

case with leaven, or, as it is sometimes called, ferment or yeast. One sees, from the commotion among its particles, that a change is going on in its internal condition, and that new compounds are forming out of its elements. Introduced in that state into the meal, it communicates a change to the whole mass, analogous to that which it is itself experiencing. This is called fermentation. In bread, it is not allowed to proceed very far, but is arrested by the heat of the oven.

It is found that the remarkable power of leaven to change the character of compounds depends on a peculiar principle which it contains, called *Diastase*. This substance is so powerful in its action, that one part of it, mixed with two thousand parts of starch, will change the whole into sugar in a few hours.

It had long been a great mystery how so small a quantity of one substance should be able to effect such a change upon so large a mass of another. But the discovery that leaven in its active state contains a fungous plant, which multiplies with prodigious rapidity, and is sustained by the matter into which the leaven is introduced, furnishes an explanation. This *yeast plant*, as it is called, consists of myriads of cells, scarcely more than one three thousandth of an inch in diameter; and it has the power of converting sugar into alcohol and carbonic acid, and finally into vinegar. All the steps of the process by which the starch of flour is changed into these various products may not be fully understood; but it seems settled that the starch affords the nourishment to the plant, at least in all ordinary cases of fermentation.

The history of catalytic changes, then, furnishes us with two principles of importance in elucidating the text. The first is, that it needs but a very small quantity of leaven to