

mother for her offspring,—to the sagacity of the dog, the horse, or the elephant,—to the genius of a Moses, a John, a Shakespeare, a Milton, a Newton, a Leibnitz, or an Edwards. Were all this capacity in the star dust, I would be constrained to seek for a cause of it in a Power possessed of knowledge, wisdom, and beneficence, planting seeds in that soil to come forth in due season. But there is another supposition; that these qualities were not in the original matter, but were added from age to age,—it may be, according to law: and if so, they must have come from a Power out of and beyond the star dust, from a Power possessed of reason and affection. I know not that science can determine absolutely which of these alternatives it should take. But take either; and, on the principle of effect implying cause, the mind must rise to the contemplation of a Being who must himself be possessed of intelligence, in order to impart intelligence.

This star dust has a greater heaviness or thickness of parts in certain places than at others; and, by the attraction of its particles, masses of it begin to rotate, and one planet is set off after another; and the planets cast off satellites, or rings; and the sun settles in the centre, with bodies circulating round him. All this has taken place according to natural law; but we infer that there has been a guardian Intelligence guiding and watching the process; otherwise, the heavy parts causing the rotation might have been in the wrong places in reference to each other, and the circling bodies at the wrong distances; and, as the result, a scene of never-ceasing confusion, in which the elements and powers would have been warring with each other, and rendering it impossible that there should appear any of the higher products of life; intelligence, and love.

The earth is now formed, an oblate spheroid, spinning round its own axis, and round the sun. By the action and counteraction of the inner heat and outer cold, there comes to be a solid land, with a corrugated surface of hill and dale, ocean and atmosphere. There follow rocks, deposited by water or thrown out by fire; and, as these are found to come forth, by aqueous or igneous process, in a state of order and adaptation, and are made to serve a beneficent end towards the living creatures, we argue that they are constructed on a plan.

But as yet there has been no life, vegetable or animal. But the protoplasm now appears. We shall let Professor Huxley describe that now famous substance, which he has taken under his special protection, and by which he works such wonders. It is the material out of which all living forms are made, as pottery is from the clay; it is the elementary life-stuff of all plants and all animals. You may see it as well as

anywhere else in the hairs to which the needle owes its stinging power. "The whole hair consists of a very delicate outer case of wood, closely applied to the inner surface of which is a layer of semi-fluid matter full of innumerable granules of extreme minuteness. This semi-fluid lining is protoplasm, which thus constitutes a kind of bag full of limpid liquid." This protoplasm, according to Professor Huxley,* is "the formal basis of all life. It is the clay of the potter; which, bake and paint it as he will, remains clay, separated by artifice, and not by nature, from the commonest brick and sun-dried clod. Thus it becomes clear that living powers are cognate, and that all living forms are fundamentally of one character." He says that "all vital action is the result of the molecular forces of the protoplasm which displays it. And if so, it must be true, in the same sense to the same extent, that the thoughts to which I am now giving utterance, and your thoughts regarding them, are the expression of molecular changes in that matter of life which is the source of our other vital phenomena."

Now, upon this account of protoplasm, have to remark that the great body of naturalists do not allow that it is correct.

But we may let Mr. Huxley's account of it pass. From his description of it, it is evident that this elementary life-stuff is a very complex body, with very peculiar endowments,—quite as likely to work evil as to work good, and requiring to be directed in order to operate beneficently. It is composed chemically of carbon, hydrogen, oxygen, and nitrogen; in one word, of protein. But then protein is not protoplasm; no power known to us can turn protein into protoplasm. Science, at its present advanced stage, cannot change dead matter into living matter.

CANADIAN ARITHMETIC in Decimal Currency, with Metrical Tables, for the use of Schools. By J. H. Richardson. Quebec: A Côté & Co. Pp. 152.

This little treatise has been carefully prepared by a teacher with a view to practical utility. The problems are all new, and no exertions have been spared by the author to ensure the strictest accuracy in every part. The exercises are graduated so as to form a progressive course of instruction adapted to the different classes in schools, and metrical tables of money, weights and measures, are inserted at the end of the work, in the expectation that the metric system will ere long be adopted as the standard throughout the commercial world.

* Physical Basis of Life.