

THE RIDDLE OF THE UNIVERSE

tained when the similarity of the elementary structure of the plant and of the animal was proved by the cellular theory, and especially when the similarity of conduct of the active, living protoplasm in both was shown in the plasma theory of Max Schultze (1859). Modern comparative physiology has shown that the physiological attitude towards various stimuli (light, heat, electricity, gravity, friction, chemical action, etc.) of the "sensitive" portions of many plants and animals is exactly the same, and that the reflex movements which the stimuli elicit take place in precisely the same manner on both sides. Hence, if it was necessary to attribute this activity to a "soul" in the lower, nerveless metazoa (sponges, polyps, etc.), it was also necessary in the case of many (if not all) metaphyta, at least in the very sensitive *mimosa*, the "fly-traps" (*dionaea* and *drosera*), and the numerous kinds of climbing plants.

It is true that modern vegetal physiology has given a purely physical explanation of many of these stimulated movements, or tropisms, by special features of growth, variations of pressure, etc. Yet these mechanical causes are neither more nor less *psychophysical* than the similar "reflex movements" of the sponges, polyps, and other nerveless metazoa, even though their mechanism is entirely different. The character of the tissue-soul reveals itself in the same way in both cases—the cells of the tissue (the regular, orderly structure of cells) transmit the stimuli they have received in one part, and thus provoke movements of other parts, or of the whole organ. This transmission of stimuli has as much title to be called "psychic activity" as its more complete form in the higher animals with nerves; the anatomic explanation of it is that the social cells of the tissue, or cell-community, are not isolated