

A patent has recently been granted for a method of refreshing horses while in harness, which consists in making the bit hollow, and having perforations in it. A rubber tube extends from one side of the bit to the carriage, and by pressing a rubber bag which contains water, the driver is enabled to refresh his horse whenever he chooses without stopping. For saddle horses the water bag is suspended from the horse's neck, or upon the pommel of the saddle.

The sugar crop of Cuba for the present year is estimated at 3,313,000 boxes of 450 pounds each. The molasses crop will amount to 365,000 hogheads. Notwithstanding the distressed condition of the country, the actual amount produced this year will be about seven-eighths of the total product of last year. The smallest yearly exportation of succharine productions during the past ten years amounted to 2,430,000 boxes, valued at \$35,000,000. A careful estimate of the succharine products, tobacco, wax, cocco, dyewoods, etc., of Cuba, places the total value at \$80,000,000.

It is stated in one of the French papers that the Hindoos in the environs of Bombay have been much startled by the appearance of their God Vishnu, who has several times been seen at night whirling past them on a celestial wheel like a dash of fire. Directly he approaches them they prostrate themselves in the dust. Yet all the time it is not really Vishnu: it is only a certain Mr. Kemp, who, ambitious to be the first velocipede rider under an Asiatic sun, has provided himself with one of these vehicles, but finding that the heat rendered it an encumbrance rather than a luxury in the daytime, is compelled to take his exercises upon it at night, by the aid of a lantern.

The inspectors of the Irish prisons report that 197 men and 565 women, who were sent to gaol in Ireland last year, had been previously in prison twenty-one times or more. Eight of the men and thirty-two of the women had been in prison more than 100 times. Three of the men had been in gaol above 160 times, one of the women 159 times, another 224 times, and one of the gaol-birds was committed for her 267th time. These persons, chiefly committed for drunkenness or disorderly conduct, spend most of their days in prisons, supported at the public expense. Imprisonment for debt is occasionally made to eke out a living. When the Lord Lieutenant, on the marriage of the Prince of Wales, cleared the Dublin Marshalsea Prison of those who were supposed to be unfortunate debtors two persons were most reluctantly turned out. A benevolent magistrate allowed them provisions which provided them with food: to meet other expenses they had themselves arrested in order to obtain a commutation in the Marshalsea free of charge.

A number of Massachusetts women, wives of prominent citizens of Cambridge and professors at Harvard, have organized an association for co-operative house-keeping. Their purpose is to purchase food and clothing at more reasonable prices, and to get their cooking, laundry-work, and sewing done better and more conveniently than is possible under the present régime. Their plan is to fit up this year a kitchen and laundry, large enough to serve at least fifty households, and next year to open sewing-rooms to furnish clothing for these households. Business is to be conducted on a strictly cash basis. Members are to be furnished goods at the current retail prices; and after the expenses of each department and the interest on the shares shall have been paid, the remaining profits are to be divided among the subscribers proportionately to the amount of their purchases.

A curious and useful discovery has been made by a workman, who some time ago, in varnishing various metal pieces, scorched himself most dreadfully. In his agony, and without an instant's reflection, he thrust his injured hand into the pot containing the varnish, and immediately felt relieved as if by enchantment. He repeated the operation for a day or two, and in a very short time his hand was perfectly cured. This discovery excited attention in his neighbourhood; he treated many similar cases successfully, and in September, 1868, he was sent for to Metz in order to cure the man injured by the powder magazine. He is now in Paris, having been sent for to try his varnish on two patients in an hospital, and has succeeded so well, that a sore that had been reserved for comparison, to be treated with nitrate of silver in the ordinary way, has been given up to him to be managed in his way.

