Process of Making Ice in the East Indies.

Natural ice is never seen in the warmest parts of that country. To procure ice by artificial means, they dig, on a large open plain, not far from Calcutta, three or four pits about thirty feet square, and two feet deep each, the bottom of which they cover about each inches or a foot thick with sugar cane or the stems of the large indian corn, dried. On this bed are placed, in rows, a number of small, shallow, unglazed earthen pans, formed of a very porous earth, a quarter of an inch thick, and about an inch and a quarter deep, which, at the dusk of evening, they fill with soft water that has been boiled. In the morning, before sunrise, the ice-makers attend the pits, and collect what is frozen in baskets, which they convey to the place of preservation. This is generally prepared on some high, dry situation by sinking a pit fourteen or fifteen feet deep, lining it first with straw, and then with a coarse kind of blanketing. The ice is deposited in this pit, and beat down with rammers, till at length its own accumulated cold again freezes it, and forms one solid mass. The mouth of the pit is well secured from the exterior air with straw and blankets, and a thatched roof is thrown over the whole. The quantity of ice formed by the method above described depends on a light atmosphere, and clear, serene weather. Three hundred persons are employed in this operation in one place.

At first sight, this curious process may appear to be an effect of evaporation; but this is not the case; for it is remarkable that it is essential to its success that the straw in which the vessels are placed should be dry, whereas, if evaporation were concerned in the congelation, wetting the straw would promote it. When the straw becomes wet by accident, it is obliged to be replaced by dry straw.

The earth is continually losing heat by radiation, and it loses most on clear, starlight nights, when there are no clouds to intercept and send back the rays of heat. The straw, like all filamentous substances, is a good radiator of caloric, and it is in consequence of the heat that is thus given out by it into space on clear nights that the ice is formed. When the weather is windy and cloudy the effect does not take place.—*American Druggists' Circular.*

Is Gaslight Injurious?

There is a prejudice against gaslight as being the most injurious form of artificial illumination. As against the proper and well regulated use of gas, this prejudice is entirely groundless, but there can be little doubt that from its abuse and bad management it is really doing more mischief than any other kind of light; its very excellencies are turned to bad account; its extreme cheapness, compared with other sources of illumination, naturally leads to its use in excessive quantities; floods of light are poured forth, so that persons may read and sew for hours together in the remotest corners of the room. The air is heated by the excessive combustion, and poisoned by large quantities of carbonic acid, which there are no means of removing. The eye is unprotected from the glare by screen or shade; extraneous light is freely admitted, which obscures the impression, and strains the nerve of vision, and in proportion as the sensibility of the eye is impaired, stronger light is used, which gives temporary relief, but with danger of ultimate and permanent injury to the sight. On the other hand, good, well purified gas, judiciously controlled in accordance with the hints we have given, is perfectly harmless.

Chilled Iron.

If iron, when cast into a mold, is allowed to cool slowly, it is very liable to crystallize, and the crystals will so arrange themselves that the article which is manufactured will be likely to break off short when put to bear any great pressure. The remedy for this is "chilling," which is done by suddenly cooling the outer edge of the piece, or the part on which the strain will come, and letting the rest cool gradually. If, however, the casting is large, this chilling, by the sudden contraction of such a mass often cracks the piece and renders it useless. Many proposals have been made to obviate this difficulty, but none are thoroughly successful. It is possible to make such castings as railroad car wheels and axle boxes with chilled surfaces, and wherever they have been used, they have answered so well that they are now in almost general use.

Mammoth Forest.

From the *California Farmer* we learn that a grove of mammoth trees has been discovered in Yosemite valley. The first tree that was measured was eighty feet in circumference three and a half feet from the ground; another tree was ninety feet in circumference at the same distance from the ground, while close to the roots it was one hundred and two feet round it, and it was three hundred feet high. The number of trees measured was one hundred and fifty-five, and they are about half the group; none were less than forty feet in circumference, and there were one hundred over fifty feet. The largest tree now lies upon the ground; it is charred, and its heavy bark is gone, and yet it measures thirty-three feet in diameter, or one hundred feet in circumference, and must have been four hundred feet high. The *Farmer* concludes by saying:—"This we believe to be the largest tree yet discovered; and this forest we claim as the Parent Forest of the world."

