctive such highly integrated behaviour as is observable in animals whose nervous system has reached the synaptic level of organisation; and I regard it as implying the percipient stage of mental organisation. I ask now: Is such instinctive behaviour purposive, in the sense that the animal or man who thus behaves, in doing so acts with purpose?

The trouble here is that, as matters stand, the words "purposive" and "purpose" are used in different contexts with difference of meaning.

If someone tells me that all instinctive behaviour is purposive I may take him to mean what Mr. McDougall would mean. But I may take him to mean only that, in any given instance, there is some more or less definite *outcome* which he then describes; let us say the nest of a goldfinch. So too if he tells me that all life-behaviour is purposive, I may take him to mean that here, too, in any given instance, there is some more or less definite outcome which may be described; let us say this or that organ as the product of embryonic development, or perhaps the organism as a whole.

The word "purposive" is often used in this sense. And it has been suggested that we should still retain its usage in this sense, and reserve the word "purposeful" for conduct under reflective procedure with some definite end in view.

Thus a purpose*ful* outcome is one which implies a precedent end in view on the part of some person who chooses means to its attainment; a purpos*ive* outcome does not carry this implication. I am, however, increasingly doubtful whether the difference of suffix suffices to mark what is for me a radical distinction.

I suggest, therefore, that it would be well to reserve the word "purpose" and its derivatives for use only in the context of agency. On these terms they are primarily applicable to some act. But such an act implies an agent who so acts. So we say that there is purpose on his part. The act, however, entails some outcome. Hence we may say: If this outcome is such as to imply the act of some agent it is purposive. I submit that there is nothing here that runs counter to current usage. I submit that in current usage the concept of agency is always brought to mind when the word "purpose" falls on the eye or the ear.

I propose, then, to restrict my use of this word to the context of explanation in terms of agency leaving "end" for use in the context of natural interpretation. On this understanding purpose does not "just come" under emergence at some stage of evolutionary progress in the natural course of events.

Let me put the matter thus: Assume that there are such stages of advance as I have distinguished—percipient, perceptive, reflective. May one add a fourth stage to be distinguished as purposive? In my "scheme of things" one may not. Explanation in terms of purpose is not a prolongation of the line of evolutionary interpretation. Nor is evolutionary interpretation a prolongation of the line of explanation in terms of purpose. They are two different ways of accounting for what happens in respect of any human person. In evolutionary regard he is a natural person; in dramatic regard he is also a centre of creative activity, one whose acts are purposive. The problem of philosophy with which we are here concerned centres round the crucial question:

How can he be both ? For I think that most people believe that in some sense and in some way he is both.

It comes then to this. If one reserve the word " purpose " for use in the context of explanation—meaning purpose on the part of some agent—then purpose is not emergent, though it may afford an explanation of emergence. This, however, would imply belief in an agent whose purpose is expressed in emergent evolution. I say advisedly *an* agent. For if for scientific interpretation there is, under reflective reference, *one* evolutionary plan, then in dramatic regard that plan is expressive of one purpose on the part of *one* agent. And since, as I have urged, an agent who acts with purpose is nothing less than a person, the Agent whose act is emergent evolution is nothing less than a person. But that Agent is not a " natural person," since a natural person is the outcome of emergent evolution. Agency is not the outcome of natural process, but that in terms of which natural process may be explained.

§ 5

We have reached the position that, at a very advanced stage of evolutionary progress, a human being attains the status of a person. As a person *in evolutionary regard*, all that happens to him, and all that he does, is susceptible of interpretation in terms of relatedness if those mental relations which play so large a part in his life be taken into full account. When he reaches this status he dwells in a world not only of perceptive reference such as was his as a little child, but also in a world of reflective reference such as is his as a grown man. This reflective world is a world transformed. But whether it is a world transformed for him as man of science, as artist, or as philosopher, it is thus transformed through his mental attitudes to it. It is a world transformed through reflective reference to it ; a world transformed in accordance with the subjective enjoyment of him who contemplates it.

Thus far, however, the world, whether transformed or untransformed, though it is susceptible of natural interpretation, remains unexplained. Not until agents who act with purpose come within the field of reflective reference is there any basis of explanation.

