

LECTURE XV. CHARACTERISTICS OF MENTAL PHENOMENA

At the end of our journey it is time to return to the question from which we set out, namely: What is it that characterizes mind as opposed to matter? Or, to state the same question in other terms: How is psychology to be distinguished from physics? The answer provisionally suggested at the outset of our inquiry was that psychology and physics are distinguished by the nature of their causal laws, not by their subject matter. At the same time we held that there is a certain subject matter, namely images, to which only psychological causal laws are applicable; this subject matter, therefore, we assigned exclusively to psychology. But we found no way of defining images except through their causation; in their intrinsic character they appeared to have no universal mark by which they could be distinguished from sensations.

In this last lecture I propose to pass in review various suggested methods of distinguishing mind from matter. I shall then briefly sketch the nature of that fundamental science which I believe to be the true metaphysic, in which mind and matter alike are seen to be constructed out of a neutral stuff, whose causal laws have no such duality as that of psychology, but form the basis upon which both physics and psychology are built.

In search for the definition of "mental phenomena," let us begin with "consciousness," which is often thought to be the essence of mind.

In the first lecture I gave various arguments against the view that

consciousness is fundamental, but I did not attempt to say what consciousness is. We must find a definition of it, if we are to feel secure in deciding that it is not fundamental. It is for the sake of the proof that it is not fundamental that we must now endeavour to decide what it is.

"Consciousness," by those who regard it as fundamental, is taken to be a character diffused throughout our mental life, distinct from sensations and images, memories, beliefs and desires, but present in all of them.* Dr. Henry Head, in an article which I quoted in Lecture III, distinguishing sensations from purely physiological occurrences, says: "Sensation, in the strict sense of the term, demands the existence of consciousness." This statement, at first sight, is one to which we feel inclined to assent, but I believe we are mistaken if we do so. Sensation is the sort of thing of which we MAY be conscious, but not a thing of which we MUST be conscious. We have been led, in the course of our inquiry, to admit unconscious beliefs and unconscious desires. There is, so far as I can see, no class of mental or other occurrences of which we are always conscious whenever they happen.

* Cf. Lecture VI.

The first thing to notice is that consciousness must be of something. In view of this, I should define "consciousness" in terms of that relation of an image of a word to an object which we defined, in Lecture XI, as "meaning." When a sensation is followed by an image which is a "copy" of

it, I think it may be said that the existence of the image constitutes consciousness of the sensation, provided it is accompanied by that sort of belief which, when we reflect upon it, makes us feel that the image is a "sign" of something other than itself. This is the sort of belief which, in the case of memory, we expressed in the words "this occurred"; or which, in the case of a judgment of perception, makes us believe in qualities correlated with present sensations, as e.g., tactile and visual qualities are correlated. The addition of some element of belief seems required, since mere imagination does not involve consciousness of anything, and there can be no consciousness which is not of something. If images alone constituted consciousness of their prototypes, such imagination-images as in fact have prototypes would involve consciousness of them; since this is not the case, an element of belief must be added to the images in defining consciousness. The belief must be of that sort that constitutes objective reference, past or present. An image, together with a belief of this sort concerning it, constitutes, according to our definition, consciousness of the prototype of the image.

But when we pass from consciousness of sensations to consciousness of objects of perception, certain further points arise which demand an addition to our definition. A judgment of perception, we may say, consists of a core of sensation, together with associated images, with belief in the present existence of an object to which sensation and images are referred in a way which is difficult to analyse. Perhaps we might say that the belief is not fundamentally in any PRESENT existence,

but is of the nature of an expectation: for example, when we see an object, we expect certain sensations to result if we proceed to touch it. Perception, then, will consist of a present sensation together with expectations of future sensations. (This, of course, is a reflective analysis, not an account of the way perception appears to unchecked introspection.) But all such expectations are liable to be erroneous, since they are based upon correlations which are usual but not invariable. Any such correlation may mislead us in a particular case, for example, if we try to touch a reflection in a looking-glass under the impression that it is "real." Since memory is fallible, a similar difficulty arises as regards consciousness of past objects. It would seem odd to say that we can be "conscious" of a thing which does not or did not exist. The only way to avoid this awkwardness is to add to our definition the proviso that the beliefs involved in consciousness must be TRUE.

