

## Editorial Summary.

**BET SUGAR IN GERMANY.**—A German agricultural journal gives an interesting account of the beet sugar business in that country. Fields of beets of from two to three hundred acres are often seen there. The beets are drilled in rows about fifteen inches apart and the whole labor of cultivation performed by the hoe. The women and men work in gangs of twenty or more. The men get from sixteen to nineteen cents per day and the women from thirteen to fifteen—working fourteen hours. The manufactories for this sugar are on a correspondingly large scale, some of them employing a thousand hands. The beets are brought from the field and elevated to the upper story of a high building, where they are cleaned, crushed, and filtered, the juice descending from story to story, undergoing a refining process by the way till it reaches the lower one in the shape of a sugar cone two and a half feet in length. It is a very nice article and worth at the factory about ten cents per pound. It takes eight days from the time of crushing the beets till the sugar is dried sufficiently for market. One of these establishments turned out six millions of pounds last year with the help of six hundred hands.

**THUNDERBOLTS AS REMEDIES.**—An English writer argues that several physical maladies can be cured by lightning. The doctrine that "like cures like," holds good, he asserts, in the case of maladies to which the destructive element gives birth; whether the fright, or some proper action of the electric fluid works the cure, it is hard to say, but the fact is incontestible. Several cases are reported where individuals paralyzed from their youth have recovered complete use of their limbs by lightning strokes in after years. A country clergyman in Kent was paralyzed by apoplexy in 1761, and struck by lightning about a year after, when all traces of the paralysis left him. A man who had lost the use of both arms was guarding some animals in a field; lightning fell upon him, and when he came to his senses he found that he could use both arms and hands. These are but a few out of many recorded instances. A variety of ailments besides paralysis have been cured or ameliorated by the same agency, even blindness; for one Gardley, some time an actor at the Surrey Theater, who had been for many years blind of one eye, had his sight quite restored by a lightning flash.

**POWER OF A GROWING TREE.**—Walton Hall, England, had at one time its own corn mill, and when that inconvenient necessity no longer existed, the mill stone was laid by in an orchard and forgotten. The diameter of this circular stone measured five feet and a half while its depth averaged seven inches throughout; its center hole had a diameter of eleven inches. By mere accident some bird squirrel had dropped the fruit of the filbert tree through the hole on the earth; and in 1812 the seedling was seen rising up through that unwonted channel. As its trunk gradually grew through this aperture and increased, its power to raise the ponderous mass of stone was speculated upon by many. Would the filbert tree die in the attempt? Would it burst the mill-stone? or would it lift it? In the end the little filbert tree lifted the mill-stone, and in 1863 wore it like a crinoline about its trunk; and Mr. Waterton used to sit upon it under the branching shade.

**PRESERVATION OF BUILDING STONE.**—An Illinois architect has invented a process for preserving from decay and disfigurement the beautifully colored stone called "Athens marble," which is now used very extensively at the West for building fronts. This stone is composed principally of carbonate of lime, carbonate of magnesia, and silica, but among the minor ingredients, protoxide of iron pervades the whole mass, giving the characteristic blue-greenish tint, the main cause of its beauty, but the cause also of its decay, as exposure to the atmosphere converts the protoxide into hydrated sesquioxide of iron, or iron rust. To remedy this action the stone is coated with a soluble glass, made by melting a mixture of fifteen parts of silica, ten of soda, and one of charcoal, until it forms a glass which is reduced to the liquid form by boiling in water. This solution permanently fastens itself to the surface and protects the stone from the atmosphere, smoke, and dust.

**PHYSIOLOGICAL ACTION OF ALCOHOL.**—The same observer has propounded a physiological law relative to alcoholic fluids, which is to the effect that the period of time required by these bodies to produce their effects, and the period of time required for recovery, turned altogether on the boiling point of the fluid used. This is so certain that the boiling point and action of one fluid being known, the action of any other fluids might be predicted from their boiling point. The explanation is simply that the alcohols taken into the body are not changed in their chemical composition, and their evolution and time of evolution are the mere matter of the expenditure of force, caloric, to raise them and carry them off. The practical lesson to be drawn is, that in case of alcoholic poisoning of the human subject, the most important condition for recovery is a high temperature.