But they do come within the field of reflective reference. And when they do come there is an emergent attitude towards them on the part of the natural person. This emergent attitude towards them stands near the top—let me hazard the opinion that it stands at the very top—of the hierarchy of emergent attitudes in mental regard. It is one's attitude towards one's brother-members in social fellowship not only as natural persons but also, and chiefly, as personal agents, as centres of creative activity. It is too one's reflective attitude towards oneself, and, here again, not the natural self but the self as agent who acts with purpose, who is an actor in the drama of life, who is, within limits, creative.

Here the matter for emphasis is that, if we accept both, we have in some way to harmonise belief in the constructiveness we find in nature and belief in the creativity of agents who act with purpose. Take first the former belief.

We find in our world communities of men and women acting and reacting in a relational sense as members in fellowship. My belief is that, if mental relations, no less than physical relations, contribute to rendering this social fellowship such as we find it to be, all this is susceptible of natural interpretation.

Now consider any individual man or woman. Using the word "fellowship" in the same relational sense, each one of them is a community of organs, tissues and so forth as members in fellowship. But here there are not mental relations of like modal status, though "other than physical" relations of like kind there are.

Consider next any organ. It too is a community of cells as members in fellowship. Thus in physical regard—and speculatively in "other than physical" regard also—we may go step by step lower down. We may say that each cell is a

community of living units, however they may be named, as members in fellowship; each living unit a community of specialised molecules as members in fellowship; each specialised molecule, and others less specialised, a community of atoms; each atom a community of electrical charges.

Here we proceed by the method of distinguishing analysis. We take these communities in descending order as they now exist. Thus far no evolutionary concept is introduced. The evolutionist inverts this order. His concern is with natural history—the natural history of social communities, of living organisms human and other, of this or that organ, of cells, molecules, atoms; if possible in the light of existing knowledge, of electrical charges; and combining all these, of the course of events through the ages.

But if there be, in the natural history of events, ascending modes of fellowship of members progressively higher in evolutionary status, we must recognise that at each upward step something new is introduced into the series. Each mode of fellowship is new; and in virtue of this new fellowship each member in fellowship, as a member, has a new character which it did not possess before it entered into this mode of fellowship. To this new character the word "emergent" is applicable. But of this new emergent character all one can say, under the natural interpretation offered by science, is that it "just comes." Prior to fellowship it was not there. Consequent on fellowship there it is. All one can do is to describe it as best one can, and say, for example: *That* is distinctive of such and such an atom as a member in fellowship in such and such a molecule; or *That* is distinctive of such and such a man as a member of this or that community in social life.

On these terms emergent evolution purports to be a scientific interpretation of all that is comprised under the comprehensive concept of the constructiveness in nature. If accepted, it is taken in an attitude of scientific belief. As the outcome of emergent evolution, along one line of advance,

(that which chiefly interests us here and now) I accept the natural person in whom this attitude of scientific belief is a characterising feature.

But I no less believe that the natural person is also a dramatic person, one who acts with purpose. I thus pass from scientific interpretation to that which I have asked leave to speak of as dramatic explanation ; I pass from scientific belief to dramatic belief. In both cases there is an attitude of belief on my part ; in both cases an object of belief on my part. In the one case the object of belief is the natural person as the outcome of emergent evolution ; in the other case the object of belief is the dramatic person as the basis of explanation.

Taking then the dramatic person as a basis of explanation, of what is such an explanation given ? Clearly of those affairs in which this dramatic person plays a part. Thus, for example, should I explain much that happens in the drama of human life. Is there not, however, much that happens, even in this drama, that remains unexplained ? And if one turn from the dramatic creativity which is centred in human folk who act with purpose, does this afford an adequate and sufficient explanation of *all that is comprised under the constructiveness we find in nature?* Assuredly it does not. It may and does afford a partial explanation of the acts of men and women under human fellowship. It affords no explanation of the organisation of the living body ; of the sub-reflective, and in that sense sub-conscious, organisation of the mind ; of anything that happens at a lower level than that of the natural person. In brief, of the whole hierarchical series interpretable in terms of " fellowship " only the topmost level, that of the dramatic fellowship of men and women in social communities, is thus far explicable in terms of agency. This is a very partial and very incomplete explanation.