It is satisfactory to hear that M. Armand, a French savant, has stated to the Academy of Sciences that he has discovered a sure antidote to nicotine in the common watercress. It destroys the poisonous effects of nicotine, and yet does not alter the aroma of tobacco. A solution of watercress may therefore be employed for steeping the leaves of tobacco, and would thus divest them of their noxious properties, and moreover, a draught of the same will act as a sure antidote to nicotine. In the face of this important discovery, anti-tobacco societies will no longer have any excuse for the affectionate interest they have hitherto displayed in the health of smokers, or for the lavish abuse they have so freely bestowed upon their victims. Instead of tracts, the anti-tobaccoists should now distribute watercresses, and we feel sure that Dean Close will be the first to set a good example by encouraging the growth and promoting the circulation of this now truly valuable plant.—*Fall Mall Gazette.*

M. Puschel, a German chemist, gives the following receipts for the application of sulphur to the colouring of small metallic objects:—1. A solution is made in the following manner: Dissolve 4 oz. of the hyposulphite of soda in a pint and a half of water, and then add a solution of 1 oz. of acetate of lead in the same quantity of water. Articles to be coloured are placed in the mixture which is then gradually heated to boiling point. The effect of this solution is to give iron the effect of blue steel; zinc becomes bronze, and copper or brass becomes, successively, yellowish red, scarlet, deep blue, light blue, bluish white, and, finally, white, with a tinge of rose. This solution has no effect on lead or tin. 2. By replacing the acetate of lead in the solution by sulphate of copper, brass becomes first of a fine rosy tint, then green, and, finally, of a iridescent brown colour. Zinc does not colour in this solution; it throws down a precipitate of brown sulphuret of copper, but if boiled in a solution containing both lead and copper, it becomes covered with a black adherent crust, which may be improved by a thin coating of wax. If the lead solution be thickened with a little gum tragacanth, and patterns be traced with it on brass, which is afterwards heated to 212 degrees, and then plunged in solution No. 1, a good marked effect is produced.

SCIENCE AND ART.

An alloy for jewellers' use, said to be very ductile and malleable and to possess a fine color, is composed of 750 parts of gold, 166 parts of silver, and 84 parts of copper.

Dr. Koller recommends concentrated glycerine as a substitute for spirits of wine for the preservation of zoological and anatomical preparations, on the ground that it is not liable to evaporation, that it is not combustible, and that moreover, it preserves better the natural color of various preparations usually kept and preserved in spirits of wine.

A photographer in the Strand has issued a "photograph likeness of our Saviour," which Hiram Fuller, once of the New York Mirror, commends as a true likeness. He says it is copied from the portrait carved on an emerald by order of Tiberius Caesar, which the Emperor afterwards gave out of the treasury of Constantinople to Pope Innocent VIII., for the redemption of his brother, taken captive by the Christians.

Artificial stone is made by mixing sand with a concentrated solution of silicate of soda. The pasty mass thus formed is placed in the mould of the desired shape. It is then dried, but is yet as brittle as biscuit. It is next saturated with a solution of chloride of calcium. In about an hour the chemical change takes place, and the whole mass becomes as hard as stone; finally, it is washed and dried.

A good telescope, with a 3 1/4 inch aperture, virtually brings the moon within 1,200 miles of the observer, or within one two-hundredth of its real distance. Lord Rosse's telescope brings it within 42 miles, so that objects 270 feet long are discernible. Baer has calculated that an instrument of ten times the power of Rosse's would be required to bring the moon within a German mile, at which distance the body of a man can be perceived.

Sir David Brewster found, says the Engineer, that the fundamental principle of the stereoscope was known to Euclid, who compiled the well-known Elements about B. C. 280; that it was distinctly described by Galen, 1,500 years ago; and that Baptista Porta, in 1599, gave such a complete separate picture seen by each eye, and of the combined picture placed between them, in which we recognize not only the principle but the construction of the stereoscope.

The Paris Presse gives an account of an experiment, at the Marquis Stock Works, for the manufacture of steel by one operation. M. Aristide Bernard is the inventor of the new process which proved entirely successful, the operation lasting about an hour and a half, when the metal was converted into steel "with as much facility as puddling." The Presse adds: "We shall be much deceived if this invention has not in it the germ of a complete revolution in metallurgy."

