Advice about Lightning.

It is calculated that at least fifty persons are killed by lightning every year in this country, and as the season is approaching when casualties of this kind are imminent, a few words of advice and caution upon the subject may serve as a safeguard, if carefully observed.

During the prevalence of a recent thunder-storm which visited the town and vicinity of St. Petersburg, Ill., two men were suddenly killed by a stroke of lightning, which decended the chimney of the house in which they were residing. One of the unfortunate victims was in the act of winding a clock that stood on the mantlepiece, and the other was standing immediately behind him, when both were struck lifeless. Two women were at the same time sitting in the room and escaped injury, as they happened to be seated some distance from the chimney.

When the lightning's flash and the thunder's crash are seen and heard almost simultaneously, it is a sign that danger is at hand, and the next bolt may strike the tenement which affords us shelter. To know the place of greatest safety upon such an occasion is important knowledge. This science clearly teaches us, and as a faithful monitor, its voice should be heard with attention,

The earth and atmosphere are saturated with electricity, which ordinarily remains in a state of equilibrium. When this condition is disturbed we have the phenomena of thunder-storms—which is simply an effort of nature to restore the electric equilibrium between the atmosphere and the earth. The atmosphere in such cases is converted into a huge Leyden jar; the lightning is simply disruptive discharges through the intervening air; and thunder is the sound caused by the violent and sudden compression of the air-producing waves, hence the long continued roll like the discharge of artillery. Lightning is the most subtile and irresistible power of nature. A single flash can shiver the tall mast of a war-ship that might bid defiance to a cannonade, or rend the lofty oak of the forest to splinters in an instant; and a single bolt has toppled the tall church spire to the dust in the twinkling of an eye. What is the puny power of man before such a mighty agent? It is physically frail as a feather or a trembling leaf. Armed in the panoply of science, however, man, like a weak but skillful general, can manœuver his forces against this otherwise destructive power, and convert danger into comparative safety.

This discovery was made when Franklin proved the identity of lightning and electricity with his little kite. Electricity possesses the peculiar property of flowing quietly along or through what are called "conductors," such as copper, gold, iron, &c.; and taking advantage of this, the American philosopher suggested the erection of tall rods of iron or copper on houses and ships, to *tap* the Leyden jars of the atmosphere, and convey their charges quietly and safely to the earth. This suggestion carried out has saved thousands of lives and millions' worth of property, hence all houses should be provided with such conductors; but as is the case now, perhaps the great majority of buildings will always be unsupplied with such agencies. In all such cases, it should never be forgotten that the lightning always seeks to pass to the earth by the nearest prominent conductors, hence we have an explanation of the cause why trees, masts of ships, steeples of churches, towers, and chimneys are so often struck, and why the persons referred to above should not have been standing so near the fire-place on the occasion of a thunder storm which cost them their lives. In such storms, persons in houses should sit or lie in some place as far distant as possible from the chimney, and the most exposed parts of the walls—the middle of the room, if it is large, is the safest locality. Sailors on the sea should keep as far from the masts as possible, and farmers in the fields should never seek shelter under trees. Horizontal strokes of lightning sometimes take place, and several persons have been struck while sitting at open windows during thunder-storms. Every window of a room in which persons are sitting, in such cases, should be closed; a flash of the fluid, which would pass through an open window into an apartment, will be conducted down through the floor and wall to the earth if the window is shut. We have thus given some directions to be followed by all persons during the prevalence of lightning, and we have set forth the science of the question, so that all may not only see the reasonableness of our remarks, but their seasonableness also.

Making Perfume.

Have any of the uninitiated ever had any idea how perfumes are obtained from flowers? It is to many a mystery, an occult art, a pretty kind of alchemy, a mild witchcraft. There is a rough notion of machines like miniature wine-presses, where the flowers were squeezed, and bruised, and mangled, and made to give up their perfumes in a rude masterful manner; though it is puzzling to think how mignonette, or sweet pea, or any other flower which loses its odor when crushed or dead, could be treated thus to any advantage.

There are, it appears, four modes of obtaining the perfume of plants and flowers, The first is by expression—a mode only adopted when the plant is very prolific in its volatile or essential oil; that is, in its odor. The outer rind or pellicle of the lemon, orange, citron, and a few others of the same class, is chiefly subjected to this process. The parts to be expressed are put into a cloth bag, and placed under a screw press; sometimes laid, without any bag at all, on the perforated plate through which the oil is to run. When all the oil is expressed, it is left standing in a quiet place for some time, to allow it to separate itself from the water which came with it. It is then poured off and strained.

The second method is by distillation—a method used for lavender, cloves, seeds, herbs, but not for the rarer flowers, the odors of which are lost by heat; only to be gained indeed by loving contact and careful influence. The only notable fact in this process of distillation is that, in France, they apply fire directly to the still; in England, they distil by steam. Excepting for this difference, this mode of chemical manipulation is too well known to need description here. The fire applied directly to the still sometimes gives a burnt odor to the distillate, which is not entirely disagreeable in some combinations.

