notion of the ether of space, and it will be seen that, like it, the test of its reality and usefulness is its pragmatic value.

The arguments we have singled out for notice give but an inadequate idea of the thorough way in which Dr Johnstone has expounded in this most valuable book the various problems of biology and their relation to the laws of physics. The interest is sustained throughout, but what is above all noticeable is the firm conviction that in this search for the true conceptual scheme lies the whole promise of progress in biological science.

H. WILDON CARR.

LONDON.

The Philosophy of Change.—By H. Wildon Carr.—London: Macmillan & Co., 1914.—Pp. xii+216.

IN this work Mr Carr offers us an account of what the philosophy of Bergson may be taken to have *proved*; he is less concerned with the many suggestions that it contains, though he does not underrate their importance. Mr Carr has had the advantage of numerous conversations with M. Bergson about this book, so we may take it that his exposition is orthodox in the main. The parts that are specially new are Mr Carr's opinion that modern physical theories (especially the Theory of Relativity) support Bergson's view of the priority of change, and discussions on the connection of Bergson's theories with the New Realism on the one hand and religious doctrines on the other. To criticise the whole work adequately would demand a whole number of the *Hibbert Journal*. I shall therefore confine myself to some points that seem specially important or difficult.

I do not think that Mr Carr succeeds in showing any close connection between modern physical theories and Bergson's view that change is prior to things. (1) He argues that modern science holds that all things are in motion. (This, by the by, follows directly from the view that motion is relative, as distinct from the Theory of Relativity, if we grant that *any* body is in motion.) But I see no logical connection between the propositions: All things move, and All things are movements. (2) When the physicist says that matter is electricity in motion he means roughly that things consist of certain states that occupy different places at different times. But he does not suggest that these states are themselves motions. (3) Mr Carr fails to distinguish the three questions: (*a*) Is motion absolute or relative? (*b*) Are there absolute distances between bodies and absolute intervals between events? and (*c*) Do magnitudes differ from the numerical values of themselves? It is absolutely essential to distinguish these three questions before any trustworthy philosophical conclusion can be drawn from the Theory of Relativity; and, when these distinctions have been made, it can be shown that this Theory is compatible even with the

highest and driest Newtonian doctrine of space and time. (4) Mr Carr, like Bergson, holds the extraordinary view that science teaches that in perceiving colours we perceive vibrations. This seems to me so obviously false that I hardly know how to refute it. (5) On the face of it, it would be very strange if the scientific method pursued to the uttermost led us to the same conclusions as an admittedly opposed method. (6) I find it difficult to understand why Bergsonians and so many other people should hold that it is typical of life that a whole should obey laws and have qualities which could not be foreseen from a knowledge of the laws and qualities of its separate parts. I should have thought that any chemical compound was an example of the same fact.

In the second chapter Mr Carr deals with Intuition, the conscious use of which is the special method of philosophy. It is a "direct apprehension by the mind of reality as it really is, and not under the form of a perception, conception, or idea . . . of reason." It is unfortunate that Mr Carr does not use some consistent terminology to distinguish between the act of perceiving and the object perceived. (Such a terminology need not imply that the object is different when perceived and when unperceived in any further respect.) The result is that he generally uses "perception" to mean "percept," but sometimes (and presumably in the passage quoted) to mean "act of perceiving." An intuition, then, is supposed to be an act that is not intellectual, and this is clearly thought to be its great advantage. But why should this be so? The answer seems to be as follows:—Everyone admits that there is change in the universe; but the intellect can only deal with what is static, it can only try to construct change out of unchanging materials. This attempt always ends in contradictions (Zeno's paradoxes). On the other hand, the static side of the universe can be constructed out of changes, viz. by regarding anything alleged to be static as a momentary "view" of a change. Hence a faculty that can understand change is necessary and sufficient for understanding the universe. Such a faculty is intuition, for this grasps our mental life as change. There are several points here that I must criticise.

I think Mr Carr tends to confuse two different things: (i.) the alleged permanence of physical objects like atoms, and (ii.) that of qualities and relations. Thus there arises a confusion between two different questions: (i.) the logical question: Does change involve unchanging terms and relations, and can it be satisfactorily described in terms of them? and (ii.) Are things really ever in wholly the same state at two different moments? The second of these may be answered in the negative without answering the first. Some of Mr Carr's arguments seem to me to prove that he has made this confusion. He argues in one place that, because we cannot explain how change could start, therefore the world cannot consist of anything but change. But the most that he ought to conclude is that things have always been changing, not that there is nothing but change. The only positive argument against answering the logical question affirmatively is Zeno's paradoxes. But Mr Carr takes a curious attitude towards

