acted still more rapidly. On the other hand, no action took place on the employment merely of dilute sulphuric acid.—*Artizan.*

THE CLOVES OF COMMERCE.—The article known in commerce as cloves, are the unopened flowers of a small evergreen that resembles in appearance the laurel of the bay. It is a native of the Molucca, or Spice Islands, but has been carried to all the warmer parts of the world, and is largely cultivated in the tropical regions of America. The flowers are small in size, and grow in large numbers in clusters at the very ends of the branches. The cloves we use are the flowers gathered before they are opened, and whilst they are still green. After being gathered, they are smoked by a wood fire, and then dried in the sun. Each clove consists of two parts, a round head, which is the four petals or leaves of the flower rolled up, inclosing a number of small stalks or filaments. The other part of the clove is terminated with four points, and is, in fact, the flower-cup, and the unripe seed-vessel. All these parts may be distinctly shown if a few leaves are soaked for a short time in hot water, when the leaves of the flower soften, and readily unroll. The smell of cloves is very strong and aromatic, but not unpleasant. Their taste is pungent, acrid, and lasting. Both the taste and smell depend on the quantity of oil they contain. Sometimes the oil is separated from the cloves before they are sold, and the odor and taste in consequence is much weakened by this proceeding.

LIQUID GLUE.—*By M. Sc. Dumoulin.*—Chemists well know that heating and cooling repeatedly a solution of glue (gelatine) in contact with the air, it loses its property of becoming a jelly. M. Gemelin has shown, that a solution of fish-glue in a sealed tube, placed in a water bath heated to the boiling point for several days, exhibits the same phenomenon i.e, the glue remains liquid,does not gelatinize upon cooling.

The change effected, is one of the most difficult problems to resolve, of organic chemistry. It appears to be a product of the action of the oxygen of the air and the water, upon the glue as demonstrated from the action of a small quantity of nitric acid, on a solution of strong glue. We know that on treating gelatine with an excess of this acid in the presence of heat, it is converted into malic and oxalic acids, fat, tannin, &c. This does not occur when we treat the glue dissolved in its weight of water, with a very small quantity of nitric acid, we obtain only a strong glue which preserves a long time its primitive qualities, and which no longer has the property of gelatinizing. In this manner the glue sold in France under the name of liquid and unchangeable glue, is fabricated. This glue is exceedingly convenient for cabinet-makers, joiners, pasteboard manufacturers, toy-makers, &c., since it can be used cold. It is prepared as follows :—

Dissolve 2 pounds of strong glue in one quart of water in a glue-kettle, or in a water-bath, when the glue is entirely melted, add little by little, to the amount of 10 ounces of strong nitric acid. This addition produces an effervescence due to the disengagement of hypo-nitric acid, when the whole of the acid is added, remove the vessel from the fire, and leave it to cool. I have preserved glue thus prepared, more than two years in a stoppered flask, without its undergoing any alteration. This liquid glue is very convenient in chemical operations. I have employed it with advantage in my laboratory, for the preservation of different gasses, the same as lute, covering the little bands of linen with the glue.—*Comptus Rendus,* Sept. 27, 1852.

The liquid glue prepared as above directed, we can recommend from our own experience; it is readily and cheaply made, and must prove an invaluable substitute for solutions of gum-arabic, paste, &c. The proportions mentioned are those best adapted for ordinary use, one need not however be very particular on this point. If the glue should gelatinize in the cold, the slightest warmth will liquefy it again.—*Br.Pa.*

PRESERVATION OF EGGS.—*By M. P. Chambordt.*—By submitting a thin stratum of the white and yoke of eggs, about one-twefth of an in. thick, upon glass or porcelain plates, to the heat of an oven, a mass will be obtained after 24 hours drying, readily pulverized, and which is not altered by the action of the air after drying again a day. Each pound of powdered egg thus prepared, when desired for use requires two pounds of cold water, with which it is to be beaten up, and is equivalent to 50 eggs, and may be used for omelettes, pastries, or other culinary purposes.—*Belgique Industrielle.*

THE NEW RAILWAY LOCOMOTIVE.—*Mr. McConnell's, by Fairbairn, of Manchester.*—The first experimental trip made with this locomotive on the London and North-Western line, from Wolverton to London, was perfectly satisfactory, and no doubt was entertained that the distance from London to Birmingham could easily be accomplished in the time suggested—two hours. The engine being new, the highest speed obtained was 60 miles per hour. One peculiar novelty is that the steam pipe presents a broad flat surface to the heated air as it passes the tubes, so that it is "dried" as it passes into the cylinder. The pistons and rods are in one piece of wrought-iron, thus diminishing the weight from 3 to 2 cwts., reducing the reciprocating resistance at a velocity of 60 miles per hour, from 140 tons to about 90 tons per minute. The springs are of India-rubber, on Coleman's patent; it has a Bourdon's steam-pressure meter, showing the pressure of steam in the boiler; and a Carrett and Marshall's steam-pump, to enable the driver to supply the boiler when not in motion. The cylinder-covers are of wrought-iron, only half the usual weight; and the axles are tubular, reducing the weight one-third.

