

the Royal Society of England, soon came another promotion. The government was establishing a great institution of Science at Lille, in the extreme north of France. Pasteur was made Dean of the College, and he rejoiced in the opportunities afforded by the industries of the neighborhood. The town of 160,000 inhabitants had many factories, dye-works, bleach fields, chemical works, sugar manufactories, and breweries. Students flocked by hundreds to the new school. Pasteur's aim was to make the institution practical, and helpful to these many industries. The modifications and results of Fermentation was a great field of research. It was not at all understood, even by the leaders of science. Dumas said: "The act of Fermentation is strange and obscure." Berzelius, the great Swedish chemist, said: "Fermentation is due to contact." By another it was declared to be "a catalytic force,"—which



PASTEUR AT WORK.

meant nothing. Liebig, the dean of German chemistry, said: "Chemical decomposition was produced by influence"—but this again explained nothing. These were the best guesses the age had been able to make.

Pasteur undertook to study lactic fermentation—the fermentation of sour milk. He saw in the liquid, with the microscope, little bodies of gray substance forming. He placed this gray substance in other liquids. The fermentation was thus continued. "The gray substance," said he, "is the ferment." Pasteur saw the lactic ferment bud and multiply as ordinary beer yeast would do. A living agent and its products were before him.

In the very thickest of these investigations Pasteur was removed by the government to the "Ecole Normale," in Paris, the very pole star of his boyish ambitions, but now as chief administrator and director of studies. The accommodation of the Parisian school was much inferior to that of Lille, but he manfully grappled with the difficulties. He now investigated alcoholic fermentation, and here again found, as he says, "the deduplication of sugar