In the second place, the question arises as to whether we can be conscious of images. If we apply our definition to this case, it seems to demand images of images. In order, for example, to be conscious of an image of a cat, we shall require, according to the letter of the definition, an image which is a copy of our image of the cat, and has this image for its prototype. Now, it hardly seems probable, as a matter of observation, that there are images of images, as opposed to images of sensations. We may meet this difficulty in two ways, either by boldly denying consciousness of images, or by finding a sense in which, by means of a different accompanying belief, an image, instead of meaning

its prototype, can mean another image of the same prototype.

The first alternative, which denies consciousness of images, has already been discussed when we were dealing with Introspection in Lecture VI. We then decided that there must be, in some sense, consciousness of images. We are therefore left with the second suggested way of dealing with knowledge of images. According to this second hypothesis, there may be two images of the same prototype, such that one of them means the other, instead of meaning the prototype. It will be remembered that we defined meaning by association a word or image means an object, we said, when it has the same associations as the object. But this definition must not be interpreted too absolutely: a word or image will not have ALL the same associations as the object which it means. The word "cat" may be associated with the word "mat," but it would not happen except by accident that a cat would be associated with a mat. And in like manner an image may have certain associations which its prototype will not have, e.g. an association with the word "image." When these associations are active, an image means an image, instead of meaning its prototype. If I have had images of a given prototype many times, I can mean one of these, as opposed to the rest, by recollecting the time and place or any other distinctive association of that one occasion. This happens, for example, when a place recalls to us some thought we previously had in that place, so that we remember a thought as opposed to the occurrence to which it referred. Thus we may say that we think of an image A when we have a similar image B associated with recollections of circumstances connected with A, but not with its prototype or with other images of the

same prototype. In this way we become aware of images without the need of any new store of mental contents, merely by the help of new associations. This theory, so far as I can see, solves the problems of introspective knowledge, without requiring heroic measures such as those proposed by Knight Dunlap, whose views we discussed in Lecture VI.

According to what we have been saying, sensation itself is not an instance of consciousness, though the immediate memory by which it is apt to be succeeded is so. A sensation which is remembered becomes an object of consciousness as soon as it begins to be remembered, which will normally be almost immediately after its occurrence (if at all); but while it exists it is not an object of consciousness. If, however, it is part of a perception, say of some familiar person, we may say that the person perceived is an object of consciousness. For in this case the sensation is a SIGN of the perceived object in much the same way in which a memory-image is a sign of a remembered object. The essential practical function of "consciousness" and "thought" is that they enable us to act with reference to what is distant in time or space, even though it is not at present stimulating our senses. This reference to absent objects is possible through association and habit. Actual sensations, in themselves, are not cases of consciousness, because they do not bring in this reference to what is absent. But their connection with consciousness is very close, both through immediate memory, and through the correlations which turn sensations into perceptions.

Enough has, I hope, been said to show that consciousness is far too

complex and accidental to be taken as the fundamental characteristic of mind. We have seen that belief and images both enter into it. Belief itself, as we saw in an earlier lecture, is complex. Therefore, if any definition of mind is suggested by our analysis of consciousness, images are what would naturally suggest themselves. But since we found that images can only be defined causally, we cannot deal with this suggestion, except in connection with the difference between physical and psychological causal laws.

I come next to those characteristics of mental phenomena which arise out of mnemonic causation. The possibility of action with reference to what is not sensibly present is one of the things that might be held to characterize mind. Let us take first a very elementary example. Suppose you are in a familiar room at night, and suddenly the light goes out. You will be able to find your way to the door without much difficulty by means of the picture of the room which you have in your mind. In this case visual images serve, somewhat imperfectly it is true, the purpose which visual sensations would otherwise serve. The stimulus to the production of visual images is the desire to get out of the room, which, according to what we found in Lecture III, consists essentially of present sensations and motor impulses caused by them. Again, words heard or read enable you to act with reference to the matters about which they give information; here, again, a present sensible stimulus, in virtue of habits formed in the past, enables you to act in a manner appropriate to an object which is not sensibly present. The whole essence of the practical efficiency of "thought" consists in sensitiveness to signs:

the sensible presence of A, which is a sign of the present or future existence of B, enables us to act in a manner appropriate to B. Of this, words are the supreme example, since their effects as signs are prodigious, while their intrinsic interest as sensible occurrences on their own account is usually very slight. The operation of signs may or may not be accompanied by consciousness. If a sensible stimulus A calls up an image of B, and we then act with reference to B, we have what may be called consciousness of B. But habit may enable us to act in a manner appropriate to B as soon as A appears, without ever having an image of B. In that case, although A operates as a sign, it operates without the help of consciousness. Broadly speaking, a very familiar sign tends to operate directly in this manner, and the intervention of consciousness marks an imperfectly established habit.

