

umes, spoke of the so-called molecular weight as an unknown quantity, although, in accordance with that principle, this molecular weight, or, properly speaking, this equivalent weight, is simply deduced for any body the specific gravity of which is unknown.

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#### MISCELLANEOUS.

**SOLUTION OF STARCH IN LEAVES.**—A diastatic ferment can be extracted from green leaves in the following way:—The leaves are bruised in a mortar, and covered with cold water; after 24 hours they are pressed, and  $1\frac{1}{2}$  volumes of 90° alcohol added to the juice, which is then filtered. The same quantity of alcohol is again added to the filtrate, and after a few minutes, the clear liquid is filtered off and the precipitate washed once or twice with alcohol of 65°. The diastase is obtained in solution by dissolving the washed precipitate in water and filtering. 10 c.c. of such a solution is added to 0.5 gram. of starch into a paste and kept at 63°, and the formation of sugar is shown by comparison with a similar flask to which a few drops of chloroform have been added. The leaves of the potato, dahlia, artichoke, maize, beet, castor oil plant, and the unripe seeds of the opium poppy, sunflower, and castor oil plant, have all yielded positive results. Microbes have not been found in the solution, and the starch was in all cases transformed into a mixture of reducing sugar and dextrine. To connect this with the formation of sugar in growing plants, the author shows, by a series of experiments that, although diastase will only act on starch paste and not on crude starch at 60°, 57°, and 50°, yet at 42° and 34° it always transforms a little crude starch into sugar. The quantity of sugar produced reaches a limit in twenty-four or thirty-six hours; but if it be dialyzed out of the solution as fast as it is formed, the formation is rendered continuous. The same result is produced by diluting the solution, so that it seems to be the accumulation of sugar which puts an end to the diastatic action.

Cuboni's experiment, therefore, in which the disappearance of starch from a vine leaf, placed in the dark, was prevented by an annular incision in the stem above and below the leaf, does not negative the idea that starch is transformed into sugar by a diastatic ferment in the leaf: arrest of sugar formation would, under these circumstances, be brought about by accumulation of sugar in the isolated leaf. When only one incision is made, either above or below the leaf, the starch disappears as usual; and when a grape cluster, either in flower or fruit, is opposite the leaf, the starch disappears, even when the stem is cut through above and below. It appears from this that the demand for fresh supplies of carbohydrates in some centre of growth will drain off the accumulated organ with sufficient rapidity to render its formation continuous.—*Ann. Agronom.*, 12, 200-203.