M. Leibreith has written to the French Academy about a new anæsthetic discovered by himself. He calls it chloral. It is to be administered by absorption rather than inhalation, which enables the dose to be measured with greater accuracy. The insensibility produced is said to be more complete than that caused by any other substance. The use of it is unattended by any danger, and a woman was lately kept under its influence for two hours during a protracted surgical operation.

DEPOSITING METALS ON FERROUS MATERIALS.—Silk, muslin, or other fibrous materials, may be covered with silver, copper, or gold, by the electro-plating process, thus: Make a solution of sulphate of copper in liquid ammonia; dip the materials in this, and dry them; then place them in a solution of honey or grape sugar in water at a warm temperature. The sugar will thus decompose the copper salt, and deposit metallic copper on the fiber. The silk or muslin may now be transferred to the electric bath, and receive a deposit of such metal as is desired.—*S. Presse.*

M. Revoil, an architect well known in France, in the course of his attempts to arrive at exactness in the drawings of distant objects, by the aid at one time of the camera lucida, and at another of the ordinary telescope, has invented an apparatus combining the principles of the two instruments. This instrument he calls the Téléconographe. The principle involved is that of allowing the image transmitted by the object-glass of a telescope to pass through a prism connected with the eye-piece. The rays of light that would in the ordinary use of the telescope be transmitted direct to the eye, are refracted by the prism, and thrown down upon a table placed below the eye-piece. The distance between the prism and the table determines the size of the image projected on the latter, and it is easy for the observer to trace on a paper placed on this sketching table the actual outlines indicated by the refracted light. The telescope has both vertical and horizontal motion, and is so constructed that a connected drawing can be made of a larger area than can be included in the object-glass at one view; in fact, an entire panorama can be traced, if the relative positions of the axis of the telescope and the surface of the sketching table are undisturbed. By means of this instrument a perfect drawing of the summit of one of the towers of Notre Dame, Paris, was made at the distance of 300 yards, and two mountain peaks, in Provence, were also admirably sketched. For the faithful delineation of objects so distant as to require the use of a telescope to distinguish their details, for military surveying, &c., its services promise to be of great value.

AGRICULTURAL.

Place a bone in the earth near the root of a grape, and the vine will send out a leading root directly to the bone. In its passage it will throw out no fibres—but when it reaches the bone the root will entirely cover it with the most delicate fibres, like lace, each one seeking a pore of the bone. On this bone the vine will continue to feed as long as nutriment remains to be extracted.

An Illinois correspondent writes to the New England Farmer as follows:—I generally grow several sorts of onions. When my black seed onions require thinning out in the second time, I draw out those with the largest bulbs, about the size of horse beans, and lay them on the ground in rows dry. They will enlarge considerably after being drawn. Let them lie till the tops are all quite dark and dead; no matter if you have a shower or two of rain upon them, if turned over often to dry again. When quite dry I tie them up in small bunches by the tops, and hang them up where the sun can shine on them, taking care to stow them out of frost's way in winter. Soon as spring opens put them in rows about six inches apart each way, and we get early green onions, either to eat green as a salad or to use with "ge" for stuffing fowls, &c.

TAKING UP PLANTS FOR WINTER.—Many of the half-yearly plants which have bloomed in the borders, such as Fuchsias, Carnations, Roses, Geraniums, etc., should now be prepared for their winter quarters and potted at once. These may be kept in a cold frame or pit or in a dry cellar. The succulent shoots should be cut away at the time of potting, and be exposed to the air, but shaded until they become established. The longer they can be kept out without injury from frost, the better will they endure their winter confinement. Chrysanthemums for blooming in-doors should now be potted. They will grow somewhat at first, but will soon recover, and give a satisfactory bloom. After the flowering is over, cut back the stems and place the pots in the cellar. Some of the Geraniums will bloom during the winter in the house if taken up early and well cut back at the time. Ivy for house growth will bear almost any treatment, but it is best to take it up at once and allow it to be well rooted in the pots before removing it in-doors, and then take it to a cold room.