The power of acquiring experience, which characterizes men and animals, is an example of the general law that, in mnemonic causation, the causal unit is not one event at one time, but two or more events at two or more times. & A burnt child fears the fire, that is to say, the neighbourhood of fire has a different effect upon a child which has had the sensations of burning than upon one which has not. More correctly, the observed effect, when a child which has been burnt is put near a fire, has for its cause, not merely the neighbourhood of the fire, but this together with the previous burning. The general formula, when an animal has acquired experience through some event A, is that, when B occurs at some future time, the animal to which A has happened acts differently from an animal which A has not happened. Thus A and B together, not either

separately, must be regarded as the cause of the animal's behaviour, unless we take account of the effect which A has had in altering the animal's nervous tissue, which is a matter not patent to external observation except under very special circumstances. With this possibility, we are brought back to causal laws, and to the suggestion that many things which seem essentially mental are really neural. Perhaps it is the nerves that acquire experience rather than the mind. If so, the possibility of acquiring experience cannot be used to define mind.*

* Cf. Lecture IV.

Very similar considerations apply to memory, if taken as the essence of mind. A recollection is aroused by something which is happening now, but is different from the effect which the present occurrence would have produced if the recollected event had not occurred. This may be accounted for by the physical effect of the past event on the brain, making it a different instrument from that which would have resulted from a different experience. The causal peculiarities of memory may, therefore, have a physiological explanation. With every special class of mental phenomena this possibility meets us afresh. If psychology is to be a separate science at all, we must seek a wider ground for its separateness than any that we have been considering hitherto.

We have found that "consciousness" is too narrow to characterize mental phenomena, and that mnemic causation is too wide. I come now to a

characteristic which, though difficult to define, comes much nearer to what we require, namely subjectivity.

Subjectivity, as a characteristic of mental phenomena, was considered in Lecture VII, in connection with the definition of perception. We there decided that those particulars which constitute the physical world can be collected into sets in two ways, one of which makes a bundle of all those particulars that are appearances of a given thing from different places, while the other makes a bundle of all those particulars which are appearances of different things from a given place. A bundle of this latter sort, at a given time, is called a "perspective"; taken throughout a period of time, it is called a "biography." Subjectivity is the characteristic of perspectives and biographies, the characteristic of giving the view of the world from a certain place. We saw in Lecture VII that this characteristic involves none of the other characteristics that are commonly associated with mental phenomena, such as consciousness, experience and memory. We found in fact that it is exhibited by a photographic plate, and, strictly speaking, by any particular taken in conjunction with those which have the same "passive" place in the sense defined in Lecture VII. The particulars forming one perspective are connected together primarily by simultaneity; those forming one biography, primarily by the existence of direct time-relations between them. To these are to be added relations derivable from the laws of perspective. In all this we are clearly not in the region of psychology, as commonly understood; yet we are also hardly in the region of physics. And the definition of perspectives

and biographies, though it does not yet yield anything that would be commonly called "mental," is presupposed in mental phenomena, for example in mnemic causation: the causal unit in mnemic causation, which gives rise to Semon's engram, is the whole of one perspective--not of any perspective, but of a perspective in a place where there is nervous tissue, or at any rate living tissue of some sort. Perception also, as we saw, can only be defined in terms of perspectives. Thus the conception of subjectivity, i.e. of the "passive" place of a particular, though not alone sufficient to define mind, is clearly an essential element in the definition.

I have maintained throughout these lectures that the data of psychology do not differ in, their intrinsic character from the data of physics.

I have maintained that sensations are data for psychology and physics equally, while images, which may be in some sense exclusively psychological data, can only be distinguished from sensations by their correlations, not by what they are in themselves. It is now necessary, however, to examine the notion of a "datum," and to obtain, if possible, a definition of this notion.

The notion of "data" is familiar throughout science, and is usually treated by men of science as though it were perfectly clear.

Psychologists, on the other hand, find great difficulty in the conception. "Data" are naturally defined in terms of theory of knowledge: they are those propositions of which the truth is known without demonstration, so that they may be used as premisses in proving

other propositions. Further, when a proposition which is a datum asserts the existence of something, we say that the something is a datum, as well as the proposition asserting its existence. Thus those objects of whose existence we become certain through perception are said to be data.

There is some difficulty in connecting this epistemological definition of "data" with our psychological analysis of knowledge; but until such a connection has been effected, we have no right to use the conception "data."

