

into alcohol and carbonic acid is correlative to a phenomenon of life; an organization of globules."

The year 1859 was largely taken up with examining fermentation. Whence come those ferments, those microscopic bodies, those transforming agents, so weak in appearance, so powerful in reality? He saw some great outcome in the future. He wrote to his old friend Chappuis: "I am pursuing these studies on fermentation which are of great interest, connected as they are with the impenetrable mystery of Life and Death."

Spontaneous Generation.

Early in February, Pasteur read an important paper before the Academy of Sciences on the line of the alcoholic, lactic, and tartaric fermentations. The paper was highly appreciated.

A wider field was opening up to Pasteur. In a postscript of a letter to a friend he said: "Yesterday I presented to the Academy my researches on Spontaneous Generation. They seemed to produce a great sensation. More later." Pasteur was forced to deal with this subject in order to meet his opponents in the matter of fermentation. His antagonists fell back on "occult," "obscure," "indefinite causes." To overcome this he was forced to grapple with spontaneous generation, whose advocates dated back to the times of Aristotle, Lucretius, Virgil, Ovid and Pliny. Even in the 16th century Von Helmont gave a recipe to create mice. This was "to put dirty linen into a receptacle, together with a few grains of wheat or a piece of cheese." The conflict was now again on, and it was to be a battle royal.

Pasteur's warm friend, Biot, who clung to the old positions, advised him against entering the contest. "You will never find your way out," urged Biot. "I shall try," replied Pasteur, calmly.

The invention of the microscope in the end of the 17th century had been used to support spontaneous generation; for, said its supporters, by what other means could you explain the production from one body of a million descendants in forty-eight hours. The clubs and fashionable gatherings of Paris took up the question.

Years before this the Cardinal of Polignac had written a thesis favoring the ground now taken by Pasteur, and ending: "Everything in this world has its germ or seed." Prominent men in the church in the 18th century had divided on the subject. An English priest, named Needham, had championed "spontaneous generation"; an Italian clerical, Spallanzani opposed Needham. The Italian Jesuit had "sealed tubes hermetically, heated them strongly, and found no possibility of life being produced." Voltaire had taken the side of the Jesuit, and was against the possibility of "spontaneous generation." Now in the 19th century the question was still in suspense.

To force his side forward a daring scientist of Rouen, M. Pouchet, sent a note to the Academy of Sciences claiming that he could show "that animals and plants could be generated in a medium absolutely free from atmospheric air, and in which, therefore, no germ of organic bodies could have been brought by air."

Pasteur undertook a campaign, which lasted for four years, to show Pouchet to be wrong. He wrote to Pouchet that he feared his facts were not founded on "faultless exactitude."

Pouchet had friends and ardent supporters. Two of these, Joly and Musset, maintained that "they did not mean a creation out of nothing, but the production of a new organized being, lacking parents, and of which the primordial elements are drawn from ambient organic matter."