

THE RIDDLE OF THE UNIVERSE

sation and movement of the protozoa, and of the complex functions of the sense-organs and the brain in the higher animals and man. The activity of the psychoplasm, which we call the "soul," is always connected with metabolism.

All living organisms, without exception, are sensitive; they are influenced by the condition of their environment, and react thereon by certain modifications in their own structure. Light and heat, gravity and electricity, mechanical processes and chemical action in the environment, act as *stimuli* on the sensitive psychoplasm, and effect changes in its molecular composition. We may distinguish the following five chief stages of this sensibility:

I. At the lowest stage of organization the *whole psychoplasm*, as such, is sensitive, and reacts on the stimuli from without; that is the case with the lowest protists, with many plants, and with some of the most rudimentary animals.

II. At the second stage very simple and indiscriminating *sense-organs* begin to appear on the surface of the organism, in the form of protoplasmic filaments and pigment spots, the forerunners of the nerves of touch and the eyes; these are found in some of the higher protists and in many of the lower animals and plants.

III. At the third stage *specific organs* of sense, each with a peculiar adaptation, have arisen by differentiation out of these rudimentary processes: there are the chemical instruments of smell and taste, and the physical organs of touch, temperature, hearing, and sight. The "specific energy" of these sense-organs is not an original inherent property of theirs, but has been gained by functional adaptation and progressive heredity.