LETTERS TO THE EDITOR.

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Psychophysical Interaction.

SINCE NATURE is read by many people beside physicists and mathematicians, it may be useful to state explicitly that a letter with a diagram, on p. 102, is erroneous and misleading.

For the same reason it may be desirable to remark distinctly, in opposition to a notion apparently suggested by several previous writers, that guidance or deflection of motion is not in the least contradictory of the principle of the conservation of momentum. For the rest, all the letters of importance which have recently appeared are in accordance with my views.

OLIVER LODGE.

I HAVE followed with much interest the discussion opened in your columns by Sir Oliver Lodge's recent contention that mind directs but does not create energy. What is aimed at, as I understand it, by this distinction is the reconciliation of the activity and efficiency of mind with the mechanical laws of the conservation of energy and momentum. The distinction itself is, as is well known, as old as Descartes, being designed by him to meet the same problem as it presented itself to the thinkers of the seventeenth century. As is also well known, it was immediately disowned by his successors on the ground that guidance or direction of energy by the mind is an interference with the operation of material forces as the physicist is bound to conceive of them not less than the creation of it. Why is it more inconceivable that mind should alter energy or momentum than that it should interfere in any way whatever with the material world as a closed mechanical system? While to Sir Oliver Lodge it seems axiomatic that mind cannot produce energy, to others it has seemed equally axiomatic that it cannot resist or control it. It remains, therefore, for those who propose to revive the above distinction as a way of making the relation of mind to matter comprehensible to show by an analysis of the conception of control that the direction of physical energy by the mind is any more intelligible than its creation. Failing this, the problem they have sought to solve by means of this formula only returns in a deeper form. How is mental efficiency in any shape to be reconciled with fundamental mechanical principles? The purpose of this letter is to suggest a form of solution, somewhat different from that of Prof. Ward's in his "Naturalism and Agnosticism," which makes recourse to so ambiguous a distinction unnecessary.

Stated in its most general form, the problem is that of the operation of mind upon matter. Three answers have stood out owing to the authority of those who at different times have advocated them:—

(1) It has been held that mind and matter are each in its own sphere effectively operative, but that these spheres are wholly different. They never touch or intersect. Where there appears to be coincidence, as in knowledge or in the action of one upon the other, this is to be explained (if an explanation is insisted on) as the result of pre-arrangement. Except in the form of the working hypothesis of parallelism, no responsible thinker would probably accept this "dualistic" theory at the present time, and it need not further be considered.

(2) The second answer is that which explains mental activity as merely apparent. The really active forces are material. Consciousness is merely a by-product, standing to material forces as the steam which is dissipated in the air stands to the steam-engine—a sign of its operation, but itself contributing nothing to its efficiency. This "materialistic" theory is surrounded by difficulties which this is not the place to discuss, but which the present generation seems to be in the main agreed are insuperable.

(3) A third view remains which takes up the problem at an earlier point, and asks whether our difficulty is not a self-made one. If we set out from the existence of mind

and matter as two entirely separate substances, there is, it must be admitted, no way in which we can establish any continuity or causality between them. On the other hand, if we reverse this assumption, and regard the conception of two worlds, a physical and a mental, as one that grows up within (it is not said created by) our experience, a way seems opened up out of the difficulty. The conservation of energy and momentum, and the determination of their direction by physical antecedents, are from this point of view conceptions which are forced upon us in our endeavour to interpret to ourselves one side or aspect of our experience—that which we call the mechanical. Within the area so describable they are universal, ultimate, admitting of no exception. But the mechanical is only one side of our experience. Besides mechanical energy there is life. The phenomena of life violate no mechanical law, yet open up to us a new aspect of our world, a new form of "energy." We may, indeed, try to "explain" life as only a more complex mechanism, and this has been a common device since the time of Descartes. But the present day tendency to recognise here a *transitio in aliud genus*, and to reject (as leading to confusion) the attempt to explain the fuller, more concrete reality by formulæ applicable only to the more abstract, seems to be founded on a truer insight. What holds of the relation of life to mechanism holds also of the relation of mind to life in general. Here also a new world opens up with laws of its own, no more identifiable with those of matter or organism than the system of mechanical forces which make up the movement of the billiard ball upon the table or the contraction of the muscles in the player's arm is identifiable with his acquired dexterity or his gaming ambition.

"But how," it may be asked, "does all this help us? Granted the world of Nature has these different 'sides,' we are no nearer understanding how any one side is connected with another, least of all how the 'world as will and idea' is connected with the world as matter and energy." It is just here that I wish to invite the physicist who may not have considered the question in this light to make an experiment with his ideas which may not hitherto have suggested itself, and when suggested may appear to him as ridiculous as an invitation to vary his outlook upon the universe in the interest of science by standing upon his head. The suggestion is that instead of starting, as probably he has been accustomed to do, from the presupposition that the entirely real and concrete is what is known as the physical world, and that everything else must fall into line as in some sense a product or reflection of it, he should start from his own experience as a whole—his mind and will as it exercises itself in the world of reality in general, including, of course, other minds and wills—as though this were the primary, most entirely real and concrete fact that he knows, and regard all else as comparatively abstract and secondary. The former view I invite him to consider for the time being as analogous to the old Ptolemaic astronomy, the latter as the Copernican. When he has done so I ask him further to consider whether the operation of mind on matter need any longer constitute the insoluble problem the older hypothesis made of it. Putting aside the question of the relation of our individual minds to the mind of the Creator, the single "real" activity is from this point of view that of a conscious will in presence of a universe which it is its one supreme interest to understand and adapt to its own ends of life and well-being. The condition of such understanding and adaptation is selection and abstraction; its one supreme law *divide et impera*. A fundamental division at which developing experience early arrives is that of an inner and an outer—a self and other. A subdivision of the latter, which it is not long in achieving, is into the material other and the mental other—the physical and the social world. In this way the division proceeds, but always into parts of a whole of which we must keep a hold and to which we must ever return wherever the danger threatens of becoming the victim of our own abstractions. Treated as an articulate part of the whole, each field falls into its place in the organism of experience—general philosophy being the attempt to state what that place is; when hypostatized into an independent reality, still more when mistaken for the whole it leads only to confusion. From the beginning of speculation the front of the offending has here lain with Matter. Philo-