these. He seems to admit that the difficulties about infinity and continuity have been overcome, but to hold that mathematical continuity cannot be applied to a movement. In that case, of course, Zeno's arguments become irrelevant. "Real movements are psychical acts . . . they are pure qualities." Consequently these are indivisible, and the mathematical account of motion, though self-consistent, is wholly irrelevant. This position seems to me to rest on several confusions and fallacies. (*a*) Mathematics does not regard movements as divisible into other movements. The mathematical analysis is not that of a whole into parts of the same kind, but of a complex into terms and relations of a different kind. Hence, even if movements have no parts, this will not prove that the mathematical analysis is inapplicable to them. (*b*) It is important to distinguish (i.) the volition to move my arm, (ii.) the percept of motion, and (iii.) physical motion. The first is no doubt in some sense indivisible. Anyhow, it *is* not motion, and the mathematical analysis does not pretend to apply to it. (ii.) and (iii.) may both be called motion, but the mathematical account only directly applies to (iii.); it holds that some physical motions give rise to percepts of motion just as some give rise to percepts of colour. If there be some other sense of motion which is exhibited in mental life and can only be grasped by intuition, I fail to see the least evidence that it is *also* the essence of physical motions, or that an understanding of it will help you to understand the physical world better than you do now.

I now pass to Mr Carr's chapters on Body and Mind, Perception, and Memory. Mr Carr gives an excellent account of the difficulties about the relation of Mind and Body with which I have little cause to quarrel except in one respect. He seems to hold that both parallelism and interaction involve that percepts are mental. This does not appear to me to follow. Why should not the effect of a stimulus on the brain be to make me perceive a certain physical object? I do not find it easy to distinguish Mr Carr's view from interaction understood in this sense. He often says that memory supervenes on pure perception in order to enable us to deal with the world practically. But how would it help us unless mind really does act on body?

With regard to the doctrine of pure perception I have several criticisms to make. (1) The persons who hold that the immediate objects of perception are unlikely to exist when unperceived may be wrong. But their opinion is not arbitrary; it has very strong arguments on its side which deserve to be noticed and refuted. (2) There seems to me an ambiguity in the doctrine of pure perception. Is perception *simply* selection; or is it an awareness of what has been selected? (3) If we be directly aware of objects as they are, how do you explain the fact that I see an ellipse when someone else sees a circle? Two suggestions seem to be offered: (*a*) All selections contain some parts or qualities of our own bodies, and (*b*) there is no pure perception in fact, but always perception + memory. Neither suggestion seems to me to explain the facts. The elements due to my own body are what Mr Carr calls "affections," or feelings. These will not

explain a geometrical difference. Nor do I see how supervening *memories* are going to explain a difference in perceived *objects* correlated with differences of position. (4) If affections be qualities of our bodies, why do we never perceive the affections of other people? (5) The theory becomes less and less plausible when we combine it with the further conclusion that our bodies, like everything else, are really movements. How does one movement select another? (6) What among movements corresponds to geometrical relations like distance, shape, etc.? The physical theories which talk about vibrations and are so much quoted by Mr Carr have to assume these relations if they are to explain anything. (7) If the real world be homogeneous, why should we find it necessary for practice to treat it as heterogeneous? if it be heterogeneous, why should it not really be divided up in very much the same way as common sense believes?

Let us pass to the doctrine of memory. Here it seems to me that a most unfortunate confusion has happened. Just as Mr Carr used "perception" for percepts and acts of perceiving, so he now uses "memory" for things remembered and for acts of remembering. But, whereas in the former case he saw that "perception" was ambiguous, he has failed to see that "memory" is equally so. Hence the extraordinary conclusion that all memories are psychical and therefore must be stored up in a mind, and the still stranger conclusion that when I remember the past the past somehow exists in the present. The truth seems to be that there are past events (some psychical and some physical) and that I can have a present awareness whose object is a past event. No doubt there are difficulties here, but they are nothing to those raised by Mr Carr's doctrine of memory.

In a very useful chapter Mr Carr describes the relation of Bergson's theories to God, freedom, and immortality. This chapter is useful because it ought to convince the numerous worthy persons who suppose that because Bergson is not favourable to science he must be favourable to religion, that they have been a little hasty. Bergson cannot promise us immortality, nor offer us a God with any of the qualities demanded by religion; but he can give those who find such a result consolatory the glorious certitude that all their actions are incalculable.

I have been obliged to harp on points where I differ from Mr Carr. But I wish to conclude by saying that this is a most able exposition of Bergson. And if so lucid and learned an account leaves the reader, as it has left the present reviewer, with a strengthened conviction that Bergson's philosophy is so rooted in confusion as to be incapable of an intelligible statement, he must blame M. Bergson and not Mr Carr.

C. D. Broad.

University of St Andrews.