DISCUSSION AND CORRESPONDENCE.

NATURALISM AND AGNOSTICISM.

CIRCUMSTANCES, which need not be detailed here, having led me to pay somewhat careful attention to Professor Ward's most skillful 'Gifford Lectures,' I read Professor Brooks' review (SCIENCE, September 1st) of this work with keen interest. The notice cannot be termed unfair, unless, indeed, one take exception to the superfluous statement, "nothing is easier than for one who is not a naturalist to improve upon the work of Charles Darwin." Nothing in Ward's attitude, except, possibly, his tremendous castigation of Spencer, warrants such harshness. On the other hand, Brooks' entire outlook is so different, and the position he adopts so far removed from that of his author that there is a real danger lest readers of SCIENCE should tend to misprize a book wrought out, not only with remarkable analytic insight, but also in competent familiarity and sympathy with scientific methods. I cannot find that Brooks anywhere indicates what task precisely Ward attempts; on the contrary, he sometimes blinks the issue. And yet, this may be stated with directness, and without disrespect to the reviewer, which, I need hardly say, is far from my mind.

The advance of science in the eighteenth and nineteenth centuries has gradually crystallized into four theories, not of scientific phenomena, but of the universe as a whole. (1) The Mechanical Theory. This founds on abstract Dynamics, which deals with molar phenomena; on Molecular Mechanics, which is concerned ultimately with ideals of matter; while, latterly, Mechanical Physics has tended, in some hands, to give way before Energetics, which regards all change as either a transference or a transformation of energy. (2) The Theory of Mechanical Evolution, which seeks to trace *back* the phenomena of the universe, as they now are, to an original condition that can be expressed according to purely mathematico-physical formulæ—the theory of Spencer. (3) Biological Evolution as *implied* in the work of Lamarck, C. Darwin and their followers. (4) The Theory of Psychophysical Parallelism, involving Clifford's 'mind-stuff,' the 'double-aspect' theory, the 'conscious automaton' (Huxley) theory and, generally, the view that 'mind' is an epiphenomenon of 'matter.' The task essayed by Ward may be put in the form of the following question: Taking the fundamental conceptions employed by the various exponents of these theories, what can they be shown to involve when subjected to the analyses of Epistemology? In other words, to what conclusions do they lead inevitably, and are these conclusions sufficient to account for all that is actually involved in man's universe? Brooks' hint of dogmatism may be traced to an incomplete acceptance of the fact, fully accepted by Ward, that, for man, there is no universe but man's universe; and here all dogmatism is out of place.

So far as 'simple-minded men of science' are concerned, I think we may admit that Ward has exploded, beyond peradventure, the assorted dogmas peculiar to the first, second and fourth of these theories of the universe. I am by no means sure that he has achieved similar success with the third, possibly because it still remains so fluid, and I have a tolerably strong conviction that his constructive alternative, termed Spiritual Monism, will prove as unsatisfactory to others as to Brooks. At the same time, one must remember that he has stated this in the briefest and, therefore, most tentative fashion.

Brooks' review dwells almost exclusively on the third theory and, consequently, he hardly does justice to Ward's positive achievement; while, further, his difficulty in adapting himself to the epistemological standpoint seems to lead him to attribute to Ward positions which his author is far from holding. The sections of the review dealing with figurative language show this. The former lapse may be omitted as unimportant. The latter calls for some notice. The reason for Brooks' difficulty in envisaging Ward's standpoint comes out plainly in the following statement: "The naturalist agrees with Ward that our conception of the order of nature is not absolute, but contingent or relative, but he is not prepared to assert that it is a hypothesis; for a hypothesis is a mental product, and he does not know whether the contingency is mental or organic." Waiving the question whether there possibly *can* be an *order* of nature distinct from our conception

of it, this statement implies that there is *a* mental and *an* organic sphere, which may be treated as if each stood in isolation from the other. Whether such an idea be compatible with the Theory of Evolution appears very problematical. Be this as it may, the precise problem of Epistemology is just the question, *can* there be any sphere *for man*, in which anything may be regarded as if it were out of relation to mind, or to 'the mental,' using the more abstract language supplied us? Till this has been determined—and many advance valid reasons for concluding that it has been determined in the negative—discussion of 'teleology' and the like is so much beating the air.

But, fortunately, there happens to be far more community between Brooks and Ward than the printed page reveals. That Brooks should be moved to consider Ward's book at all, that he should attack some of the questions so significantly discussed in his brilliant 'Foundations of Zoology,' and that Ward should go entirely to the positive sciences for his materials are right hopeful signs of the times. No doubt Brooks' review bears witness to an appreciable remnant of that estrangement between science and philosophy which was at its height in the sixties and seventies. In the seventeenth and eighteenth centuries Descartes, Spinoza, Leibniz and Kant drew their materials from the sciences as then formulated; and the 'plain historical way' of Locke, and to some extent of Hume, commended itself to the sober methods of scientific inquiry. But at the beginning of the nineteenth century, thanks to the new 'social sense' that arose with Lessing and Herder and Goethe, philosophy forsook its commerce with the natural sciences and sought aid from the so-called human sciences, especially in those aspects which may be lumped under the name *Culturgeschichte*. This movement reached its zenith with Hegel and his followers. Meanwhile, the natural sciences, particularly in that development of them which Brooks ornaments, had themselves taken up and projected along new lines the very suggestions of the *Culturgeschichte* group, and had summed the results in the term Evolution. This term, as we now understand it, is no more than half a century old, a brief period in the life of any great operative conception, and we are far from clearly perceiving all it implies. "There is 'something more' at work," as Romanes said to me time and again. Ward's book is a product of this conviction of ignorance, so is Brooks' review. Further, the book must be taken as a powerful witness to the return of philosophy to the old, amicable relationship of the seventeenth and eighteenth centuries. The pressing affair of philosophy is to elicit the implications of theories which are not simply provisional groupings of phenomena scientifically observed, but profess to be *Weltansichten*. Just because they are at once scientific and philosophical, neither the scientist nor the philosopher can deal with them in his own corner. Brooks and Ward are at one in proving this. Indeed, the most interesting—some would say the most promising—factor in contemporary intellectual activity crops out in the fact that scientists are becoming more and more alive to philosophical problems, while philosophers are beginning to discover that, after all, their main concern is with the fundamental conceptions incident to that highly organized portion of human experience which goes by the name of science. Each side will better the prospect for a more thoroughly rational explanation of things known and to know by foregoing its own *idola*.

I should not have ventured to intrude at this 'great assize' but for the fact that Brooks attributes to Ward *idola* from which the Cambridge epistemologist has shaken free. On the other hand, and far more important, Brooks himself has already escaped many others which, in the not very distant past, generated that amazing hybrid—a mechanical biology.

R. M. Wenley.
University of Michigan.

THE ORIGIN OF MEASUREMENTS.

To the Editor of Science: My small boy, aged 5 years, was discovered this summer to have originated a system of measurement which he used in conversation with other children. Certain distances were described as four men, and certain other distances were spoken of as a boy or half a boy. Certain others were spoken of as two men and a boy. Perhaps this may