

tion to it. It can be set out in the statement that wherever energy shows itself it appears as composed of two factors — the intensity and the capacity factors. These terms, borrowed from the older theories of heat and electricity, measure the quantity of energy as well as the direction in which changes of energy take place: the general law being that energy, in whatever form it may appear, tends to go from places of higher to places of lower potential or intensity.

The characteristic feature of this most recent outcome of the physical view of natural phenomena is that it takes in real earnest the suggestion at which many natural philosophers have independently arrived, that energy is a substance quite as much as matter. This granted, it seems at least reasonable to some thinkers to see how far they can get by employing the two conceptions of matter and energy alone without adopting a third something, the ether, which was introduced at a time when the idea of the conservation of energy had not yet been formulated.¹

52.
The out-
come.

¹ For an indication of the further development of this point of view I must refer the reader to the chapter on Photo-chemistry in Prof. Ostwald's great work ('Allg. Chemie,' 2nd ed., vol. ii. part 1, p. 1014, &c.) "In the interest," he says, "of a conception of nature which is free from hypotheses, we must ask whether the assumption of that medium, the ether, is unavoidable. To me it does not seem to be so. If we ask for the cause of all displacements of energy in space which we can singly observe, we find that it always consists in differences of intensity. . . . The main point is that, having conceived

energy to be a real thing, indeed the only real thing in the so-called outer world, there is no need to inquire for a carrier of it when we find it anywhere. This enables us to look upon radiant energy as independently existing in space. We have found in the general law of intensity—*i.e.*, in the empirical fact that energy tends to equalise forced changes of its density in space—the principle according to which transmission of energy in space necessarily takes place when there appears anywhere an excess." From this and other passages of Prof. Ostwald's writings it seems as if mass likewise was to be given