But may not the concept of agency be applied throughout the whole series from bottom to top ? Let us frankly and fearlessly accept in an attitude of dramatic belief the

postulate that it may. Then what we postulate, as the object of belief, is God as creative Agent. Then one may make bold to say: Every step in the constructive advance of nature; every hierarchical stage in the progress of natural fellowship; every phase of emergent evolution; is *also* the expression of God's creative activity.

§ 6

"Such as men themselves are, such will God appear to them to be." Dean Inge quotes these words of John Smith, the Cambridge Platonist, in the opening sentence of his Paddock Lectures on *Personal Idealism and Mysticism*. In other words, each of us who believes in God imputes to Him certain characters which he has been led to believe to have being in himself as a person who acts with purpose. But he does so, as Descartes scholastically phrased it, *eminenter*—that is, beyond measure or degree.

Our present concern is imputation of purpose. The position we have reached is that, save under dramatic fiction, as distinguished from dramatic history, purpose should be imputed to nothing less than one who has attained the status of a person. Hence I, who accept this "principle," should not, and do not, impute purpose to an emotion, to an instinct, to life, or to "nature," since I do not impute to any one of them the status of a person.

As one who seeks to interpret and to explain, I try to base my reflective procedure on such presumptive evidence as is, from the nature of the case, available. I have to state, then, on what evidence I interpret this or that living being as one who has attained to the status of a person. I have tried to do so in terms of fore-plan of action, end in view and outcome, precedent wish, and subsequent satisfaction. Here, then, it may be said, you impute purpose to that living being who has reached the status of a person; for that person whose reflective conduct affords evidence of "end—attainment—satisfaction," affords evidence also of "purpose."

No doubt we may, and often do, use the words "end" and "purpose" as synonymous. But I have asked leave to differentiate in accordance with the context—to speak of "end" in the context of natural interpretation, and to reserve the word "purpose" for usage in the context of explanation in terms of agency. You may not agree to do so. You may say that it is a purely arbitrary distinction *in words* where there is no real difference in fact. End in view and purpose, you may say, have precisely the same meaning. To take a concrete case, you may say to me: If you tell us that it was your end in view to write this book, or that it was your purpose to do so, your meaning is just the same. Whereon I can only say: Pardon me. *My* meaning would *not* be just the same.

Let us, however, set my purpose (or yours) on one side for the present. Let us assume, or as I should prefer to say on my part acknowledge, that emergent evolution is the expression of God's purpose. If then I say that the emergence of life, in due course, expresses His purpose, I do *not* mean that this was His end in view, up to date so to speak, and that He then had the emergence of human personality as a further end in view. I should not impute to Him the sequence "end—attainment—satisfaction." Why not? Because these are characterising features of the reflective procedure of a natural person as emergent; and the God in whom I believe is not a natural person as emergent. To revert to scholastic phraseology, God is not the *terminus ad quem* of evolutionary interpretation. God is the *terminus a quo* of dramatic explanation. He is the fountain-head and source of all agency.

"End — attainment — satisfaction" imply temporal sequence. Is there temporal sequence in Divine purpose? We are here embrangled in all the difficulties which cluster round the concept of time. I cannot here attempt to resolve them. But I have urged (p. 156) that the concept of time, laid out in due sequence of "past—present—future," is the outcome of reflective interpretation. Is this

concept applicable to God's purpose? I for one think not.

Let us, however, revert to human affairs; and let us briefly consider the connection between purpose on the part of an agent and some plan which, as natural person, he has in mind. I suggest that there is a valid sense in which such a plan is non-temporal—that sense in which we regard the questions When? and Where? as *irrelevant.* Only in respect of instances of the plan are these questions relevant. If what we speak of as gravitation be a pervasive plan of physical relatedness—if space-time be for physical thought a plan of events no less pervasive—to the questions Where? and When? can one give other answers than: Everywhere and Always? And if I urge that emergent evolution is a plan of world events and you should ask When? and Where? I reply, that *as plan,* it is universal, though the instances are somewhen and somewhere.

