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HARPER'S MAGAZINE.

## HOW WE FIGHT DISEASE.

rather more than a century ago, a very young physician thought to test a very old folk remedy against the greatest scourge of that day—smallpox. His method, slightly elaborated, has served to banish that disease from cleanly lands. But it was merely a chance success won in the dark; to use a large word, a purely empirical discovery. No one had the slightest idea how the vaccine worked, for no one, up to thirty or forty years ago, had so much as a suspicion as to the nature or cause of disease. Jenner's discovery was not the forerunner of a host of others; it opened no new line of inquiry. The physicians of his time, and after, were far more interested in the fancies of Hahnemann than in a patient, scientific investigation of these new and amazingly fertile results.

It was left for a French chemist, Louis Pasteur, who, knowing nothing of medicine or the stock-in-trade absurdities taught in its name, could fresh to the subject, to reveal that disease is essentially a fermentation—due, like the fermenting of yeast, to the presence of a minute fungus. Following the customary method of preparing the smallpox vaccine, Pasteur and his aides found that by deliberately cultivating his microbes through a succession of young animals, he was able so to attenuate the poison they secret as to make it relatively harmless. Nevertheless, as in the case of vaccination, the fungus thus modified was able, by inducing a mild form of the disease, to confer immunity against a more virulent attack. His dramatic cures of the dreaded hydrophobia instantly gave his ideas a world-wide vogue, and in scarce any land of the earth were there lack-luster eager spirits to follow out and explore the paths thus so brilliantly opened up.

A little later came the discovery, at the hands of two of Pasteur's disciples, that the serum of inoculated animals—the colorless fluid of the blood after the red corpuscles which it contains have been strained out—contains an anti-poison, or, as it has come to be known, an antitoxin, which, injected into an animal, confers immunity in the same manner as inoculation itself. This was the beginning of "the new medicine," of the so-called "sero-therapy." If the new methods have not yet realized all that was hoped from them, it may still be noted that a single one of the new serums, the preparation of the diphtheria antitoxin, has already saved thousands of little lives, and that horrible fate of death from hydrophobia is now almost unknown. Anti-poisons for many of the serpent venoms are known, so that the other day, when Dr. Chalmette of Lille, who has made this latter field so much his own, was bitten in the careless handling of a deadly adder, he had merely to step across the room and inject into his arm the serum of his own preparation. Without the latter, in a few moments he would have been dead; with it, the crisis was soon past, and within an hour he was back at work. "Astonishing," murmured France; and so it was.—[Carl Snyder, in Harper's Magazine for April.

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