

## SCIENCE AND MECHANICS.

## ANCHOR ICE.

This is one of the most curious phenomena of nature, and as yet no satisfactory explanation of the mode of its production has ever been under our observation. It is well known that water freezes at thirty-nine degrees Fahrenheit, and that ice, being specifically lighter in water, swims upon its surface, forms a covering for it, and thus prevents entire congelation of all collections of fresh water in colditudes.

This is a wise provision of nature, otherwise our streams during the winter season, would become totally obstructed, or in other words, our rivers during the cold of winter would become solid masses of ice. Yet contrary to the ordinary operations of nature, we have in certain localities and under certain circumstances, precisely the result which nature has been careful to guard against. During the past winter unusual quantities of this substance have formed in the immediate vicinity of the falls, and although it has afforded no obstruction to the operation of machinery, a mile below it has entirely filled the bed of the river in certain places, and has thus, as the water in the river has subsided, given to the ice the appearance of having been thrown up in the central part of the stream. A few weeks since as we were passing the river, we noticed an opening through the ice of some eight or ten feet in diameter, and from the unusual quantities of anchor ice here presenting itself at the surface, we were induced to stop some distance and witness the singular phenomenon. The surface of the ice for a mile or more above and below the opening was frozen to a depth of eight or ten inches. The current at this point was quite rapid and swollen, and the bottom rocky. The night preceding had been intensely cold. For some moments the surface of the water would be perfectly clear, and then perhaps for five or ten minutes large quantities of the anchor ice would present itself at the surface, and as suddenly disappear, being carried downward by the rapidity of the current. From appearances, the anchor ice in the immediate vicinity of this point was formed with great rapidity, but why the process of congelation should occur at the bottom of the stream, is the mystery we would be glad to have solved. A friend, who has long been conversant with this object, observes that its formation almost always occurs previous to a storm of rain, and that the conditions mentioned above, viz, a shallow rapid stream with a stony bottom, is the most favorable for its production. This, however, furnishes no solution of the mystery, and the fact that it frequently forms under different conditions, renders it quite problematical whether any one of them is essential to its formation. We would be much obliged to some of our scientific cotemporaries for satisfactory explanation of this phenomenon.—*Lewiston Journal*.

Without assuming to be one of our friend's "scientific" cotemporaries, we will suggest an explanation.

Anchor ice, as it is called, forms at the bottom of streams, or in the middle of streams, or wherever there is a current.

Hence it frequently forms at the bottom of rapids, where the water rushes out of the crevices at the bottom and edges of the gate and falls down, or anchors it. Sometimes it forms at the instant when the gate is started, and holds it like a giant. We conceive the true cause of it to be this. It has been found that if water be kept quiet, or without much motion, it can be cooled down three or four degrees below the ice forming point, (which is put down on Fahrenheit's thermometer at 32°) but if quick motion be made among the particles as they are cooled down, it instantly shoots into crystals of ice. Now, in the case mentioned above, the water becomes cooled down below the ice forming point, but little motion, shows no ice until it comes to the crevices of the gate, or until the gate is started, when an agitation being made among the particles it immediately shoots out into ice and clogs all up.

In the case mentioned above, of the opening through the ice of the river, which exhibited so much anchor ice, might not the cause of the phenomenon be this? The water above the rapid was probably very motionless;—that is, the current was slow, gentle, and comparatively sluggish. In this place the water became cooled down below the ice forming point, and moving lazily along, until it met the pitch of the "tips;" when, owing to the sudden shaking of the particles, they shot out into ice, which rose and sunk and tumbled about as the great directed.

It formed at the bottom of the stream, because the over-cooled water met with obstructions which shook it into ice.—*Maine Farmer*.

**EXPOSURE TO THE SUN.**—There are few points which seem less generally understood, or more clearly proved, than the fact that exposure to the sun, without exercise sufficient to create free perspiration, will produce illness; and that the same exposure to the sun, with sufficient exercise, will not produce illness. Let any man sleep in the sun he will awake perspiring, and very ill, perhaps he will die. Let the same man dig in the sun for the same length of time, and he will perspire ten times as much, and be quite well. The fact is that not by the direct rays of the sun, but the heat of the atmosphere produce abundance of bile, and powerful exercise alone will carry off that bile. Popular errors explained.

**CHLOROFORM.**—Last week we published an account of the sad effect of chloroform on a young lady in New Bedford, who foolishly inhaled a quantity for the "fun of it," and was thrown into violent convulsions, which lasted for the space of sixteen hours. Since then two melancholy cases have come to hand, which shew that it is rather a dangerous agent, even in the hands of those who are deemed skillful operators.

