

cesses of fermentation as exhibited in the early stages of caries as Prof. Miller, of Berlin. He, in a very extensive series of experiments, most carefully planned and executed, was enabled to establish truths which heretofore could be held but as conjectures.

In the first of these he established the initial stage in the chemical theory, namely, that saliva, to which has been added a sterilized organic body as starch or sugar, will become acid in four or five hours, indicating the splendid opportunity organisms of the saliva possess in the mouth during certain periods of the day or night, particularly the latter, to uninterruptedly propagate and exert their destructive influence on the surrounding teeth. It was already known that an active unorganized ferment ptyalin already existed in the saliva, but Miller demonstrated the organism producing the acid to be very different in its nature and properties; that it was an organized ferment, and was perfectly capable of sustaining and reproducing itself in a suitable pabulum. To determine the nature of the acid produced by this process of fermentation was a problem of no great difficulty, and a few experiments proved what was already conjectured, that it was no more than the ordinary ferment, lactic acid.

More important to the development of dental science was the demonstrating of artificially produced decalcification and caries in a sound tooth, by placing it in a suitable pabulum: a solution of beef extract and cane-sugar, which after being sterilized was infected with the fungus already referred to, thus proving the correctness of the chemical theory. With these agents, fungi, and a suitable soil on which it may feed and luxuriate, aided indirectly by a uniform temperature, moisture and free oxygen, it requires but a very superficial knowledge of the nature and habit of fungi to comprehend how an acid, their product, will almost invariably be found, not necessarily in the entire mouth, that may be alkaline, but in spaces adapted for the lodgment of food particles, in the fissures, sulci and interdental spaces of the teeth.

We do not wish to be understood as stating that lactic acid is the only acid, or even the only destructive acid, of the oral cavity. The acidity of the mucus secretion is well known, and while it does not possess decalcifying properties to the same degree as lactic acid, it assists very materially the destructive influence of lactic acid in cavities bordering upon the gum margin, if indeed it is not the sole cause of decalcification in such cases.

Other fungi than the one we have been considering are also to be found in the secretions of the mouth, Black having recognized as many as twenty-two varieties, and whatever their influence may be, it appears evident that so far as caries is concerned they are not particularly harmful.

Having established the fact that caries is to a certain extent