It is clear, in the first place, that there can be no datum apart from a belief. A sensation which merely comes and goes is not a datum; it only becomes a datum when it is remembered. Similarly, in perception, we do not have a datum unless we have a JUDGMENT of perception. In the sense in which objects (as opposed to propositions) are data, it would seem natural to say that those objects of which we are conscious are data. But consciousness, as we have seen, is a complex notion, involving beliefs, as well as mnemonic phenomena such as are required for perception and memory. It follows that no datum is theoretically indubitable, since no belief is infallible; it follows also that every datum has a greater or less degree of vagueness, since there is always some vagueness in memory and the meaning of images.

Data are not those things of which our consciousness is earliest in time. At every period of life, after we have become capable of thought,

some of our beliefs are obtained by inference, while others are not. A belief may pass from either of these classes into the other, and may therefore become, or cease to be, a belief giving a datum. When, in what follows, I speak of data, I do not mean the things of which we feel sure before scientific study begins, but the things which, when a science is well advanced, appear as affording grounds for other parts of the science, without themselves being believed on any ground except observation. I assume, that is to say, a trained observer, with an analytic attention, knowing the sort of thing to look for, and the sort of thing that will be important. What he observes is, at the stage of science which he has reached, a datum for his science. It is just as sophisticated and elaborate as the theories which he bases upon it, since only trained habits and much practice enable a man to make the kind of observation that will be scientifically illuminating. Nevertheless, when once it has been observed, belief in it is not based on inference and reasoning, but merely upon its having been seen. In this way its logical status differs from that of the theories which are proved by its means.

In any science other than psychology the datum is primarily a perception, in which only the sensational core is ultimately and theoretically a datum, though some such accretions as turn the sensation into a perception are practically unavoidable. But if we postulate an ideal observer, he will be able to isolate the sensation, and treat this alone as datum. There is, therefore, an important sense in which we may say that, if we analyse as much as we ought, our data, outside

psychology, consist of sensations, which include within themselves certain spatial and temporal relations.

Applying this remark to physiology, we see that the nerves and brain as physical objects are not truly data; they are to be replaced, in the ideal structure of science, by the sensations through which the physiologist is said to perceive them. The passage from these sensations to nerves and brain as physical objects belongs really to the initial stage in the theory of physics, and ought to be placed in the reasoned part, not in the part supposed to be observed. To say we see the nerves is like saying we hear the nightingale; both are convenient but inaccurate expressions. We hear a sound which we believe to be causally connected with the nightingale, and we see a sight which we believe to be causally connected with a nerve. But in each case it is only the sensation that ought, in strictness, to be called a datum. Now, sensations are certainly among the data of psychology. Therefore all the data of the physical sciences are also psychological data. It remains to inquire whether all the data of psychology are also data of physical science, and especially of physiology.

If we have been right in our analysis of mind, the ultimate data of psychology are only sensations and images and their relations. Beliefs, desires, volitions, and so on, appeared to us to be complex phenomena consisting of sensations and images variously interrelated. Thus (apart from certain relations) the occurrences which seem most distinctively mental, and furthest removed from physics, are, like physical objects,

constructed or inferred, not part of the original stock of data in the perfected science. From both ends, therefore, the difference between physical and psychological data is diminished. Is there ultimately no difference, or do images remain as irreducibly and exclusively psychological? In view of the causal definition of the difference between images and sensations, this brings us to a new question, namely: Are the causal laws of psychology different from those of any other science, or are they really physiological?

Certain ambiguities must be removed before this question can be adequately discussed.

First, there is the distinction between rough approximate laws and such as appear to be precise and general. I shall return to the former presently; it is the latter that I wish to discuss now.

Matter, as defined at the end of Lecture V, is a logical fiction, invented because it gives a convenient way of stating causal laws. Except in cases of perfect regularity in appearances (of which we can have no experience), the actual appearances of a piece of matter are not members of that ideal system of regular appearances which is defined as being the matter in question. But the matter is, after all, inferred from its appearances, which are used to VERIFY physical laws. Thus, in so far as physics is an empirical and verifiable science, it must assume or prove that the inference from appearances to matter is, in general, legitimate, and it must be able to tell us, more or less, what

appearances to expect. It is through this question of verifiability and empirical applicability to experience that we are led to a theory of matter such as I advocate. From the consideration of this question it results that physics, in so far as it is an empirical science, not a logical phantasy, is concerned with particulars of just the same sort as those which psychology considers under the name of sensations. The causal laws of physics, so interpreted, differ from those of psychology only by the fact that they connect a particular with other appearances in the same piece of matter, rather than with other appearances in the same perspective. That is to say, they group together particulars having the same "active" place, while psychology groups together those having the same "passive" place. Some particulars, such as images, have no "active" place, and therefore belong exclusively to psychology.

