in the creatures". So strongly was this view engrained that attempts at analysis were frowned upon as materialistic or irreligious, and Groos notices that fear of the Sorbonne's disapprobation led Leroy to publish his famous *Letters on Animals* as if from "a physician of Nuremberg".

Metaphysical Interpretation.

Closely allied to the theological interpretation is that of various metaphysicians who have interested themselves in the psychological aspects of animal life. Thus Schelling, who had a strong influence on German biology, said that "animals in their works and ways were but expressions or instruments of the universally immanent reason, without being themselves reasonable. Only in what they do is there reason, but not in themselves." Of this position, too, there are modern representatives, for instance, E. von Hartmann, who, while perfectly aware of the suggested scientific interpretations, finds satisfaction in none, and falls back upon his metaphysical principle of "the Unconscious".

Animal Automatism.

The extreme of reaction from metaphysical interpretation is to be found in the Cartesian doctrine that animals are automata. As Huxley has told us, Descartes was an unwearied dissector and observer, "a physiologist of the first rank", who did for the nervous system what Harvey had done for the heart and blood-vessels. He recognized that the brain was the organ of mental processes, that muscular contraction is (usually) dependent on nervous stimuli, that there are sensory and motor nerves, that reflex actions may take place without volition or even contrary to it, and he held an almost modern theory of memory.

Starting from reflex actions in man, co-ordinate and purposive, though unwilled and unconscious, Descartes argued that animal activities might be of a similar nature, though doubtless requiring in most cases a more refined and complicated nervous mechanism. As Huxley puts it, almost quoting, as he points out, from Malebranche's statement of the Cartesian doctrine, "what proof is there that brutes are other than a