Maceration is the third process. Purified beef or deer suet is placed with purified lard in a clean metal or porcelain pan or steam bath. When melted, the flowers required to be used are thrown in and left to remain from twelve to forty-eight hours; the liquid fat is then strained, and fresh flowers added, This is repeated as often as is necessary; and the pomatum obtained therefrom is known as six, twelve, eighteen, or twenty-four, according to the strength of the odor. For perfumed oil the same process is gone through; fine olive oil only being substituted for lard and suet. Orange, rose, and cassie, are prepared thus; violet and réséda are begun thus, and finished by enfleurage.

This is the daintiest method of all. Enfleurage, or absorption, is very little practiced in England, though uniformly used in France for all the finest odors. Square frames with glass bottoms are spread with a layer of fat about a quarter of an inch thick; and then sprinkled abundantly with flowers. They are suffered to remain forty-eight hours, when a fresh supply of the spent and exhausted blossoms is given; which process is repeated over and over again until the pomatum is sufficiently powerfully scented. For perfumed oil, coarse cotton cloths are saturated with fine olive oil, and laid on frames of wire gauze. These are treated in the same manner as the above; and, when thoroughly perfumed, are placed under a screw press and the oil wrung from them—rich flowery oil, such as Juno or Venus might have used, and been proud of, too.

Odors are extracted from various parts of plants or flowers; different in different kinds. The roots of orris and of vitivert; the stem or wood of cedar, santal and rosewood; the leaves of mint, thyme, and patchouli; the flowers of roses, violets, and other flowers; the seeds of the Tonquin bean, and carraway, the bark of the cinnamon; many gums and resins—benzoin, olibanum, &c.; these are a few instances of the various odoriferous parts of different plants. Some indeed are more varied in their odoriferous elements. For instance, the orange-tree gives three distinct scents, and most flowers give two, according to their manner of preparation. From the leaves of the orange-tree, comes petit-grain; from the flowers, neroli; from the rind, the essential oil known as Portugal. Again the orange flower or neroli, macerated in pomade is known as orange-flower pomatum. This, chopped up fine and put in rectified spirit, makes extrait de fleur d'orange, which is one of the most valuable bases to the perfumer—passing, with slight modifications, for sweet-pea, magnolia, and scents of that class. Orange-flowers distilled with water give the otto known as oil of neroli. The petit-grain, a quite different odor, is extracted from the leaves and the young unripe fruit of various species of citrons, and is used for scenting soaps. The neroli petale and bigarade help to form Hungary-water and eau de Cologne. The water which was used in distilling the oil of neroli, when freed from oil, is eau de fleur d'orange, a cheap and fragrant cosmetic of three qualities. The first is made from the distilled flowers; the second, of the water used in distilling the oil of neroli; and the third from the leaves, stems, and young unripe fruit of every kind of orange-tree. They are easily tested; the first turning rose-color under a few drops of sulphuric acid; the second turning rose-color, too, when quite fresh; but, after a short time this chemical result and the aroma both disappear; the third does not change its color at all under sulphuric acid, and smells more of lemon than of orange.

Who does not know the magic virtues attributed to almond-paste? But the largest amount of the almond perfume of commerce comes from distilled laurel leaves and the kernel of stone-fruit; also from the skin of bitter almonds. The essential oil of almonds is got from the nut itself; first pressed into a cake, then moistened with salt and water; from the fermentation of this is produced the amygdalin and emulsine contained in the almonds. Laurel leaves and other analogous substances give the same results under the like treatment. Fourteen pounds of almond-cake yield one ounce of essential oil, which must then be diluted with spirit to become pleasant, the concentrated essence being too powerful to be tolerable. It is much used in soap, cold cream, &c., being esteemed as a good cosmetic. Mirabane is imitated oil of almonds, made from benzole (a product of tar oil), and patented by Mr. Mansfield, of Weybridge, England. This mirabane was used for perfuming soap; but it did not succeed, and, after a short time, the licence was withdrawn, since when miribane or, chemically speaking, nitro-benzole, has not been applied to any of the general uses of perfumery.—*S. Piesse.*

SCIENCE AND SOAP.—We refer to the fact, in another article, that the government is calling for soap. Here, it seems to us, is a rare chance for Professor Gardner, the famous New England soapman, to visit Washington, assemble the officials who contract for soap, and proclaim in their ears, in his own peculiar manner, the virtues of soap and cleanliness. Uncle Sam and all his official family would be astonished to hear that there is not only virtue in soap, but also science and wit.