Some, and indeed many things usually sown only in the spring, may, with advantage, be sown in the fall—as parsnips, carrots, beets, onions, lettuce, peas, and all plants that a slight frost will not cut down. Care should be taken not to sow early enough to have the plants come up before the frost sets in. The seed, in this way, will lie safe all winter, though the frost should penetrate three feet below them. When heavy frosts come on, but not before, the beds should be covered with straw or litter, kept from blowing away by the most convenient weights, as scantling, rails, planks, etc. We all know what a bustle there is to get in early peas. If they were sown in the fall they would start up the moment the frost was out of the ground, and would be ten days earlier in bearing, in spite of every effort being made by the spring-sowers to overtake them. One object of this fall sowing is, to get the work done ready for spring; for at that season you have so many things to do at once! Besides, you cannot sow the instant the frost breaks up; for the ground is wet and clammy unfit to be dug or trenched or trodden upon. So that here are ten days lost. But the seed which has lain in the ground all the winter, is ready to start the moment the earth is clear of the winter frost, and is up the time you can get other seed into the ground in good state.

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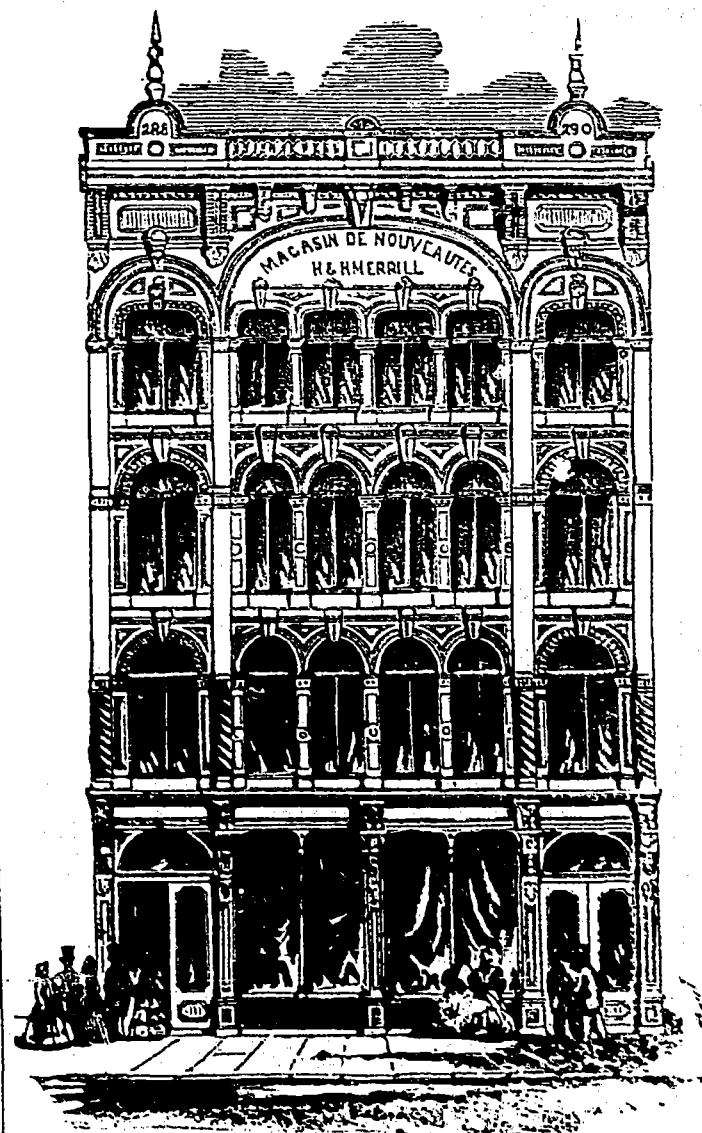
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