

tion is invariably retarded. On the other hand, as every housekeeper knows, the slightest indication of mould is a sure proof of incipient decay. Although the decomposition of organic matter through the influences of vegetable growth may seem opposed to the teachings of chemistry, there is no real antagonism, as both forces may come into operation. Certain chemical solutions are known to sustain bacteria. Several of these were here named in which bacteria are known to grow rapidly. On the other hand Pasteur and Tyndall have shown that even organic substances will remain long without evidences of putrefaction, though this speedily occurs when the first step towards it is taken by the introduction of vegetable life.

The modern treatment of wounds shows the pressing importance not only of preventing decomposition, but of recognizing what are its causes. Many successful practitioners agree with Dr. Gamgee who says: "That he has never been troubled with the idea that infection is always floating in the atmosphere ready to settle in the shape of impalpable and implacable germs into any breach which may be made in the surface of a living body, and that he believes life to be the great antiseptic." Life is undoubtedly the great antiseptic, and tissues instinct with life will best resist the malign influence of vegetable forms; but when wounded their fluids are not in their normal condition, and it is carrying out the principal of both rational and antiseptic surgery to diminish their quantity and thus deprive vegetable growth of food for decomposition.

As regards the practice of medicine it is an important though difficult question to determine to what extent vegetable forms operate in the production of ordinary fevers,—that they do so to a considerable extent is the current belief of the medical profession. Dr. Murchison in '75 at the Pathological Society pointed out a chemical process, having resemblances to the multiplication of contagion. Several fermentations are now recognized to be due to the growth of distinct vegetable forms. Others are more purely chemicals, such as those produced by heat and acid. A peculiar vinous ferment has also been extracted from the madder root. These all induce chemical change without themselves entering into the resulting product. May not decayed or changed albuminous compounds act as similar ferments when introduced into the fluids of the body?

Fever-producing agents, it is now well recognized find a ready vehicle in water, but the separation of the active agent from the liquid is difficult, though recent experiments seem to show not impossible. Dr. Burdon Sanderson, by precipitating with alcohol and then extracting with water, obtained an extract which caused fever. He shows that this extract is not really in solution, though it has passed through filtering paper, it still contains particles which have the power of causing fever. He has ascertained that no animal poison is really soluble, and adopts a plan of filtering through porcelain by which a filtrate is obtained that does not produce fever; this filtrate differs from that which has passed through paper in this important particular, it is barren. The first filtrate has no bacteria, but particles are seen in it. An hour after bacteria are found in considerable numbers. The filtrate through porcelain shows no bacteria, and 24 hours afterwards remains barren. Now here the natural inference is that the fever-producing agents are to be found in particles and yet it is possible that an animal fluid in passing through the fine cells of porcelain may be chemically changed and that the absence of fever-producing energy is due to this change. It is well understood that all bacteria found in diseased tissues are not to be regarded as causes of disease. When an animal fluid begins to decompose bacteria are seen and the forms of vegetable life which appear depend upon the composition of the fluid. One specimen of urine will shew the bacterium terms; if sugar be present the *tortula cerevisiæ* also appears. In other specimens small round cells appear sometimes isolated, at other times in chains. So also it is probable that according to the tissue decomposing, different forms of bacteria are present, each form as it were choosing that tissue most suitable for its growth. Hence even if after death bacteria are found in any tissue, they cannot at once be regarded as causes of disease. It may be that in the dying body, the bacteria infesting the surface of the body and mucous-lining of the intestines in innumerable multitudes, may pass inwards to lay hold of the elements that are dead before the life of the whole body has ceased. This may serve to explain how it is that in different diseases similar forms of bacteria appear. It has been suggested that after all the diversity which is seen in fevers, several may depend upon the same bacteria, modified in the course of time with the circumstances of its growth. Should this seem start-