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AGENTS.—DAWSON BROS., Montreal; J. & A. McMILLAN, St. John N.B.; GEO. STREET & Co., 30 Cornhill, London, Eng.; M. H. MAHLER, 23 Rue Richer, Paris.

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## BACTERIA.

It may be interesting to our readers to have set before them in a short space the principal facts known to the scientific world in regard to bacteria, these little organisms which have so interested the medical mind in connection with their relation to disease. The subject is one of immense importance, and some of the best scientific minds of the day are bent upon the task of investigating the true position of these organisms, whether they stand in the relation of cause or effect to those diseases with which they have been especially associated.

But few investigators look at present with favor upon the theory that disease is caused by chemical changes—i. e., that some *materies morbi* having found its way into the body, sets up a catalytic action and induces morbid processes in the various tissues which are affected in the particular disease. This is, speaking broadly, the idea which held the medical mind for years, and which even yet has a few well-known adherents; but the great majority of scientists and original investigators unhesitatingly affirm that disease is caused by living organisms, germs, which introduced into the system multiply indefinitely and thus excite the morbid processes characteristic of each type of disease.

This germ theory of disease is certainly the one which commends itself to the present bent of the scientific mind. When Koch announced in 1882

that he had discovered the bacillus which was specific in tubercle, he gave a great impetus to the investigations then being made as to the influence of bacteria upon disease. These investigations, owing to the imperfection of instruments, the ignorance of the methods of staining, and the want of precise information on the part of botanists regarding these schizomycetes, had been carried on in a desultory manner for years. Bassi discovered, as early as 1835 the cause of muscadine in silk-worms. The fungus of favus was discovered by Schonlein in 1839, that of thrush a few years later; so that though it is only within the past few years that much progress has been made in the investigation, it was commenced long enough ago.

The term *bacteria*, synonymous with *microbe*, has been given to microscopic particles of vegetable matter belonging to the *fungi*. These little organisms are practically omnipresent. Every breath we draw sucks almost countless numbers of them into the lungs. Examine a drop of decomposing animal fluid under the microscope, and you will find the fluid alive with minute particles of various shapes. Some mere points, others rod-shaped, others wavy lines, and all in a state of motion. Wherever decomposition goes on, these bodies are found; the air of our towns is as a sea in which they float in immense profusion, while even country air is not free from them, all awaiting favorable conditions for reproduction. The power of resisting destruction shown by most of them is great. Boiling water will not destroy all forms, e. g., *B. subtilis*; they may be subjected to freezing without losing the power of motion and reproduction. Fortunately however, the temperature of boiling water destroys all known pathogenic species. The name *Bacteria* is unfortunate, being the proper name of a single genus only, but it has come into general use and is now used in the same sense as *microbe*. They have been classified by Cohn, who calls them as follows:

1. *Sphero-bacteria* or micrococci.
2. *Micro-bacteria* or bacteria.
3. *Desmo-bacteria* or bacilli.
4. *spiro-bacteria* or spirillæ.

The first consist of minute drops of protoplasm, having delicate cell walls; they multiply by fission, forming clusters (*zooglea*), and chains. They are found in myriads wherever moist organic matter is decomposing, and are active agents in the process