NEW METHOD OF PROPELLING VESSELS.—Professor A. Crestadoro has just secured, under the new patent law, an interesting scheme for propelling vessels. He considers the use of paddles or blades to be a mistake similar to that which prevailed so long in the application of locomotives or railroads, and which materially retarded the progress of that invention, when, taking for granted the inability of the plain circumference of the wheels to propel the carriage, much labour and skill had been wasted in the contrivance of levers which acted on the road in a manner somewhat resembling the feet of horses. Now, as the apprehended insufficiency of the adhesion of the plain circumference of the wheels with the road to propel the carriage has been proved a fallacy, so he considers the necessity of paddles or blades, of whatever description they may be, as altogether fallacious, and that the best and cheapest mode of improving the propeller is to use simply the plain circumference of cylindrical drums. It is a natural supposition that a plain round surface should have no tractic adhesion with the water; but, on close examination it will be found that not only such is not the case, but, what is even more surprising, the tractic adhesion of a plain cylindrical drum is far greater than that of a paddle wheel of equal size. Taking for instance the steam-vessel Atlantic, whose paddle-wheels are of 35 feet diameter, and length of paddles 12 feet 6 inches, supposing a moderate immersion of 5 feet paddles—one pair of drums of equal size at equal immersion would displace a pair of cubic segments of about 135631 lbs. of water; or, what amounts to the same thing, a pressure of not less than 60 tons would act upon the drums as a tractic adhesion, which is by far superior to that afforded by the best method of paddle-wheels in the most favourable circumstances. Now the cylindrical propeller has the substantial advantage that it can be, when reduced to a moderate diameter, applied as well totally immersed, if it be (as proposed by the patentee) fitted into a semi-cylindrical case, with only such a clearance as is just sufficient to let the drum have a proper action, the other half-drum or semi-cylinder projecting out of the case for the propelling action.—*European Times, (Liverpool,) Nov.* 12, 1852.

New System of Manufacturing Sugar.

We have been favoured, says the London *Times,* with an opportunity of witnessing an improved process for making sugar, recently invented and put in operation by Mr.H.Bessemer, civil engineer, at his premises, Baxter-house, Old St. Pancras-road, and, in common with several gentlemen practically conversant with the subject who were present, have to express the high gratification we experienced at the results brought under our notice. In the present condition of our West India colonies every improvement in the manufacture of sugar, and everything that tends to cheapen its production, cannot fail to excite interest; and a brief description of this new process may not therefore be unacceptable to the reader. This we shall attempt to do in language as free from technicalities as the nature of the subject will admit of. In the manufacture of sugar from the cane the saccharine juice is by the usual system expressed by a roller-mill, which, on an average, obtains from 50 to 55 per cent. of juice; whereas the cane, according to the most eminent writers, contains 90 per cent., the remaining 35 or 40 per cent. being left in the "cane trash." Mr. Bessemer, by a great improvement on his original invention of the cane-press, is now enabled to obtain, by a principal of continuous pressure, from 75 to 80 per cent. without any additional cost. In order to produce granulated sugar from the juice of the cane, it is necessary to separate a large portion of the water in which the saccharine matter is held in solution. This has hitherto been effected by boiling, the water passing off in the form of steam. It has, however, been discovered, that the heat necessary to produce ebullition effects a rapid chemical decomposition of a large portion of the sugar under operation, which assumes a dark brown or blackish colour, and is perfectly uncrystallizable, in which condition sugar is commonly known under the name of molasses or treacle, and amounts to 40 per cent. of the entire quantity of saccharine matter present in the juice. In the new process just patented by Mr. Bessemer, this separation of the aqueous portion of the fluid is no longer effected by boiling, but is dependent on that beautiful law of nature by which evaporation is carried on spontaneously, and every shower of rain again vaporized, and caused to ascend in the atmosphere. To carry this into practice, a small pan only is required, in which is placed a screw of peculiar construction, presenting about 6,000 superficial feet of surface, which is kept wetted by slowly revolving in the fluid to be evaporated; and in contact with this wet surface some 10,000 cubic feet of warm atmospheric air is forced per minute by a common blowing fan. The aqueous portions of the solution are thus rapidly absorbed by the air, and pass off as a perfectly invisible vapor, while the temperature of the fluid is only 110 degrees Fahrenheit. The most remarkable fact is that the evaporation at this low temperature is equal to that of firepans of the same dimensions with a powerful fire beneath them. A vast amount of fuel is thus saved; and a still more important result obtained from