

gents, but the following were those obtained.

Moore's Test.—Equal parts of the sap and caustic potass were boiled for about two minutes; the fluid assumed a dark oily yellow or sherry color, which it retained. This "dark sherry color," will at any time result by boiling grape sugar, potash and distilled water, as shown by experiments in the *Lancet* by Dr. Hassal.*

Trommer's Test.—A solution of the sulphate of copper was added sufficiently to give the sap a light blue color, a deposit of phosphate of copper occurred; † caustic potass was then added in excess, when a heavy precipitate of hydrated oxide of copper fell, which became re-dissolved in the excess of alkali, forming a dark-blue solution. On heating to ebullition, a most marked deposit of red sub-oxide of copper fell.

Cappozzuoli's Test.—A few grains of blue hydrated oxide of copper were added to some of the sap, in a conical glass vessel, and the fluid rendered alkaline by adding caustic potass. The fluid assumed a reddish tinge, and after the lapse of a few hours the edge of the deposit of oxide obtained a yellow color, which extended throughout the entire mass from the reduction of the oxide to a metallic state.

Muneme's Test.—A few drops of sap were placed on a strip of white merino, that had been previously acted upon by a strong solution of chloride of tin, and then dried. On exposing it to a temperature of from 260° to 300° Fahrenheit, it immediately produced a dark-brown spot. This is one of the most convenient and delicate tests that has been as yet discovered, and one of easy application, for strips of this saturated cloth may be carried about like the ordinary test papers. "By the help of this test the presence of sugar in the urine can be readily detected. Ten drops of diabetic urine, diffused in half a pint of water, would in this way yield a brownish black spot. Ordinary urine, urea and uric acid, produce no result of this kind."**

Nitrate of Silver Test.—On adding a few drops of a solution of nitrate of silver, nothing was observed, but on adding some caustic ammonia, a white precipitate was formed, which was reduced by a very slight heat, the metallic silver attaching itself to the surface of the vessel.

All these tests were satisfactory and clearly demonstrated the presence of sugar. Some specimens of sap, however, are richer than others in the amount of sugar present, and consequently possess a higher specific gravity. This fact is well known to some of the sugar-makers.

On reference to many standard works of

authority, † I find quotations from a paper published many years ago in the American Philosophical Society's Transactions, ‡ by Dr. Rush, giving an account of the sugar maple tree. All the tests here applied, were at that time unknown, and although I have been unable to refer to the original paper, I find that no examination of the sap itself was made.

Dr. Rush has described the process of manufacture in the States, which is a very simple one, as practised by the farmers.

In Canada the sap is procured and manufactured into sugar as follows:—

The tree is bored on its south side with an augur, or a brace and bit, or a gouge, or rounded chisel, until the hole is nearly two inches deep, in some cases it is much less, the diameter being from $\frac{3}{4}$ to $1\frac{1}{4}$ inches. Care must be taken that the alburnum or white bark is not penetrated more than half an inch, as experience has proved that a greater discharge of sap takes place at this depth than any other. It is neatly cleaned out, and a small and thin pine or cedar spile, or spout, is then tightly introduced to direct the flow of sap into the bucket or trough. In some parts of Lower Canada, instead of boring a hole, the *habitans* chop a pretty large opening with a hatchet, this would seem to answer well in obtaining the sap, but it very much injures the tree and frequently destroys it. When the sap ceases running on the south side, the tree is again bored on the east or west side, seldom on the north side, as that side furnishes but a small quantity of sap, supposed to be owing to the want of a warm atmosphere from that quarter.

Some trees have two openings made at the same time, a few inches from each other; others have holes in the most convenient place, without reference to the points of the compass.

Mr. Dillon, of Longue Pointe, who has kindly replied to a communication of mine upon the subject, states that there are two kinds of drifter besides the spout, one made of a piece of bent hoop, and the other a flat piece of cedar; the former made so as to fit the incision of a gouge, and the latter driven into the tree after tapping with an axe. He considers the tapping by the brace and bit as preferable to either the gouge or the axe, as the opening may be plugged at any time to prevent the entrance of air, which might injure the tree.

The age of the tree tapped is uncertain, but the diameter of the trunk must not be less than 9 or 10 inches; it attains its full growth in about 20 years, and is then from two to three feet in diameter.

Dr. Rush states that tapping does not injure

* March 8, 1851.

† Traces of phosphates were present.

** London Medical Gaz, April 5, 1850.

† Ure's Dictionary of Chemistry.—Thomson's Organic Chemistry. Ure's Dictionary of Arts and Manufactures.

‡ Vol. 3. p. 64.