**EXTRACTING INDIGO FROM RAGS.**—A French patent has been allowed for a new method of recovering indigo from cotton or woolen rags which have previously been dyed with that substance. The inventor places the rags in a boiler provided with a double bottom and saturates them thoroughly with a solution of caustic soda of 1° Baume. After this the rags are kept for five hours under the action of steam at 45 pounds pressure. By this treatment the indigo is reduced, and dissolved, then precipitated from the soda solution, and finally collected in as pure state as the best sorts in commerce.

**DEATH BY FIRE DAMP.**—Dr. B. W. Richardson, F. R. S., in investigating the physiological action of the methyl compounds, has particularly observed the action of the hydride of methyl, which occurs naturally in the form of fire-damp in mines, and as marsh gas on land. Seeking first to ascertain what percentage would prove fatal in the air, he found that even pigeons could live in an air charged with thirty-five per cent of the gas, for half an hour. When death finally ensued, it came as a sleep, so gentle that it was determined with difficulty when either circulation or respiration ceased. From these observations he concluded that the victims of a mine explosion die an easy but prolonged death, and while the knowledge of the first of these truths should inspire thankfulness, the latter should encourage the rescuing party not to abandon their exertions even for days after the accident has occurred.

**THE RAMIÉ PLANT.**—We have received from Mr. A. B. Bacon, chairman of the Section of Agriculture, New Orleans Academy of Science, a specimen of fiber made from this plant, which is beautifully white and fine, and certainly very strong. The accompanying circular asserts that the plant may be started with root cuttings, and will flourish in any climate where the ground does not freeze over a foot deep, and never needs replanting. Well rooted plants will produce from two to five cuttings of the stalk in a year, each giving 150 pounds of fiber to the acre. A native of Java, the plant has been domesticated in Mexico by D. Benito Roehl, a Belgo-Austrian botanist, who has also invented a machine for cleaning it. Any further information may be obtained from Mr. Bacon, at the *Picayune* Office, N. O.

**MOCK SUNS.**—The inhabitants of Lee county, Va. were lately much excited over the rather uncommon spectacle of apparently three suns rising at the same time. The central orb was encircled by a beautiful iris, surmounted by the fragment of another one, which extended on either hand above the attendant suns. After a brief space, these latter dissolved, leaving the only original Sol in the enjoyment of his full glory. The phenomenon, while it lasted, was a subject of dismay and affright to the ignorant populace, who considered it as certainly portentous of coming evil.

A NUMBER of illustrations of excellent inventions, intended for this issue, are necessarily left out to make room for our Spanish correspondent's letter, and other interesting matter, which could not be deferred.

## How Muskrats Swim Under the Ice.

Muskrats have a curious method of traveling long distances under the ice. In their Winter excursions to their feeding grounds, which are frequently at great distances from their abodes, they take in breath at starting, and remain under the water as long as they can. They then rise up to the ice, and breathe out the air in their lungs, which remains in bubbles against the lower surface of the ice. They wait till this air recovers oxygen from the water and ice, and then take it in again, and go on till the operation has to be repeated. In this way they can travel almost any distance, and live any length of time under the ice. The hunter sometimes takes advantage of this habit of the muskrat in the following manner:—When the marshes and ponds, where the muskrats abound are first frozen over, and the ice is thin and clear, on striking into their houses with his hatchet, for the purpose of setting his traps, he frequently sees a whole family plunge into the water and swim away under the ice. Following one of them for some distance, he sees him come up to renew his breath in the manner above described. After the animal has breathed against the ice, and before he has time to take his bubble in again, the hunter strikes with his hatchet directly over him, and drives him away from his breath. In this case he drowns in swimming a few rods, and the hunter, cutting a hole in the ice, takes him out. Mink, otter, and beaver travel under the ice in the same way, and hunters have frequently told me of taking otter in the manner I have described when these animals visit the houses of the muskrat for prey.—*Trapper's Guide.*

## MANUFACTURING, MINING, AND RAILROAD ITEMS.

The largest pumps ever made in the United States have just been completed for the San Francisco Dry Dock Company. The casings of the pumps are ten feet in diameter. The weight of the material in each pump is 75 tons. They are calculated to raise 504,000 cubic feet, or 16,150 tons of water, and free the dock in two hours.

Something entirely new in the manufacture of porcelain has been introduced in a Philadelphia factory. The new material is called "hot-cast porcelain," for while containing the ingredients of which porcelain is composed, it is worked like glass, and like the latter it can be blown, pressed, or rolled into any desired shape.

