

for a few people to coat them with tar. While two of these were tarring the tiles, three others were employed to give them, receive them when tarred, and lay them in a corner of the kiln, where the heat was reduced to that of a vapour bath. When the kiln was quite cold the tiles were perfectly dried, but they had not such a shining coat as the former, because the great heat had caused the tar to penetrate their substance. Their pores were completely stopped, and they were rendered impenetrable to water. The five persons mentioned tarred four thousand tiles in six hours. Both these experiments did not consume a barrel of tar.

The roof for which these were used, is open to north, and exposed to all the violence of rains and storms. It was repaired in 1779, and not one of the tarred tiles is at all injured or decayed. They are covered with a very fine mass, and their surface is in as good condition as if the tar had been just laid on. On the other hand, several of those which had been set apart, supposing that they would resist the weather without any preparation, because they were thoroughly burned, are cracked, broken at the corners, or splintered on the surface.

Some persons think that tarred tiles would be the more durable, if they were powdered with iron filings and charcoal dust; but Count Von M. conceives that these substances would render the surface rough; and thus detain the water, while those coated with varnish would let it run off. He is of opinion however, that a mixture of lime and tar would be more beneficial, and thinks too that fats in general, whale oil, or the dregs of oil, would be equally adapted to the purpose, and still cheaper.

*Observations...* It is obvious that coal tar would do equally well as pine tar, for the purpose above mentioned, and be much cheaper, as has been remarked by the editor of the Philosophical Journal; coal tar will soon be easily procured, on account of the increased use of coal gas lights, in preparing which it is furnished in abundance, and which lights must, from their many advantages in time

supersede all other artificial lights for manufactories. The process recommended in this paper, must be also very beneficial for making bricks more durable in the fronts of new houses. But for the fronts of old houses, the method suggested by the Count at the end of his paper is preferable, as the oil would admit of the addition of red ochre, or some other colouring matter, so as to restore or improve the original colour of the brick work,

*Letters respecting De Luc's Electric Column; by Mr. Forster.*

*Phil. Mag.* xxxvi. 75.

Mr. Forster states that, "notwithstanding the changes which have happened in the state of the atmosphere, the small bells, which are in communication with De Luc's electric column, have continued to ring without ceasing from the 25th of March to the moment of inspection on the 23d of July. Although we have had of late heavy rain, accompanied with thunder and lightning, we have not had any very damp weather, which seems to be the most likely to stop the motion of the small clapper, by depositing moisture on the insulating parts of the apparatus. Mr. Forster mentions a mistake which he made in his first account of the electric column, (which is inserted in our 4th vol. p. 301) having there mis-called the ends of the column: as he has named that the zinc end, which should have been called the silver end, and the reverse. So that the effects on the electrometer of the coated jar, respecting the *plus* and *minus* states, were just what might have been imagined they would be. The mistake was owing to the silver and paper being connected together; for had the two metals been united, and the paper separate, the instrument would then have resembled more the usual construction of a galvanic trough; and Mr. F. would not then, he thinks, have been led into any error respecting the names of the ends or the poles of it.

M. De Luc has used paper covered with the copper foil, called Dutch gold, in his experiments, which though not so powerful as the silver

leaf, is preferable from its greater cheapness.

*Artificial Cold.*

*Phil. Mag.* xxxvi. 76.

Professor Leslie of Edinburgh, in continuing a series of experiments on the relations of air and moisture, has lately been led to a very singular and important discovery. *Without any expenditure of materials*, he can by means of a simple apparatus, in which the action of certain chemical agents is combined, freeze a mass of water, and keep it for an indefinite length of time in a state of ice. In the space of an hour he has, on a small scale, formed a cake of ice six inches in diameter, and three quarters of an inch thick. With very little trouble he can produce a permanent cold of 90 degrees of Fahrenheit below the temperature of the air, and might easily push it to 100 or 110. The professor is now engaged in prosecuting these fruitful researches, and will soon, it is hoped, favour the public with an account of this process, and of its chief results.

*Observations.* This discovery of professor Leslie, is of the greatest importance, if the facts stated of it are correct; which from the connections the editor of the *Phil. Mag.* is known to have with Edinburgh is extremely probable. For a method of freezing water *without any expenditure of materials* by a simple apparatus, must afford a never failing and inexhaustible supply of fresh water at sea, and thereby save much stowage in ships, contribute extremely to the health and comfort of seamen on long voyages, and render the operation of blockading enemies' ports, on which much of our security depends, more certain and effectual.

This invention will also be of great use in the salt works, affording a cheap method of bringing brine to the point of crystallization; the manufacture of nitre will also experience a similar benefit; as will all chemical processes of the same nature. And by its use the concentration of spirits, and of vinegar, may be performed more readily, and every species of distillation may be much accelerated.

The many benefits to be derived from a discovery so perfect, as this is announced to be, will, it is hoped, excuse this notice of it, preceding its description, contrary to the usual order of this department of the magazine; but it must be owned they naturally occasion some doubts whether the Edinburgh correspondent, or the editor of the *Phil. Mag.* may not have been mistaken in his assertion of this great degree of cold being produced *without any expenditure of materials*.

*Observations on the Effects of Magnesia, in preventing an increased secretion of Uric acid, by Mr W. F. Brande.* *Phil. Mag.* xxxvi. 8.

Mr. Brande has in this paper given farther particulars of the success of this medicine in calculous diseases, of which some account was given in a former number.

Four cases are related in which magnesia had the most beneficial effects; after the alkalies having been tried in vain. In the first case fifteen grains of magnesia were given three times a day; in the second case twenty grains night and morning; in the third case twenty grains every night the first period of taking it, and twenty grains night and morning at the second period. The fourth case being very remarkable from the magnesia having given great relief in the gout, as well as in the disease it was intended to remove, is selected for insertion at large.

CASE 4.

A gentleman aged fifty six, after recovering from a severe fit of the gout, voided constantly a large quantity of mucus in his urine, a symptom which he had never before noticed. There was also occasionally, abundance of red sand, consisting principally of uric acid, but he never had voided a calculus. His stomach was uncommonly weak; he was often affected with the heartburn, and an almost constant pain in the neighbourhood of the right kidney. He had been in the habit of taking tincture of bark, and other spirituous medicines, from a belief that the pain in his right side arose from the gout in his stomach.

He had already attempted to use