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## THE GERM THEORY OF DISEASE.

At the annual meeting (Jan. 27, '85) of the Yorkshire Association of Medical Officers of Health Dr. Hime read a paper on "The Germ Theory of Disease." He said (*Sanitary Rec.*) that his paper was intended to show the basis of belief for what is known as the germ theory of disease, to trace out the leading events in the history of the theory, and to show the position in which it stands at the present time as a scientific theory fully verified by facts. - It was about two hundred years since Robert Boyle first referred to fermentation as being the process strictly analogous to fever; and the same belief had become permanent amongst us, as indicated by the use of the word *zymotic* as applied to fevers, which really meant fermentative diseases. In more modern times Helene had, entirely on theoretical grounds, established the theory of germ disease before anything was known of the actual existence of germs; but it was to Pasteur and Koch that the theory was indebted for its present scientific aspect. It was not a little remarkable that Pasteur's early work had nothing whatever to do with disease. It was entirely concerned with fermentation proper, and it was he who first proved that what we know as ordinary fermentation was a process which was distinctly the outcome of the vitality and energy of the yeast plant, and not (as was taught by Liebig) a result of the development of the yeast plant. One remarkable characteristic of ferments was the great disproportion between the results which it was capable of producing when placed in a suitable medium and the exceedingly small quantity of material which could produce those results. It might be compared to the multiplication of infectious material, such as vaccine, when inoculated on the body. In further studies

Pasteur ascertained that while some ferments required air to enable them to live and flourish, others were killed by its action. Hence he divided all ferments into two great classes—those which did not require air, or *anaerobes*, and those which did require air, *aerobes*. Subsequent investigations into another process—the idea of which even was disgusting, viz., putrefaction—convinced Pasteur that it, like ordinary fermentations, was due to a specific ferment, which did not require air for its development, and which alone produced the phenomena of putrefaction; a process strictly analogous to fermentation, the two differing only in one circumstance—that in putrefaction offensive smelling gases were given off. The important bearing of putrefaction upon the organic matter of the world was illimitable, the ultimate fate of all animal and vegetable matter being the same—viz., its restoration to the air, effected by the three omnipotent processes of fermentation, putrefaction and slow combustion. The first great work which Pasteur was engaged in was the state of the wine disease, the remedy of which he discovered as well as the cause. He was next engaged in the investigation of the silk worm disease. Next Pasteur was engaged on the state of the disease affecting vinegar and beer, and this also he proved to be due to a specific minute fungus. When this was excluded the liquor remained unaffected. The central point of investigation—the application of the germ theory to the higher animals—was then mentioned, and the strict analogy between the process of fermentation and certain kinds of disease (such as fevers) was described. It was, however, in surgical practice that the truth of the germ theory first bore its fruits, and to England, in the person of Sir Joseph Lister, was due the glory of having established a method of surgical practice which had not only rendered familiar operations free from danger, but had