But the highest value for a history of Thought attaches to this point for a different reason. In it the long-separated lines[1] of botanical and zoological study met again. Immediately after the appearance of Schleiden's epoch-making publication—and partly in consequence of it—Theodor Schwann was induced to collect, in 1839, all the known observations, coming principally from the school of Johannes Müller, which referred to the existence and formation of animal cells, and to utilise them in the enunciation of his great generalisation, "that there is one universal principle of development for the elementary parts of organisms however different, and that this principle is the formation of cells."[2]

47. Schleiden and Schwann.

[1] The fourth decade of the century was also the period in which physical and chemical methods and ideas were—notably in France and Germany—made useful for anatomical and physiological research in zoology and botany. Sachs, however, significantly warns us against the view, which has since been frequently put forward in an exaggerated form, that the physiology of plants consists in nothing but applied physics and chemistry (*loc. cit.*, p. 393, &c.) That Schwann himself attached the greatest importance to this point can be seen from the preface to his principal work. This appeared in 1839, and was translated into English by Henry Smith, and published by the Sydenham Society in 1847 with the significant title, 'Microscopical Researches into the Accordance in the Structure and Growth of Animals and Plants.' The translator has also attached a rendering of Schleiden's 'Contributions to Phytogenesis,' which appeared first in Part II. of Müller's 'Archiv für Anatomie und Physiologie' in 1838, and was also translated in 'Taylor's Scientific Memoirs,' vol. ii. part 6.

[2] Schwann, *loc. cit.*, p. 165. A little farther on he adds the following generalisation, which it is well to read in the light of more recent researches: "A structureless substance is present in the first instance, which lies either around or in the interior of cells already existing; and cells are formed in it in accordance with certain laws, which cells become developed in various ways into the elementary parts of organisms." It is clear that the discovery of what may be called the morphological element or unit of organised structures in this view meant the end of pure morphology. The problem of the explanation of existing forms was handed over to the student of development, to the genetic view and conception of nature. The cellular theory, thus enunciated in its greatest generality by Schwann, has formed a kind of provisional resting-place in the study of the forms and changes of living nature; as Newton's gravitation formula has served as a provi-