A remarkable pillar of light, resembling the tail of a large comet, swept from northeast to northwest over the city of New York on the 29th ult,

Notes and Queries

*** PERSONS who write to us expecting replies through this column, and those who may desire to make contributions to it of brief interesting facts, must always observe the strict rule, viz., to furnish their names, otherwise we cannot place confidence in their communications.

WE are unable to supply several numbers of this volume; therefore, when our subscribers order missing numbers and do not receive them promptly, they may reasonably conclude that we cannot supply them.

J. A. S., of Miss.—There is no new work on the high pressure steam-engine published. The most complete work on the subject is "Tredgold on the Steam Engine," a London publication, and very dear.

J. B. B., of Fla.—We would be happy to receive a description of your electric wind vane. We advise you to connect the wires with the ground for safety; it will do no harm, while it will ensure confidence. Mr. Sherry, of Sag Harbor, L. I., we believe, will furnish you with such a clock as you want on reasonable terms.

A. T., of Ill.—There is no publication devoted specially to type-founding in this country or in England. "The Printer," published by Henry & Huntingdon, this city, contains considerable information on the subject. Several works on printing have been published. Joel Munsell, printer, of Albany, N. Y., has quite a large library of books relating to this art.

R. & G., of Md.—There would be scarcely a limit to the value of a motor that would supersede steam with the economical results you mention.

W. R. H., of Texas.—We regret that we cannot send you No. 52 of the last volume. We are out of that number. A mixture of sulphur, phosphorous and camphor burned in anthills will generate a heavy gas, that will be likely to kill the insects.

J. T., of Del.—We advise you to put a coat, one inch thick, of boiled pitch and asphalt cement on your leaky roof; it should be laid on hot. contain 30 per cent of sand and should be covered with air slacked lime or marble dust, and on the top of all some fine white gravel.

H. I., of N. Y.—A common opinion prevails that the ocean cannot be sounded; this is a mistake, for the whole Atlantic has been sounded from America to Europeia latitude 50°. The water in your dam will flow back just as far with a 100 feet diagonal breast as a 50 feet straight breast. The hight of the wall or breast determines the back-flow, not the length of it.

L. Hatfield, Cuyahoga Falls, Ohio, wishes to correspond with a manufacturer of mowing machine knives.

J. S. N., of Pa.—Common gum copal varnish will stand exposure to rains for one season at least, and is transparent but not white. Linseed oil, boiled down until it is of a creamy consistency, makes a very durable transparent varnish, which will last for two or three seasons exposed to the weather.

S. C., of Va.—To obtain a correct knowledge of chemistry, you should commence and study a good elementary work and experiment. Get Gregory's or Kane's elements of chemistry to commence with.

B. P. R., of N. Y.—The mineral which you have sent us from Washington County is galena. If fuel is cheap and abundant it may be profitably smelted for its lead. It contains no silver of any consequence.

W. A. L., of N. Y.—What more information do you want in regard to concrete houses than the article to which you have referred?

J. P. W., of Ill.—Address Wiley & Halsted, booksellers, of this city, in reference to a work on architectural drawing.

J. W. B., of Tenn.—H. C. Baird, of Philadelphia, has issued a work on brewing and distilling, which also contains information about yeast-making.

H. S., of Pa.—A depilatory powder for removing hair can be made of slacked lime in powder, three ounces, orpiment, half an ounce, mixed with water to the consistence of cream. Apply it with a rag or brush, and allow it to remain on for five minutes.

R. W., of Mich.—Bricks glazed on the outside have been proposed several times, and no doubt they would be excellent to prevent moisture entering from the outside.

L. J. O., of Wis.—We are not acquainted with the practical operation of the coal oil lamp to which you refer.

W. H., of Ill.—Your proposed method of navigating the atmosphere is impracticable. You seem to suppose that by making a spherical vessel to contain 100,000,000 cubic feet of air, then pumping this out, that it will "go off and up like a bird." You also propose to build an iron vessel 1000 feet long and 500 feet in diameter to carry out your ideas. If you do so, and extract the air from it by a pump, its sides will be crushed in like pasteboard, as the outside pressure will then be 15 lbs. on the square inch.

S. M. M., of Iowa.—The substance of your letter may be summed up in the following words: "There is no general rule for determining accurately the amount of friction which a steam-engine consumes on itself." If all engines were made alike, one rule could be applied to all, not otherwise. A steam-engine can be constructed which will not consume more than one-twentieth of its power in friction.

L. K. H., of Wis.—If you turn to page 262, No. 32 of the SCIENTIFIC AMERICAN, you will find information about license laws of States which fully answers your question. If you employ a patent process in tanning leather you are not obliged to stamp the date of the patent on the leather. The process, and not the leather, is the subject of the patent.

W. A. F., of ——.There is no chance for a pa ent on your marine governor. The same thing has been oftentimes proposed to us. We have no confidence in its value as an operating device.