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ANTISEPTIC SURGERY.

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MR. PRESIDENT AND GENTLEMEN,—

Having had great facilities for observing the conduct of surgical cases treated under what is known as the antiseptic system during my student course at Edinburgh University, and after my graduation as House Surgeon in the university clinical wards under Mr. Lister's charge, I thought perhaps a few remarks on the principles and practice of that system might be interesting, and have therefore drawn up very briefly, for so important a subject the grounds on which the theory of the system rests, and the practical deductions which are drawn from it.

In the first place, let us clearly understand, what exactly is the meaning of the term antiseptic system. It means the method of treating a surgical case in such a manner as shall effectually prevent the occurrence of putrefaction in the parts concerned. And if we really can accomplish this, what a change in behaviour do many surgical cases undergo. Indeed, it makes surgery very different from what it used to be. Injuries formerly regarded in the gravest light become comparatively trifling, and some diseases rarely admitting of cure terminate most satisfactorily in perfect recovery. This is a strong statement to make, but not stronger than I think is justly due to the change wrought in surgical practice by this system. The guiding principle, which regulates all details down to the very minutest in carrying out the practice to obtain such results, is the germ theory of putrefaction.

* Read before the Canadian Medical Association, August, '76.

This theory declares, "that putrefaction in organic substances under atmospheric influence, is effected by living organisms developed from germs floating in the atmosphere as constituents of its dust, and not by the oxygen of the air as was formerly supposed." As perhaps the proofs of this theory as they were gradually elaborated, are not very familiar to some, and as an accurate conception of the germ theory is so essential to success in carrying out antiseptic measures in their integrity, it will be well I think to go somewhat into detail, into the experimental proofs on which the theory rests.

Ever since Harvey, in 1651, from his researches into generation, announced the law "*omne vivum ex ovo*," the belief has been very general that all animals and plants are derived from eggs or seeds; that vitality is always transmitted and never created; and that where these fundamental principles cannot be recognized, the minuteness of the germs and their wide diffusion throughout nature and more especially in the atmosphere, offer a sufficient explanation of what may appear mysterious. Nature, it was argued, must be uniform in her operations and analogy warrants our supposing that the same law of generation, which applies to the higher animals and plants is equally applicable to the lower. Many scientific men have from time to time, as the result of their investigations, doubted the truth of this reasoning, and were led to believe in an equivocal or doubtful generation of the lowest forms of animal life, that is to say in their origin without pre-existing cells or germs of any kind and therefore independently of parents, and at the present time scientific men are divided in opinion, as to the numerous forms of life that spring up in putrescent and fermented fluids, one side holding the doctrine of hetero-genesis or spontaneous generation—the other homo-genesis or generation from parents. The former theory has had able advocates in Pineau, Pouchet, and Hughes Bennett; while the latter theory, or that of atmospheric germs, has been powerfully supported by Schwann, Pasteur and Lister, especially by Pasteur, who by new experiments has revived the doctrine that fermentation and putrefaction are not chemical processes, as has been maintained by Liebig, but physiological phenomena dependent on living germs derived from the atmosphere.

The first great step towards the establishment of the germ theory, was made in 1836 by Cogniard