

through the lungs, and gradually make their way into the fluids of the lymphatics and blood-vessels. Should they find a basis of operation congenial, they will grow and multiply rapidly, and develop bacterial disease. The albuminoids and carbohydrates afford grand centres for their operation. They are active factors in putrid decomposition; transform sugar into lactic acid; lactic acid into butyric acid; alcohol into acetic acid, and sugar into a slimy gum. When these products of their activity find entrance into the human system, specific bacterial disease is produced. Then it becomes a question which shall prevail, the tissue cells of the system, which by their inherent power may overcome bacterial influence, or the bacteria overpower the system and induce death. They have a congenial soil when in active operation. The bacillus of splenic fever and consumption, and the bacillus anthracis, have their own characteristics, and may by cultivation part with their dangerous power, as far as promotion of disease is concerned.

Pasteur has demonstrated beyond doubt, that by introducing a minute quantity of diseased structure charged with its specific bacteria, into the tissue of healthy animals, that the identical disease is reproduced. What is still more interesting is the fact, that virulent and poisonous bacilli, can by cultivation, be so changed, as to part with their poisonous power. Here comes in the vaccinating principle of the bacillus; its prophylactic action against invasion of the original disease. We constantly observe in practice, how an attack of scarlet fever, measles, etc., almost precludes the possibility of a second such occurrence. The precise power is difficult to define, and parasitic action may be the chief factor in the remarkable protection. We know well what vaccination has accomplished, and the same principle may yet be so arranged as to place under control many zymotic diseases which still scourge the human family. The question of the precise relationship of organisms to the processes of putrefaction and fermentation, is beset by diversified views; followers of Pasteur's germ theory, holding that bacteria are invariably the initiators of these chemical changes, while others contend that putrefaction and fermentation may take place, independent of these low forms of life. The question of cause and effect, as associated with bacteria, is an interesting problem, and now engaging the

attention of master minds, particularly with reference to the cholera microbe, and the bacillus of tubercle, and let us hope that the result will be both practical and useful, as far as the arrest of disease is concerned. While on the subject of the cholera microbe let me remark, that judging from present indications, cholera is most assuredly gradually moving onward in the course previously taken in 1832 and 1854. In Paris the daily death-rate is quite alarming. The present is the time for activity in carrying out sanitary precautions, so as to be prepared for the advent of spring. Through steam, commercial communication has rapidly increased, and centres of trade thus placed in close relationship, hence the necessity for prompt action. Sanitary rules and regulations are of little service, unless carried into operation. Prevention is a powerful factor, and let our efforts be so directed as to guard the best interest of our people. In this brief introductory I find the subjects so closely interwoven, that with difficulty can the line of thought be isolated. Physiology and pathology have so much in common that they never can be separated, because as sciences they have the same organs and the same functions, under normal or abnormal conditions. It is important that the normal or abnormal condition of an organ should be studied, on the principles of a mutual inter-course. Functional activity and organic change are co-operating powers closely interwoven, which must be noted carefully, in the broadest sense, as progressive evolution in tissue occupies the place of the once healthy organ. Thus comes in the important application of physiological discovery, as an additional prospect for the relief of diseased structure. Lymphatics and leucocytes are points at present possessing more than an ordinary degree of interest, as to the precise part they play in the structure and functions of the system. Blood and lymph are the chief juices of the body, and on that account the purity or impurity, the normality or abnormality of either, directs, controls and determines the powers of the system in structural development, as well as decay. According to Zeigler, the lymph is merely the liquid transuded from the blood vessels, together with certain products of tissue metabolism, and certain matters taken up by the lacteals from the outside. The sources of lymph being so diversified, it is not surprising that occasional morbid changes in its composition