

For the information of such of your readers as may be acquainted with chemistry, we add the analysis of the different substances contained in cane-juice, by which they will perceive that they all consist of the same ingredients, only in different proportions, viz., carbon and the two elements of water, oxygen and hydrogen, and in albumen and gluten, nitrogen, on which, in all probability, depends their fermenting qualities.

By a reference to the foregoing table it will be easily understood how slight a change in the proportion of the ingredients of any one of the substances contained therein will convert it into an entirely different one. In chemistry we are able, to a certain extent, to imitate the operations of nature; but we must follow in the same course laid down by her: thus, we can convert woody fibre, or saw-dust and starch, into sugar, gum, alcohol, and acetic acid; but we cannot convert alcohol, acetic acid, or gum into sugar, starch, or woody fibre; and of such importance is a slight alteration of the proportions of these elements—carbon, oxygen, and hydrogen—that the abstraction of carbon from sugar, and the addition of a portion of the prime support of life, vegetation and combustion, oxygen, changes the harmless sugar into the most violent of poisons, oxalic acid, which consists of 26·57 carbon, 70·69 oxygen, and 2·74 hydrogen.

Let us now examine the action of lime on sugar, and we will find it equally, if not more, injurious than on the other substances. Sugar is capable of dissolving half its weight of lime, by which its sweet taste is destroyed, and it becomes converted into gum, the lime abstracting carbonic acid from it to form a carbonate of lime or chalk. It will be seen by the above table that—

100 parts of sugar contain 41·47 carbon.

100 parts of gum contain 41·23 ditto.

Difference . . . 24

So that, if we extract 24-100ths of a grain of carbon from 100 grains of sugar, we convert them into gum. Let us suppose that about two ounces of lime, or say 1,000 grains remain in solution in a pan, say 200 gallons of liquor, those 1,000 grains of lime will require 761 of carbonic acid to convert them into carbonate of lime or chalk, 100 grains of which consist of.

56·2 lime.  
43·8 carbonic acid.

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100·0

So that 1·761 grains of chalk consist of . . 1,000 lime.  
761 carbonic acid.

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1,761

Now 100 grains of carbonic acid consist of . . 27·53 carbon.  
72·47 oxygen.

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100·00