

only during such time as the drug is required, and to make it our business to see that its use is then suspended, just as we do in case of opium.

Dr. J. Avery, of Greenville, President, read a paper on the subject of "Pasteur and Protective Medicine." Dr. Avery told of Pasteur's parentage, his boyhood, his studies, and his first triumph as a chemist in discovering the left-handed polarizing tartaric acid. Pasteur, after this work, was made assistant professor of chemistry at Strasburg, where his first work was to prove the power of minute organisms to change or modify chemical affinity. He was then made dean of the faculty of science at Lille. Here he determined to devote a portion of his lectures to the study of fermentation. The prevailing theory of fermentation at this time, Pasteur could not accept. He experimented with milk, and discovered the lactic ferment. And soon after, in the same substance or some of its products, he found the butyric ferment. These two organisms he found to be entirely distinct. The lactic ferment required for its existence and multiplication, free oxygen or air; while the butyric ferment died when exposed to the atmosphere. Pasteur soon demonstrated that the special fermentation known as putrification is caused by a living organism belonging to the same class as the butyric ferment; and he also soon discovered the acetic acid ferment—the "*mycoderma aceti*." Pasteur's next work was to demonstrate that spontaneous generation was a myth; and he then discovered the germ which caused so much havoc among the silk worms of France and other countries. He demonstrated that the disease among the silk worms was contagious, and gave practical directions for its prevention which restored the silk industry to Europe. This work led him to the great work of his life,—the development of the theory of the parasitic origin of communicable diseases; and in this effort he took the disease known as anthrax or splenic fever, which was decimating the flocks of all Europe. He put a drop of splenic fever blood into sterilized yeast water; in a few hours it swarmed with myriads of bacteria. A drop of the first cultivation he put into a second flask containing the same kind of liquid, and the bacteria multiplied as before. This process he repeated 15 or 20 times, and by this means freed the initial drop of blood from any substance it might have carried with it. And

now, if a drop of this last cultivation is injected under the skin of a rabbit or a sheep, the animal dies with all the symptoms of idiopathic splenic fever." Pasteur had studied vaccination, and he now undertook to vaccinate for protection of animals against splenic fever. "Before the close of the year 1881, Pasteur had vaccinated 33,946 animals. In 1882, the number amounted to 399,102, including 47,000 oxen and 2,000 horses. In 1883, 100,000 were added to the list. In 1881, it was the common practice of farmers to vaccinate one-half of their herds and leave the other half unprotected. It was found at the close of the year, that the loss in the protected sheep was ten times less than in the unprotected, being 1 in 740 as against 1 in 78. In cows and oxen it was 14 times less. * * * "In pursuing his investigations of the splenic fever disease, Pasteur made some curious and interesting discoveries which are of practical value to sanitarians and all who are interested in preventing the spread of communicable diseases. * * * He found that an attenuated virus that could cause no harm to a guinea pig a year or a month or even a week old, would kill one just born. The weakened microbe could multiply itself in the blood of one so young; and a few drops of this pig's blood would kill one still older, and so on until the full virulence of the microbe was restored. * * * Exposed to the air, these germs become weakened or take on the form of spores, in which condition they will remain viable for years, and float in the air as minute particles of dust, until they find lodgment in the proper media for their development and multiplication. What is true of these germs, may also be true of the germs of diphtheria, scarlet fever, small-pox, typhoid fever, and other communicable diseases. In localities where these diseases have prevailed as epidemics, is it not quite possible their attenuated and viable germs are constantly floating in the air, ready to resume their active form whenever and wherever the conditions of climate, of poverty, of wretchedness, of filth, and of bad air, present themselves?" Dr. Avery closed his paper with a discussion of Pasteur's work in inoculating for hydrophobia.