Now I have urged that a plan, realised as such, has being only at the reflective stage of mental development. Here plan in the context of natural interpretation is co-present with purpose in the context of dramatic explanation.

What, then about my purpose in writing this book? It would be nonsense to say that my plan and purpose were "everywhere and always." None the less there is some sense —or so I venture to think—in saying: Within the universe of discourse in which I speak of my purpose or of my plan, in writing this book, it is there all the time. Subject to this plan and purpose I have chosen sundry episodes as instances. Each of these has been adduced at some "then." To select an apposite instance was in each case an end I had in view. But I claim that there is some sense in saying that while these ends in view have changed not a little—this episode having been substituted for that—still my plan and purpose have not been subject to like temporal change. May I put the matter rather baldly thus? Each end in view is somewhen; but my purpose is not merely somewhen but all the time.

It is, I trust, not irrelevant to select near the close of the

book this illustration of what I mean by purpose. It may well be asked: Why have I written it? If so, that which is asked for, I take it, is an explanation in terms of agency. In this matter I claim to be a free agent. I may then be asked: What do you mean by saying that you claim to be a *free* agent? I mean that I can *choose* this or that typical episode as an illustration in subservience to my purpose. But (it may be said) you have claimed, in effect, that every act of choice can be interpreted as an instance of "emergence." Something new (you tell us) "just came" into your mind in accordance with what you are pleased to call "the natural course of events." You cannot have it both ways. If you were free to choose this or that illustrative episode it did not "just come as emergent." If it "just came" you were not free to exercise any choice in the matter.

That seems to place me on the horns of a dilemma. And yet I venture to say: That which in the context of natural interpretation is a new and unpredictable emergent is *also* in the context of dramatic explanation a free act, no less new and unpredictable. The emphasis in each case is on *the new and unpredictable.* An argument for freedom is that no act of choice is predetermined. The argument for emergence is that no emergent is predetermined. Freedom and emergence therefore have at least this in common. They stand for indeterminism when and where they obtain. They stand for a denial of the dogma: *All* that was, is, and shall be is rigidly determined.

I have elsewhere (*Hibbert Journal*, July, 1929) said something at greater length on this topic "Freedom and Emergence." Here and now I must be content to open up, and not further to discuss, the implications of this belief in the indeterminate character of all that is *new* alike in the natural course of events and in dramatic regard. To do more lies beyond my purview in writing this book. Many grave problems lie beyond its scope.

My chief aim is analytically to distinguish emergent interpretation from explanation in terms of purpose; and

to urge that, within the synthesis of reality, they are inseparable.

If now I lay stress on natural emergence in *my* life, and on *my* purpose in dramatic regard, then how meagre and limited is that on which I lay stress! From the point of view of emergent interpretation, what an insignificant "atom" in world-advance am I! From the point of view of Divine Purpose how infinitesimal is any act, or any set of acts, which I can speak of as mine. And yet in some way all that I do falls within the natural advance of world-events; every purposive act of mine falls within the ambit of God's purpose. In what way? That, too, lies beyond my purview in writing this book.

From the outset I have been in touch with, and I have tried not to lose touch with, great problems. Near the finish I am well aware that I have only touched, and that I can touch only, their fringe. I do not pretend that I can solve them. A tentative solution of some problems closely connected with emergence I have offered. That has fallen within my scope. And I have perhaps been able to indicate the lines along which, in my judgment, a solution of wider and deeper problems should be sought.

One of these wider and deeper problems centres round the question: Are there two disparate realms of reality—let us say broadly (1) a realm of matter and energy, in which determinism reigns supreme; and (2) a realm of mind and spirit, in which indeterminate freedom holds sway? I take it to be sufficiently obvious that my belief is that there are not two disparate realms. It is along this line that, in my judgment, the solution of this problem should be sought. To what kind of solution does this line lead? I am in physical regard a living organism; but this "life" does not come to me from another realm. The kingdom of life is within me. I am in mental regard a reflective person; but this mind does not come to me from another realm. The kingdom of mind is within me. I am, in dramatic regard, a free agent; but this agency does not come to me from another realm.

