

it has gone, as an author states, "to swell the waste-heap of the universe."

Let us consider the transmutations of energy as connected with the animal world, which may be more interesting as affecting us more personally. An animal is an animated machine, complicated in its manipulations and delicate in its construction, and of such a nature that the mind, the agent that controls it, is as it were within it, and very intimately connected with it and its doings.

To run this machine fuel is required in the form of food, and for this the vegetable world is held responsible, since the animal world ultimately subsists upon vegetation. Food, as we have shewn just before, possesses energy of chemical separation, which, after entering the system, is manifested under the forms of energy of bodily heat and visible energy of actual motion, which, under the direction of the mind, is able to manifest itself in such a multitude of ways. Every action is thus due to the transformed energy of the solar rays. Who would imagine that the rays of the sun, as they start so many millions of miles away on their journey through space, were to undergo such wondrous changes, and perform so many offices in the workings of the world? Those little vibrations of particles, utterly beyond all power of comprehension, united in their power and determined and unyielding in their action, cause a whole world to tremble, and traversing all space with lightning speed, shake with their tiny fingers the whole universe.

Thus could we trace the transmutations in other cases, if time permitted. Going backwards we would ultimately arrive at the sun as our source of energy in nearly every case, the only valuable exception being in the case of the tides, which of course are due to influence of the moon. Going forwards, and following up the course of the energy, we would in most cases be able to trace the various changes of the energy, until at last we would lose track of it, as under the form of radiant energy of low temperature it left the earth to swell the quantity of unavailable energy in space.