We can now understand the distinction between physics and psychology. The nerves and brain are matter: our visual sensations when we look at them may be, and I think are, members of the system constituting irregular appearances of this matter, but are not the whole of the system. Psychology is concerned, *inter alia*, with our sensations when we see a piece of matter, as opposed to the matter which we see. Assuming, as we must, that our sensations have physical causes, their causal laws are nevertheless radically different from the laws of physics, since the consideration of a single sensation requires the breaking up of the group of which it is a member. When a sensation is used to verify physics, it is used merely as a sign of a certain material phenomenon, *i.e.* of a group of particulars of which it is a member. But when it is

studied by psychology, it is taken away from that group and put into quite a different context, where it causes images or voluntary movements. It is primarily this different grouping that is characteristic of psychology as opposed to all the physical sciences, including physiology; a secondary difference is that images, which belong to psychology, are not easily to be included among the aspects which constitute a physical thing or piece of matter.

There remains, however, an important question, namely: Are mental events causally dependent upon physical events in a sense in which the converse dependence does not hold? Before we can discuss the answer to this question, we must first be clear as to what our question means.

When, given A, it is possible to infer B, but given B, it is not possible to infer A, we say that B is dependent upon A in a sense in which A is not dependent upon B. Stated in logical terms, this amounts to saying that, when we know a many-one relation of A to B, B is dependent upon A in respect of this relation. If the relation is a causal law, we say that B is causally dependent upon A. The illustration that chiefly concerns us is the system of appearances of a physical object. We can, broadly speaking, infer distant appearances from near ones, but not vice versa. All men look alike when they are a mile away, hence when we see a man a mile off we cannot tell what he will look like when he is only a yard away. But when we see him a yard away, we can tell what he will look like a mile away. Thus the nearer view gives us more valuable information, and the distant view is causally dependent

upon it in a sense in which it is not causally dependent upon the distant view.

It is this greater causal potency of the near appearance that leads physics to state its causal laws in terms of that system of regular appearances to which the nearest appearances increasingly approximate, and that makes it value information derived from the microscope or telescope. It is clear that our sensations, considered as irregular appearances of physical objects, share the causal dependence belonging to comparatively distant appearances; therefore in our sensational life we are in causal dependence upon physical laws.

This, however, is not the most important or interesting part of our question. It is the causation of images that is the vital problem. We have seen that they are subject to mnemonic causation, and that mnemonic causation may be reducible to ordinary physical causation in nervous tissue. This is the question upon which our attitude must turn towards what may be called materialism. One sense of materialism is the view that all mental phenomena are causally dependent upon physical phenomena in the above-defined sense of causal dependence. Whether this is the case or not, I do not profess to know. The question seems to me the same as the question whether mnemonic causation is ultimate, which we considered without deciding in Lecture IV. But I think the bulk of the evidence points to the materialistic answer as the more probable.

In considering the causal laws of psychology, the distinction between

rough generalizations and exact laws is important. There are many rough generalizations in psychology, not only of the sort by which we govern our ordinary behaviour to each other, but also of a more nearly scientific kind. Habit and association belong among such laws. I will give an illustration of the kind of law that can be obtained. Suppose a person has frequently experienced A and B in close temporal contiguity, an association will be established, so that A, or an image of A, tends to cause an image of B. The question arises: will the association work in either direction, or only from the one which has occurred earlier to the one which has occurred later? In an article by Mr. Wohlgemuth, called "The Direction of Associations" ("British Journal of Psychology," vol. v, part iv, March, 1913), it is claimed to be proved by experiment that, in so far as motor memory (i.e. memory of movements) is concerned, association works only from earlier to later, while in visual and auditory memory this is not the case, but the later of two neighbouring experiences may recall the earlier as well as the earlier the later. It is suggested that motor memory is physiological, while visual and auditory memory are more truly psychological. But that is not the point which concerns us in the illustration. The point which concerns us is that a law of association, established by purely psychological observation, is a purely psychological law, and may serve as a sample of what is possible in the way of discovering such laws. It is, however, still no more than a rough generalization, a statistical average. It cannot tell us what will result from a given cause on a given occasion. It is a law of tendency, not a precise and invariable law such as those of physics aim at being.