The Iron Trade.

As to the growth of American iron manufactures, the *Pennsylvanian* says:—

"Since 1848, the consumption of that article in the United States has augmented in an unprecedented manner. The consumption of foreign iron, and manufactures of iron, which previous to 1848 never reached, in any one year, the value of $9,000,000, amounted in 1850 to $15,600,000; in 1856 to nearly $20,000,000. On the other hand, the domestic production of pig iron made very considerable progress. From 1852, when it amounted to 500,000 tuns, it rose to 1,000,000 tuns in 1856. The domestic manufacture of railroad iron has as yet only reached about one-half of our annual requirements. But, considering that eleven years ago we made no rails at all, this result must be regarded as exceedingly encouraging. The value of domestic manufactures of wrought iron of every description amounted in 1840 to $12,800,000; in 1850 to $22,600,000; in 1855 to $28,300,000."

Cadmium.

This was a term formerly applied to calamine and to the substance which sublimes from the furnace during the manufacture of brass. Cadmium is a simple metal, and was discovered in 1817 by Stromeyer, while he was seeking to ascertain the cause of the yellow color of certain oxyds of zinc. It has since been found in several varieties of zinc ore. It resembles tin in its physical properties, but is rather harder and more tenacious; its specific gravity is 8·60, and somewhat exceeds 8·69 after hammering. It fuses at a temperature a little above that required by tin. Air scarcely acts upon it except when heated, and then it forms an orange-colored oxyd. This metal has not been used in the arts, except in some cases for stopping teeth.

Uranus.

This planet is one of the most distant of our system, being about 1,800,000,000 of miles, or if a person were to count 200 every minute for ten hours a day, he would be about 42 years in counting the distance of this planet from the sun. It performs its journey round the sun in about 84 years, or its year is equal to 84 of ours. It is 86 times as large as our planet, and its diameter is 35,000 miles. Six satellites attend it, and revolve round it from east to west. It was discovered by Sir Wm. Herschel in 1781; and he christened it *Georgium Sidus*, in honor of the reigning king; other astronomers called it after its discoverer, *Herschel*, and *Uranus* is the name by which it is now generally known.

The Pressure of Water.

Water exerts the pressure caused by its own weight and that of the air above it, equally in all directions; and on this principle depends the hydraulic press—one of the most useful applications of a philosophical principle known in modern times. The direction of the pressure is not equal in all directions, but is controlled, in a great measure, by the shape of the containing vessel, as, for example, in a round cup having a flat bottom, the pressure is equal and greatest over the whole base, and gradually diminishes as it ascends the sides, and so in all regular figures. In a bottle having a long narrow neck, the pressure is greatest on the base, and then on the semi-circular portion where the bottle bulges out.

When constructing a canal, or water course, the sides should incline from the base outward, because then, the pressure will be at right angles with the sides, and so exert its force on the earth; whereas, should the sides be perpendicular, the pressure would be a direct thrust against it, and it would require a much stronger embankment to prevent the water forcing its way through. It is advisable also, to form the bottom inclined towards the center, or in a semicircular form.

In the case of a dam to stay the course of a long current of water, or to form the head of a mill pool, the form to be preferred is a segment of a circle from side to side, and widening from the top downwards; but should the river or stream be too wide for this method to be adopted, then a straight one can be built, placed at an angle with the course of the stream—like the one on the Schuylkill, at the Fairmount Waterworks—that it may serve to break the force of the stream. If a V-shaped one be thought the best, the apex of the V must be placed against the course of the stream, and not with it; or, in other words, the outside of the letter must form the dam, and not the inside.

Progress of the Telegraph.

A calculation has been made by which it appears that, of overland and submarine telegraphs, there are completed and in progress of construction at the present time, the following lengths: United States 33,000 miles overland; South America, 1,500 miles, overland; Europe, 37,900 miles, overland; India, 5,000 miles, overland. Submarine, Europe and America, 900 miles. Total, 78,350 miles. This aggregate will be increased 1,700 miles by the completion of the Atlantic Telegraph. Of the European and Indian telegraphs, not more than from six to seven thousand miles of the lines commenced are finished, yet the next six months will probably see them all in operation.

