

other class carry the process on to vinegar, and another class carry a step further, until they leave the organic matter as inorganic in a form fit for new growth.

Life could not continue without the work of the bacteria, and they are useful in many ways. They cause fermentation, giving us wines, beer and vinegar; they assist us in very making bread, butter and cheese; they prepare the foods for the seeds that we sow and the seeds sown by the wind; and for all the plants that grow; they rot the flax we put into the dam; they assist in the digestion of the food we eat, and all who eat and live. They help to build up and they do all the tearing down, except what is done by fire and other chemical agencies. They are at the beginning of life, beyond our reach, and in their work of decomposing organic matter, if not the fittest, they are the last to survive.

Only a few of the known species of bacteria plant themselves, and grow in the tissues of living animals, and cause disease. This parasitism of the bacteria is analagous to the parasitism in the higher and larger plants. The parasitic habit is acquired, as the carnivorous habits in certain plants has been, in the struggle for life. The bacteria are nearly all saprophytic, that is, they grow wholly in dead organic matter.

The parasitic bacteria have great difficulty in starting growth in living tissue; the living tissue cells prevent their intrusion, and the bacteria are obliged to secrete a poison to aid them in their efforts.

When the bacteria get the upper hand in the local contest they commence growing, and producing poison in large quantity; disease then sets in and a general struggle takes place. This struggle may last but an hour or even less, as happens in some

acute infectious diseases when very virulent, or it may last a month, when the patient always has the advantage from the animal cells becoming acclimated to withstand more poison than the vegetable cells of the bacteria. The bacteria are vulnerable to their own poison as to their products when these reach a certain strength. In chronic diseases the struggle may last one, ten or twenty years, but however long or short the struggle may be, when the bacteria go under they get defeated by setting up a stronger resistance to their poison than they possess. It is impossible, therefore, for another attack to occur for a length of time, and in the vast majority of cases the immunity the bacteria have established to the special disease caused by them in man or animals lasts for life.—A. W. Smyth in M. D., The Irish Bee Journal.

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