The experiment of laying steel rails on different sections of the New York and New Haven railroad, has been so satisfactory that the whole line is to be relaid with them, and as a beginning, an order has been sent to a firm in England for two thousand tons. Several new passenger coaches, of the English pattern, are now building in Springfield for this line, and will be put upon the road during the present month. Each carriage will have five apartments, separately accommodating seven passengers, and the method lately introduced for heating cars by circulating hot water in pipes, will be adopted on these coaches. It is not a little singular that while we are introducing these apartment carriages, some of the English roads are, or contemplate doing the same with our long American cars.

Philadelphia modestly claims to have the largest military goods manufactory, the largest chemical factories, the largest bookselling house, and the most extensive locomotive works and machine shops in the United States. In the year 1866 her factories produced over \$200,000,000 of staple goods. Philadelphia is now the commercial center of 260 cotton and woolen factories, and has besides several thousand hand looms, of which the yearly product, it is asserted, is equal to that of seventy additional mills of average size.

It is stated that arrangements have been made for a projected railroad from St. Paul, Minn., to the western extremity of Lake Superior, distant one hundred and fifty miles in a nearly direct line. Seventy-five miles will be completed this year, and the whole by the end of 1869.

The Panama Railroad, during the twelve years of its existence, has transported only 396,032 passengers, but the treasure carried during that period exceeded \$500,000,000 in gold, \$147,000,000 in silver, \$19,000,000 in currency, and \$5,000,000 worth of jewelry. The tonnage of general merchandise exceeded 600,000,000, but it appears that the increase in outlay which this heavy traffic required, for wharves, rails and locomotives, has caused a falling off for the past year in the proportion of net receipts, as compared with previous years.

The *Moscow Gazette* publishes a telegram from M. Bogdanywitch, a prospector now making a journey of exploration in Siberia, to look into the expediency of building a railway in that immense province. The adventurer is very favorably impressed, and asserts that information he has gathered shows by facts the brilliant future reserved for the Siberian railway. It is now announced that on the commencement of spring, operations will begin upon the first division of the great Russia-China-Taschkent Railway.

**SHIP LEAKING INDICATOR.**—Shaler's patent bilge water indicator, with Brevoort's improvement, was recommended by the commission appointed a few months ago to investigate the appliances for saving life at sea. It is very simple in construction, and operates on the same principle and by nearly the same means as an ordinary steam gage. A dial plate, over a box resembling a steam gage, shows an index pointer which is operated by the compression of the air in a tube. From the valve inside the case one or more pipes, either flexible or rigid, descend to the bottom of the vessel and terminate in a lead or iron pipe of larger diameter, the bottom of which reaches nearly to the skin of the ship. The rise of water compresses the air in the tubes, and, by means of the valve inside the case and simple connecting mechanism, operates the index, thus denoting by figures on the dial the depth of the water in feet, inches, and their fractions. An independent pointer outside the glass of the dial serves to denote the relative increase or diminution of the water in pumping. One single instrument, located in the binnacle or pilot house, will, by means of branch pipes, denote the state of the water in two or more portions of the ship.

## Recent American and Foreign Patents.

Under this heading we shall publish weekly notes of some of the more prominent home and foreign patents.

**SNOW PLOW.**—Chas. Lusted, New York city.—This invention relates to a new plow for cleaning railroad tracks from snow, and consists in the use of an oscillating plowshare, which throws off the snow that has been raised by it, so as to prevent the accumulation of the snow upon the share. The oscillating share is hinged to a stationary lower share, and is connected with a crank on the axle or the truck, to which the device is secured. By means of a clutch arrangement the connection between the axle and the share may be established or interrupted at will, so that the upper hinged share may remain stationary if desired.

**SCRAPER ATTACHMENT TO CARS.**—E. B. Wells, Northampton, Mass.—The object of this invention is to provide railroad cars with a device for keeping the track clear of snow, mud, and other obstructions. The device is chiefly applicable to street or horse-cars and consists in the use of scrapers or plows, one in front of each wheel, which are suspended from powerful springs, that are attached to the underside of the car platform, which are operated by levers arranged at each end of the car.

**CULTIVATOR.**—Edwin Doolittle, Pawnee, Ill.—This invention has for its object to furnish an improved cultivator, simple in construction, effective in operation, and which may be easily and conveniently guided when at work.

