

leaf, is preferable from its greater cheapness.

Artificial Cold.

Phil. Mag. xxxvi. 76.

Professor Leslie of Edinb'urgh, 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 Edinb'urgh 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 Edinb'urgh 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

the alkalies, which had produced such unpleasant sensations in the stomach, that he could not be prevailed on to try them again in any form.

Under these circumstances he readily acceded to a new plan of treatment. He was directed to omit the use of spirituous medicines, and to take twenty grains of magnesia three times a day in water, but this operating too powerfully upon the bowels, the same quantity of magnesia was taken twice a day only, with an addition of five drops of laudanum to each dose.

This plan was pursued without intermission for three weeks, and he received considerable benefit, as far as concerned the state of the stomach, and pain in the region of the kidney. The urine, which was examined once a week, was also, on the whole improved, but it occasionally deposited a very copious sediment, consisting of uric acid, with a variable proportion of mucous secretion.

After a further continuance of the dose of magnesia for three weeks, the urine was often much loaded with uric acid and mucus; but these appearances, which before the use of the magnesia were continual, are now only occasional, so that the disposition to form a redundant quantity of uric acid is much diminished: it is also deserving of remark, that *there has not been the slightest symptom of gout* from the time of the last attack, which is more than a year back, a longer interval of ease than the patient has experienced for the last six years.

He has now discontinued the regular use of the magnesia; but on perceiving any unpleasant sensation in the stomach, he returns to it for a week or ten days, and then again leaves it off.

Mr. Brande tried the effects on the urine of various doses of sub carbonate of soda, with an excess of carbonic acid, of potash, of lime, of magnesia, and of carbonic acid, from which it appeared that the lime had very little effect, either in the form of chalk, or lime water, that the carbonic acid (which was found to be very grateful to the stomach) caused the phosphates to be voided in

solution in the urine; but when it was left off at any time, they were voided in the form of white sand, that the alkalies occasioned too copious and sudden a precipitation of the phosphates; and that the magnesia, even in very large doses, neither produced so rapid an effect on the urine, nor so copious a separation of the phosphates, as the alkalies did: and on this its value as a medicine in calculous disorders seems materially to depend.

African Hemp.

A species of hemp manufactured from the leaves of a particular kind of palm, which abounds in Sierra Leone, and its neighbourhood, has been recently sent to England; and being made into cord, subjected to experiments calculated to ascertain its strength, as compared with the same length and weight of common hempen cord, the result was very satisfactory, it being found that hempen cord broke with a weight of 43 pounds and three fifths, while the African cord did not give way to less weight than 53 pounds two fifths, making a difference in favour of the latter of 10 pounds in 43 pounds.

An account of the Method of Manufacturing Salt at Moutiers, in the Department of Mont Blanc. By M. Berthier, Mine Engineer.

Journal Des Mines.

Continued from p. 148, No. XXV.

The brine that runs along the ropes speedily evaporates, and leaves on them a crystalline deposition of muriate of soda which increases continually. In very fine weather, a boiling will yield all its salt in 12 or 16 hours; in general 27 boilings are passed in 45 days. By that time the ropes are coated very thick, so as to be sometimes 0.06 metres ($2\frac{1}{2}$ in.) in diameter; they are then stripped of their salt, which operation is called *abatue*, or a fall of salt. A small and very simple machine is used for this purpose, which has the advantage of stripping 46 ropes at once. It is formed of a piece of wood which serves as an axis to a large pulley cut in half, so as to form a