The kingdom of agency—the kingdom of purpose—is within me. Thus I might lead up to a discussion of what is meant when it is said: The Kingdom of God is within us. It does not, so to speak, invade us from a disparate realm of being. If not within us, then, for us, there is no Kingdom of God. The Divine is not other than human. It is expressed in human purpose. And yet it is far more than human purpose.

Even here, however, we do not lose touch with emergent interpretation. For that which has been said above, whatever else it may imply, does also imply what one may speak of as the religious attitude. It is an emergent attitude towards the Divine. To put the matter tersely: Just as there are emergent attitudes towards beauty and truth and goodness, so, too, there is an attitude no less emergent towards divinity.

In that sense divinity (or deity) is emergent, just as beauty, and truth and goodness are emergent. But God is not emergent. Still, one may believe that the emergent attitude towards the Divine within us and within reality is itself an expression of God's Purpose.

I seek only to link in one synthesis a mental attitude which I interpret as emergent—an attitude which, whether emergent or not, undeniably does characterise some human folk—with purpose "in dramatic regard." To do this lies within my scope. To do more than this lies beyond my limited scope. It must suffice for me to fall back on symbolic paradox and say of Divine Purpose (which includes beauty, truth and goodness) that its expressiveness is revealed throughout nature (including human nature), and yet would not be there except for those minds which are themselves an "expression thereof."

There is, however, one more point which calls for further comment. As I venture to repeat, my belief is that emergent evolution is an expression of Divine Purpose. To state this belief briefly and to indicate what for me are grounds for its justification, I have regarded as *ad rem* in this book. *Ad rem*,

therefore, is the question : What about dissolution of fellowship ? What about regress as the subversal of an ascending order of progress ? Does not this regress, including, let us say, suffering and sin—including envy, hatred, malice, and all uncharitableness—come within what you have called the ambit of God's purpose ? For me it does not. Just as evolution is an interpretation of an hierarchical ascent, so is Divine purpose that which is therein expressed. That a grave problem is thus opened up I am not so foolish as to deny. But to discuss it does not fall within the plan of this book. I do not pose as one who can solve all problems. To the solution of a few of them I have addressed myself. With that which I can offer I, and those readers who have had patience to bear me company on a path with pitfalls on this side and on that, must e'en rest content.

§ 7

There are, as I said at the outset of this book, and as I repeat near its close, two ways of accounting for anything that happens ; that in accordance with scientific method and that which attributes its occurrence to the acts of some agent or agents. I asked leave to speak of the latter as dramatic explanation.

With regard to anything that happens, then, the question arises for each one of us who pauses to think : In which of these two ways is *this* to be accounted for ? The reply which I give to this question is : Always, and in any given instance, *in both ways.*

Take as the biggest " anything " one can think of that which we call the universe. Then an account of this universe may be given in terms of evolutionary constructiveness. Here no dramatic explanation is given. One rests content with scientific interpretation. Falling back on a Latin tag, one may murmur : *Ignoramus et ignorabimus.* But if therewith one does not rest content, one may supplement scientific belief in constructiveness and give rein to dramatic belief in

creativity. For me this takes the form: Interpretation in terms of emergent evolution is supplemented by explanation in terms of Divine Purpose.

Let us, however, try to get back as near as we can to the early stages of reflective procedure when interpretation and explanation were in their infancy.

In our own childhood and in the childhood of the race the predominant way of accounting for anything that happens seems, on the available evidence, to be dramatic rather than scientific. The leading questions with respect to any given thing, or to any given event, are: Who made it? or Who did it? followed by the further question: What for?

I take it that the primary answers had reference to human persons and familiar animals. But this left very much that could not be thus explained. And so secondary answers were given with reference to a multiplicity of multifarious spirit-agents who act with purpose in much the same way as human folk and animals act with purpose.

We have, then, in some fashion to account for the passage from this primitive way of explaining much that happens apart from human agency to the modern way of dealing with the same plain tale of events. But no attempt to account for it, even in brief and summary fashion, can here be made. That lies beyond my purpose in these pages.

There is, however, a question which, in view of what I have said above in this chapter, is here and now pertinent, since it bears upon what I mean by "in dramatic regard."

