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J. H. Balfour M.D. F.R.S.E. F.L.S.^a

^a Bot. Edinburgh

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XXI. *On the Growth of various kinds of Mould in Syrup.* By
J. H. BALFOUR, M.D., F.R.S.E., F.L.S., Prof. Bot. Edinburgh.

READ 8TH JANUARY 1852.

MUCH interest has been recently excited by statements relative to the Vinegar Plant, as it has been called. This plant, which has a tough-gelatinous consistence, when put into a mixture of treacle, sugar and water, gives rise to a sort of fermentation by which vinegar is produced. After six or eight weeks the original plant can be divided into two layers, each of which acts as an independent plant, and when placed in syrup continues to produce vinegar, and to divide at certain periods of growth. The vinegar thus produced is always more or less of a syrupy nature, and when evaporated to dryness, a large quantity of saccharine matter is left. Various conjectures have been hazarded as to the origin of the so-called vinegar-plant, some stating that it came from South America or other distant regions, and others that it is a spontaneous production. Lindley states that it is a peculiar form of *Penicillium glaucum*, or common blue mould. There seems to be no doubt that it is an anomalous state of mould or of some fungus, and the peculiarity of form and consistence appears to be owing to the material in which it grows. In place of producing the usual cellular sporiferous stalks, the mycelium increases to an extraordinary extent; its cellular threads interlacing together in a remarkable manner and producing one expanded cellular mass, with occasionally rounded bodies like spores in its substance. The cellular filaments may be seen under the microscope. The tendency to divide in a merismatic manner is common in many of the lower classes of plants, and this seems to be what occurs at a certain period of growth, when the plant divides into two horizontal plates. If the plant is allowed to continue growing, it forms numerous plates one above the other. The anomalous forms of fungi in certain circumstances have lately excited much interest, and Mr. Berkeley has called attention to some of the remarkable transformations which they undergo. These are such, that many forms considered as separate genera are now looked upon as mere varieties of one species.

That mould of various kinds when placed in syrup shows the same tendency to form a flat gelatinous or somewhat leathery expansion is shown by the following experiments.

Some mould that had grown on an apple was put into syrup on the 5th of March, 1851, and in the course of two months, there was

a cellular flat expanded mass formed, while the syrup was converted into vinegar. Some of the original mould was seen on the surface in its usual form.

Some mould from a pear was treated in a similar way with the same result ; also various moulds growing on bread, tea, and other vegetable substances ; the effect in most cases being to cause a fermentation, which resulted in the production of vinegar.

In another experiment on the 8th of November, 1850, a quantity of raw sugar, treacle, and water were put into a jar without any plant being introduced, and they were left untouched till March 5, 1851. When examined, a growth like that of the vinegar plant was visible and vinegar was formed. The plant was removed and put into fresh syrup, and again the production of vinegar took place.

It would appear from experiment, that when purified, white sugar alone is used to form syrup, the plant when placed in it does not produce vinegar so readily, the length of time required for the changes varying from four to six months. There may possibly be something in the raw sugar and treacle which tends to promote the acetous change.