If we wish to pass from the law of habit, stated as a tendency or average, to something more precise and invariable, we seem driven to the nervous system. We can more or less guess how an occurrence produces a change in the brain, and how its repetition gradually produces something analogous to the channel of a river, along which currents flow more easily than in neighbouring paths. We can perceive that in this way, if we had more knowledge, the tendency to habit through repetition might be replaced by a precise account of the effect of each occurrence in bringing about a modification of the sort from which habit would ultimately result. It is such considerations that make students of psychophysiology materialistic in their methods, whatever they may be in their metaphysics. There are, of course, exceptions, such as Professor J. S. Haldane,* who maintains that it is theoretically impossible to obtain physiological explanations of psychical phenomena, or physical explanations of physiological phenomena. But I think the bulk of expert opinion, in practice, is on the other side.

*See his book, "The New Physiology and Other Addresses"
(Charles Griffin & Co., 1919).

The question whether it is possible to obtain precise causal laws in which the causes are psychological, not material, is one of detailed investigation. I have done what I could to make clear the nature of the question, but I do not believe that it is possible as yet to answer it with any confidence. It seems to be by no means an insoluble question,

and we may hope that science will be able to produce sufficient grounds for regarding one answer as much more probable than the other. But for the moment I do not see how we can come to a decision.

I think, however, on grounds of the theory of matter explained in Lectures V and VII, that an ultimate scientific account of what goes on in the world, if it were ascertainable, would resemble psychology rather than physics in what we found to be the decisive difference between them. I think, that is to say, that such an account would not be content to speak, even formally, as though matter, which is a logical fiction, were the ultimate reality. I think that, if our scientific knowledge were adequate to the task, which it neither is nor is likely to become, it would exhibit the laws of correlation of the particulars constituting a momentary condition of a material unit, and would state the causal laws* of the world in terms of these particulars, not in terms of matter. Causal laws so stated would, I believe, be applicable to psychology and physics equally; the science in which they were stated would succeed in achieving what metaphysics has vainly attempted, namely a unified account of what really happens, wholly true even if not the whole of truth, and free from all convenient fictions or unwarrantable assumptions of metaphysical entities. A causal law applicable to particulars would count as a law of physics if it could be stated in terms of those fictitious systems of regular appearances which are matter; if this were not the case, it would count as a law of psychology if one of the particulars were a sensation or an image, i.e. were subject to mnemonic causation. I believe that the realization of the

complexity of a material unit, and its analysis into constituents analogous to sensations, is of the utmost importance to philosophy, and vital for any understanding of the relations between mind and matter, between our perceptions and the world which they perceive. It is in this direction, I am convinced, that we must look for the solution of many ancient perplexities.

* In a perfected science, causal laws will take the form of differential equations--or of finite-difference equations, if the theory of quanta should prove correct.

It is probable that the whole science of mental occurrences, especially where its initial definitions are concerned, could be simplified by the development of the fundamental unifying science in which the causal laws of particulars are sought, rather than the causal laws of those systems of particulars that constitute the material units of physics. This fundamental science would cause physics to become derivative, in the sort of way in which theories of the constitution of the atom make chemistry derivative from physics; it would also cause psychology to appear less singular and isolated among sciences. If we are right in this, it is a wrong philosophy of matter which has caused many of the difficulties in the philosophy of mind--difficulties which a right philosophy of matter would cause to disappear.

The conclusions at which we have arrived may be summed up as follows:

I. Physics and psychology are not distinguished by their material. Mind and matter alike are logical constructions; the particulars out of which they are constructed, or from which they are inferred, have various relations, some of which are studied by physics, others by psychology. Broadly speaking, physics group particulars by their active places, psychology by their passive places.

II. The two most essential characteristics of the causal laws which would naturally be called psychological are SUBJECTIVITY and MNEMIC CAUSATION; these are not unconnected, since the causal unit in mnemonic causation is the group of particulars having a given passive place at a given time, and it is by this manner of grouping that subjectivity is defined.

III. Habit, memory and thought are all developments of mnemonic causation. It is probable, though not certain, that mnemonic causation is derivative from ordinary physical causation in nervous (and other) tissue.

IV. Consciousness is a complex and far from universal characteristic of mental phenomena.

V. Mind is a matter of degree, chiefly exemplified in number and complexity of habits.

VI. All our data, both in physics and psychology, are subject to psychological causal laws; but physical causal laws, at least in

traditional physics, can only be stated in terms of matter, which is both inferred and constructed, never a datum. In this respect psychology is nearer to what actually exists.