I propose to take matters as they now stand, and I revert to the distinction I drew between dramatic history and literary fiction. Literary fiction stands midway between dramatic explanation and an interpretation which is at least incipiently scientific. It takes freely from that which is given on this hand and on that, but always subject to a qualifying "as if," sometimes expressed, more often unexpressed.

Now dramatic explanation is not qualified by an "as if"; (nor is scientific interpretation). In a dramatic *explanation*

of something that happens as due to an invisible spirit-agent the meaning is that to this invisible agent that which happens *is* due. The concept of purpose rules, since, as agent, the said spirit acts with purpose. There is no " as if " about the matter. In common parlance it is " literally and not only metaphorically " *so*. We must bear in mind that for primitive thought *all* agents are spirit-agents. But many spirit-agents take temporary or abiding possession of a body—that of a plant, for example, or a stream, or a zephyr. Literary fiction takes up the tradition. It retains the underlying notion of spirit-possession, but embodies it in the name of that which is thus possessed. It speaks of the babbling stream or the whispering zephyr.

All this is trite enough. Let us bring it into connection with our inquiries on life and mind. Literary fiction dealing with plant life will serve as an example. I chance to have been reading, with sincere admiration, Mary Webb's *The Spring of Joy*. What do I find ? I take two or three passages almost at random, since a dozen others would be equally *à propos*. " The white grass-root—only a little blinder than the mole, a little less purposeful than the worm—goes softly about her dark house-cares in the close chambers where no wind comes, and sends out her sons with banners." Of the periwinkle, whose " wide blue flowers gaze up intently into the wide blue sky," she says : " Suddenly . . . some faint vibration told her that the moment had come for her to leave off gazing stilly at the sky ; and so, in silence and beauty, she buried her face in the enfolding evergreen leaves." " One of the daintiest joys of spring," we read, " is the falling of soft rain among blossoms. The shining and apparently weightless drops come pattering down into the may tree with a sound of soft laughter ; one alights on a white petal with a little inaudible tap ; then petal and raindrop fall together down the steeps of green and white. . . . The leaves sit still and laugh, for they know that their time has not come, and the drops slide off shamefacedly and go elsewhere. The young buds laugh in their high places,

strong in their immaturity; and all day the rain laughs among the thin, curved petals, till the descending drops are like silver wires from the tree top to the grass, and the petals slip down them like white beads."

I think I know more or less where I am with Mary Webb. I can respond to the appeal of her artistry. But I have to write "as if" across every page. Of dramatic explanation there is none, save when, with wise reticence, and on rare occasions, there is just a pregnant hint, such as: "And it often happens that those who have only one violet find the way through its narrow, purple gate into the land of God."

I think I know where I am—can in a measure feel at home—in the realm of artistic literature. My trouble is—and this is what I lead up to—that so often I do not know where I am—I cannot feel at home—when I read much that is written on warring instincts, on conflicting emotions, on life's purpose in acting thus and thus. So I ask myself: Is this intended as a natural interpretation in terms of mental science? Is it intended as a dramatic interpretation in terms of agents who act with purpose? Am I, or am I not, to regard it as a brave attempt at literary artistry? Am I to write "as if" across the page? Again and again I know not what answer to give.

Am I here treading the dry and dusty path of the prosaic person who could find "no common sense" in what Lowell said of the "rich buttercup" (p. 196)? Not so, as I hope. I fall back on emergent attitudes. I face literary fiction, with all its wealth of symbolism, in an emergent attitude differing from that in which I face either scientific interpretation or dramatic explanation. And I welcome all three—but each in connection with its appropriate field of reference.

§ 8

I said that literary fiction stands midway between dramatic explanation and an interpretation which is at least incipiently scientific; that it takes freely from that

which is given on the one hand and on the other ; and that it is always subject to a qualifying " as if." I spoke also of its wealth of symbolism, and of an emergent attitude in which one faces that which one reads.