**KNITTING MACHINE.**—John Chantrell, Bristol, Conn.—This invention relates to a new knitting machine in which a flat web can be knit by the aid of two sets of hooked needles, and by suitable sinkers playing up and down between the horizontal needles. The yarn is taken from one single spool, and is, by a suitable carrier, laid over the bodies of the horizontal needles, and is then between the needles depressed by the sinkers, the loops thus formed are cast off over the ends of the vertical needles upon loops held between the vertical and horizontal needles, and are thus locked. The invention consists chiefly in the peculiar manner of forming the loops by the two sets of needles and by the sinkers, and in the construction and arrangement of the devices by which the yarn guide, the needle carriers, the pressers, and sinkers, are set in motion in the required order and succession.

**WATCH.**—Geo. A. Bowen, Trenton, N. J.—This invention relates to a new device for protecting the drum in which the mainspring is contained and also the adjoining gear wheels and pinions from being injured by the breaking of the mainspring.

**COMBINED FODDER CUTTER AND CORN SHELLER.**—C. R. Hewett, Waupun, Wis.—This invention has for its object to furnish a machine by means of which corn may be shelled or fodder cut, as may be desired with equal facility.

**BROOM OR BRUSH HOLDER.**—Anthony G. Davis, Watertown, Conn.—This invention has for its object to furnish a neat, cheap, simple, convenient and effective device for holding a broom or brush suspended when not in use.

**PLOW.**—James Urie, Evansville, Ind.—This invention has for its object to furnish an improved plow simple in construction, effective in operation, which can be manufactured at small expense, and any part of which can be easily renewed when worn without its being necessary to send the entire plow to the manufactory to have the renewed part fitted.

**HAY CUTTER.**—J. F. Hammond, North Sudbury, Mass.—This invention has for its object to furnish an improved hay cutter which shall be self-feeding and double-acting, and which will do its work quicker and better than the hay cutters now in general use.

**MARKER FOR SEWING MACHINES.**—Joseph P. White, Savannah, Ga.—This invention consists chiefly in a new manner of attaching an adjustable cloth presser to an adjustable gage, so that the same can be set more or less to the front as may be desired, and so that the presser can be raised and lowered at pleasure. The invention also consists in a new manner of constructing a hemmer and of attaching the same so that it can be moved to form the gage, as may be desired.

**FEED GUIDE FOR PRINTING PRESSES.**—C. Potter, Jr., Westerly, R. I.—This invention relates to an adjustable feed guide for printing presses, and has for its object the facilitating of the adjustment of the guide, one screw only being manipulated in order to admit of the guide being adjusted in two different directions which are required.

**CYLINDER PRINTING PRESS.**—C. Potter, Jr., Westerly, R. I.—This invention consists in hanging or arranging the cylinder of that kind of printing presses known as the "drum cylinder," in such a manner that the cylinder may be raised, at the will of the operator, so as to be inoperative or incapable of giving any impression. The object of the invention is to give the operator or attendant entire control over the pressure cylinder, so that, in case of a sheet of paper being improperly set or presented to the cylinder, or the failure of a sheet being presented to it at all, the pressure cylinder, by being raised, will obviate many difficulties attending the above-mentioned contingencies.

**PAD CRIMP OR PRESS.**—George Kennedy, Clarksville, Iowa.—This invention has for its object to furnish an improved instrument by means of which the back pads of harness may be easily and accurately formed, so that the pad may be stitched with as much readiness as a piece of plain leather.

**MACHINE FOR SAWING LATHES.**—Emery T. Wheeler and Wm. H. Vaughan, Cannelton, Ind.—This invention relates to a new and improved machine for sawing lath, pickets, and strips for wheelspokes, chain stuff, etc., directly from the circumference of the log, without waste.

**HANDLEVER SEWING MACHINE FOR PATCHING BOOTS, ETC.**—David Forest, Eastport, Me.—The nature of this invention consists in a device for sewing patches on boots and shoes, and other similar articles, by means of a hand lever to work the needle.

**TIRE SHRINKING MACHINE.**—James Elliott, Milford, Wis.—This invention relates to a device for tire shrinking, and consists of a platform and bed piece, the latter supporting two sliding carriages carrying a notched or toothed flange, against which the tire to be shrunk is set, and held in place by two notched or ratchet cam levers, mounted on the same carriages, which are pressed together by one or two other cam levers, hung on vertical axes on the bed piece, thus shrinking the tire.