The York True Sun of last week, (and we have seen the same statement credited to several of the New York papers,) chronicles the following heart-sickening case:

**FATAL EXPERIMENT WITH CHLOROFORM.**—A young daughter of Mr. Macdonald, a baker in Catharine street, in this city, recently met her death in the most awful manner, from the use of this fashionable but most dangerous preparation. About three weeks ago, the ether was employed to allay the toothache; but subsequently the sufferer was supposed to die, from what cause does not appear.

The apparent death, however, was only a trance, or protracted swoon; for on opening the coffin a few days ago, the unfortunate girl had turned over upon her face, and, in her agony and desperation, she had actually destroyed two of her fingers, on recovering from her temporary death by ether. The coroner's investigation should elicit the fact as to who prescribed a remedy which produced this most frightful result.—*Maine Farmer*.

**SCIENTIFIC VERACITY.**—The Massachusetts Agricultural Society has ordered from Paris, at a cost of about \$800, the figure of a horse of full size, so constructed as to admit of all the pieces being taken apart. These pieces represent the muscles, blood vessels, heart, lungs and other organs, of their natural size and appearance. Such objects would be admirably adapted to agricultural schools, and would afford the pupils accurate and useful information, scarcely to be obtained in any other way.—*Albany Cultivator*.

**STRENGTH OF IRON PILLARS.**—At a meeting of the British Association a few years ago, at Glasgow, a paper was read by Mr. Hodgkinson, describing a series of experiments made by him on the strength of iron pillars. It appears from these, that a pillar square at the top and bottom, is about three times as strong as one rounded at the ends—that if the pillars are not placed perpendicular, at least two-thirds of their strength is lost; and that they are one-seventh stronger when swelled in the middle, like the frustrum of a cone, with the base in the centre of the pillar.

**ARTIFICIAL STONE.**—A process has been patented by which artificial stone of every quality may be produced, from artificial granite, to statuary marble. The invention is, from its cheapness, a great advantage for all the purposes of architectural decoration, and from its plastic nature before it becomes hard, of great service to sculptors in taking casts of statues, busts, &c; and even of figures of the size of life. The cost is in all cases where carving is required in stone, in which this composition is substituted, less by nine-tenths. The invention is founded on the chemical analysis of the natural varieties of stone, and the manufacture is capable of such modifications as are requisite to produce all the varieties. The artificial stone produced is less absorbent than natural stone, and is superior in compactness of texture, and will resist frost, damp, and the chemical acids. It is made of flints and silicious grit, sand, &c., rendered fluid by heat, and poured into moulds as required, till cool and hardened. Its strength and solidity enables it to resist more blows than real stone. The specimens of the invention are exceedingly curious; they consist of many varieties, some being plain pieces of coping stone, stones for variegated pavement for halls and rooms, stone ornaments, such as mouldings for friezes, finials, and some more elaborate, having flowers and devices apparently cut with the chisel. There are also some grindstones, and hones used by agricultural laborers for sharpening scythes and tools. The invention is also applicable to the lining of cisterns and water pipes, its vitreous qualities insuring cleanliness. Its extreme cheapness is also a matter of consideration to those who require ornamental additions to houses.—*London Times*.

**HOW TO MAKE VINEGAR FROM MILK.**—The cow-herds on the Alps, and in several parts of France, use milk whey to make the sharpest vinegar. The process is very simple. After having clarified the whey, it is poured into a cask with some aromatic plants and elder blossoms, as it suits the fancy, and exposed in the open air to the sun, where it soon acquires an uncommon degree of acidity.

**HYALOGRAPHY.**—The art of engraving on glass, has, of late years, greatly advanced in Europe, and it is asserted that the process has now become as easy and complete as engraving on steel and copper. Truly glass is a useful article. Who, twenty years since, would have dared even to dream of such things as glass watch springs, glass cloth, glass thread, &c. &c.?

**TO POLISH STEEL AS USED IN THE TOWER OF LONDON.**—Dissolve half an ounce of camphor, and half a pound of hog's lard together over a slow fire, taking off the scum as it rises; mix as much black lead as will make it an iron colour; spread the composition over the steel, let it lie for 24 hours, rub it off with a dry linen cloth; and the metal will keep free from rust for six months.

Mechanism lends her aid to husbandry, as may be seen from the lists of improved implements and machines yearly brought under the notice of our agricultural societies.