In that attitude one *gives* under reference to that which is stated. Of course, the literary artist gives what we take in reading what he says. But, to apply what I said (p. 201) in connection with the artistic attitude, if we take only and give nothing, is that which we take more than word-sounds that beat on the ear ? In a liberal sense each word-sound is symbolic ; and all that the literary artist gives is in terms of more richly emergent symbolism. Some emergent symbolism we must give in return if we are to understand what he says. But in dramatic regard *he* is a creative artist ; and in dramatic regard *we* must creatively give. Correlative to emergence in scientific regard is creativity in dramatic regard. Are we to deny the reality of that which is given and taken in both regards ? If not, may we not speak of symbolic reality ? And in presence of symbolic reality may one not say : I believe that it is so ?

The trouble is that someone may here intervene and ask : But do you believe that it is *literally* so ? The answer that I should give is : No, if you mean that the statement *as it stands* is to be taken as literally so ; for it would not then be symbolic. But my answer is : Yes, in the sense that, underlying any statement which I accept " as so " in an attitude of symbolic belief, there is always implied, if not explicitly stated, reference to that fuller reality which one may be able to grasp only under some form of symbolism. Thus only can one in some measure understand.

I confess that there is much in Reality which I do not fully understand. Therein lies its transcendence (p. 236). Of reality I must say what Mr. S. M. Crothers has said of poetry. " To understand poetry," he says, " is a vain ambition. That which we fully understand is the part that is *not* poetry. It is that which passes our understanding which has the secret in itself " (*The Gentle Reader*, p. 43)

Here we have one of those paradoxes, with a central core of truth, which characterise symbolic utterance.

In much literature the central core of truth is in spiritual or dramatic regard. Here there is something that passes understanding which can best, or perhaps only, be symbolically expressed. As one reads, for example, the books collected in the Bible should not one ask again and again: Was this given and meant to be taken literally or symbolically *then?* Is this to be taken *now* symbolically or literally? By literally I mean as a dramatic explanation of what happened and was recorded in that which I have called plain tale. The answers to these questions lie beyond my limited scope. But it is sufficiently obvious that poets, seers, and teachers and, by general consent throughout christendom, the Greatest of all teachers, seers, and poets, spoke often, under parable or otherwise, the language of symbolism. Should we not accept their teaching in an attitude towards symbolic reality? Should we not welcome symbolism as an avenue to the understanding of " spiritual truth " ?

Turning to more recent times, and to those of to-day, must we not again and again ask: Is this so in a quite literal sense? Or is it so in a symbolic sense which is spiritually (and not spiritualistically) accepted in an attitude of belief? Was there not a turning point, at that which we speak of as the Reformation, when the emphasis fell on the latter rather than the former? I might take recent Prayer Book controversy as a further illustration. But this lies far beyond my limited scope.

It only remains to advert briefly to what may " pass understanding " in scientific belief and to the use of symbolism in this context. I confess that the curvature of space-time passes my understanding. What, then, can some friend who is an up-to-date mathematician and physicist, do for me? I suppose he will seek to get at something *ad rem* which I do understand. He will say, perhaps: Well, at least you understand what I mean by the curvature of space. I have to confess that I do not. What, then, he may ask, *do* you understand?

I suggest as an instance the curvature of a soap bubble, which I can deal with in terms of the spatial relations of points as assigned positions on its surface. We shall thus get to a three-dimensional frame of reference in terms of which the positions of any selected points may be interpreted. He will then lead me on to a fourth dimension, that which he speaks of as the time-dimension of events. He may add, say, half a dozen more dimensions of events. But then he may pause. You must remember, he may say, that I have to play down to your old-fashioned Euclidean geometry. In these symbolic terms I seek to bring within the range of your understanding that which, I fear, passes understanding for you and a great many others—namely, a specialised type of non-Euclidean geometry. And he may quote Professor Eddington to like effect: "I may say at once that I do not take the ten dimensions seriously; whereas I take the non-Euclidean geometry of the world very seriously."

So, too, many a reader may well say to me: I do not take your "fellowship" and "members" seriously; though I realise that you take the concept you thus symbolise—that of relational organisation—quite seriously; or, I do not take your "cross-over" seriously; whereas I take Pavlov's "conditioned reflexes" very seriously.

§ 9

We have been told on good authority that "sentient experience is reality, and what is not this is not real." "I am driven to the conclusion," adds Bradley, from whom I lift this oft-quoted sentence, "that for me experience is the same as reality."