Rice Grass.

This plant, also called "cut grass" and false rice, is a native of the Levant, and its classical name was given to it by Leers, a German botanist. It grows very commonly in wet, swampy places, and has stems from two to three feet high, spreading with rough, slender branches, and narrow or long leaves. The florets are oval and white, and they are seen in the month of August.

It is a beautiful grass, and is cultivated to some extent in the South, where they cut it several times in a season, and make from it a valuable hay. In the northeast it is regarded as a weed, and is destroyed by thorough draining, moisture being a necessary of its existence.

The Greatest Steam Invention yet.

The Baton Rouge *Gazette*, under the above heading, has the following:—

"William St. Martin, of this city, has invented an engine, which can be constructed, boiler and all, for about $50. The machine is so simple that we might with propriety say it is merely an escape-pipe, taking up no more room. The steam is admitted into the center of a drum or cylinder, in which the shaft works; from this the power is applied directly, without further friction. The other day we saw the perfected model of the engine pumping water about twenty feet, and throwing it into the reservoir at the brewery. This is the apparatus wanted, for getting, in a cheap manner, one or more horse power to drive small machinery. Mr. St. Martin has made application for Letters Patent, and when he gets them, we think he has a fair prospect to realize something from the result of his genius."

[The above paragraph has been "going the rounds" of the papers for some time past. The readers of the SCIENTIFIC AMERICAN will recognize in this "greatest steam invention yet," simply a rotary engine.—EDS.

Boring and Mortising Machine.

D. W. Cummings and P. C. Cambridge, Jr., of North Enfield, N. H., have invented a new machine for this purpose. A varying and progressive length of stroke is given to the chisel mandrel or arbor, so that the length of stroke may be gradually increased, as the depth of the mortise increases, and the chisel is thus regularly fed to its work. There are also means employed for rotating the chisel mandrel automatically from the auger arbor. It is a valuable machine.

Attachment to Violins.

The violin, it is well known, is one of the most difficult instruments to finger. A patent has been granted to Jackson Gorham, of Bairdstown, Ga., for a device consisting of four fingers, which press the string on to the finger-board in any desired place; so that ordinary performers will be able to execute music in any key, fingering only in those keys on which the great mass of performers play, viz., the keys of one, two and three sharps.

Expanding Tires on Wheels.

S. Penberthy, of Chicago, Ill., has patented a device for this purpose, by which tires may be expanded on iron wheels without removing the wheel or axle from the carriage. It is essentially a portable furnace, by which any portion of the tire can be expanded until it has become sufficiently enlarged.

Lime Kiln.

A new form of lime kiln has been patented by A. G. Anderson, of Quincy, Ill., whereby its operation is continuous for any length of time, and the lime is exposed to the more direct action of the fire. Greater convenience is afforded for withdrawing the charges than in any other so-called "continuous" or "perpetual draw" lime kilns.

Printing Press.

Mervin Davis, of New York City, has invented an improved printing press, in which a small expenditure of power will give a good impression; he also combines with it an improved feeding device and ink-distributing apparatus—the whole forming a complete and efficient press, which will do its work well and neatly.

Rock Drill.

This improved rock drill has a kind of jumping motion combined with the rotatory one, and the machinery by which it is operated is compact and simple. It is the invention of George H. Wood, of Green Bay, Wis., and the patented features will be found in our List of Claims this week.

Folding Iron Bedstead.

This bedstead is provided with sides, which open out when the bed is set up, and which occupy no more room when folded than an ordinary folding bedstead. It is the invention of F. Vandenhove, of New York City, and was patented this week.

The city of Columbia, Cal., whose total destruction by fire we announced a short time ago, has been rapidly rebuilt. The new buildings are many and testify to the prosperity of the neighborhood.

The first pile has been driven for a bridge across the Sacramento river, California.