It goes without saying that Bradley was careful to safeguard his position. If, however, we take "sentient experience" to mean that which we believe to exist at the percipient, perceptive or reflective stage of mental development in living organisms on this earth, then, from the evolutionary point of view, there was physical reality, in which most of

us believe, long ages before such "sentient experience" came into being.

But this is matter of belief. Let us try to get down to something in one's "sentient experience" which is not matter of belief. Cannot each one of us say: Enjoyment and reference on my part there is? Even here "on my part" is matter of belief, for it implies that abiding *Ego* in which I believe. Drop this out, and there remains: Enjoyment and reference there is. Concerning *that* there can be no Cartesian doubt, no argument. That stands in no need of proof.

On this we build the superstructure of belief. But it is always someone's belief. And what he believes it is for him to say. I believe, among sundry other things, that a physical world exists independently of anyone's "sentient experience." But what it *is* "in itself," apart from all reference to it, no one can say. On these terms, however, I cannot give rigid demonstrative proof of its independent existence. If you ask me: On what grounds do you justify this belief? all I can say in reply is: On the grounds that I can give no interpretation of nature—including reference and enjoyment on my part—without this belief.

I also believe in the existence of God independently of anyone's "sentient experience." But what He *Is* "in Himself," apart from all reference to Him on the part of reflective men and women, I cannot say. I can only say with John Smith: "Such as men themselves are, such will God appear to them to be." On these terms, however, I cannot give rigid demonstrative proof of His independent existence. If you ask me on what grounds do you justify this belief, all I can say in reply is: On the grounds that I can give no explanation of all that happens—including my belief in Him—without this belief in His personal agency.

Contrast now science and drama. Scientifically one abstracts from all agency. Dramatically one is concerned with that agency from which in science one abstracts. Scientifically one reaches the unexplained constructiveness in nature. Dramatically one explains this constructiveness

as the expression of God's creative activity. Scientifically one finds—or at any rate one seeks—*one* constructive plan in nature. Dramatically one seeks, in the hope of finding, *one* creative purpose in God. If one is justified in scientific belief to the end of interpretation, may one not be justified in dramatic belief for the purpose of explanation ?

In conclusion, let me say what led me to choose *Mind at the Crossways* as the title of this book.

First, in scientific regard. We have many times found ourselves in troubled waters over the word " mind " and the concept it embodies. If we take it in the most comprehensive sense as equivalent to " other than physical " (p. 26), the expression " mind at the crossways " has little point or meaning. Even if we take it as qualified by the word " percipient," then mind in this sense does not stand at the passage, or crossway, to that which is emergently new. But if guidance of action, and nothing less, be accepted as the criterion of mind—then mind in this sense, the most usual sense, does stand at a crossway—namely at the emergent passage from percipience to perception. If it be said that, even here, we have not mind in the full and proper sense—if it be said that mind is present only when there is control of conduct with ends in view—then, in this sense also, mind stands at a crossway. It stands at the emergent switch-point of divergence from the ascending line of perception to a new and higher line of ascent which comes on to the scene with the advent of reflection. The crossways are the " switch-points " of new mental departures under emergent evolution.

Next in dramatic regard. Here, too, we are in difficulties over the word " mind " and the concept it embodies. Some speak in dramatic regard of creative mind (*mens creatrix*). Others, under a differentiation of meaning which has good sanction, prefer to speak of spirit as creative (*spiritus creator*). They accept the distinction implied in " body, mind, and spirit." May we not, then, use the word " mind," like the word " person," in both contexts—in that of scientific interpretation and in that of dramatic explanation ?

If so, then we may say that Mind as creative is *not* the outcome of emergent evolution, though the minds with which mental science deals are discussed in terms of the universal constructiveness we find in, or read into, nature. Mind as creative is not a " moment " in natural constructiveness. It is timelessly one with the universal and spiritual creativity of God.

In man the creativity of Spirit finds limited expression only at the reflective stage of mental development in evolutionary progress. It finds expression only along the path that ascends from the emergent crossway at which the sign-post points " To reflective procedure." But in the language of symbolism God stands at all emergent crossways. All instances of emergent advance are, in dramatic regard, the expression of one Divine Purpose.

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