Chief Engineer's Office, U. S. Navy Yard, Washington, November 18, 1874,

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Very respectfully, your obedient servant, ned] EDWIN FITHIAN, [Signed]

Chief Engineer, U.S. N

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vertisement, next week, on page 237.

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W. H. A. will find directions for bleaching beeswaxon p. 299, vol.31.-W. M. will find a recipe for silver-plating solution on p. 299, vol. 31.-W. H. M. will find directions for coloring putty on p. 107, vol. 31.—R. C. J. can plate iron with silver by the process given on p. 314, vol. 24.-W. H. W. will find an explanation of sailing faster than the wind on p. 176, vol. 28.—R. H. H. will find directions for bronzing on iron on p. 283, vol. 31.—H. E. will find directions for case-hardening iron on p. 69, vol. 31. -F. E. H. will find a recipe for marine glue on p.
43, vol. 32.—E. E. W. will find the recipe for furniture polish and also for finish for black walnut on p. 315, vol. 30.—J. K. S. and J. S. S. should each consulta physician.—C. G. M. will find a description of the wonder camera on p. 26, vol. 31.—C. C. S. will find directions for preparing muriate of ammonia for inhalation on p. 315, vol. 31.-W. H. and many others are assured that there is not and cannot be an instrument for indicating hidden treasure.-J. D. will find directions for softening and toughening wood on p. 319, vol. 31.

(1) W. J. A. asks: Will nitro-glycerin explode through a capillary tube? A. If we under stand your question, yes.

(2) C. D. B. asks: What kind of oil is the best to preserve shoe leather, and to keep it soft? A. You will find neatsfoot oil the best.

Will a compound of cologne, hartshorn, tincture of cantharides, oil of lavender, oil of rosemary, and oil of nutmeg injure the skin? A. Probably not if used only a few times, and not in excessive quantity. Cologne is mostly all alcohol, which has a very injurious effect upon the skin, if used fre quently, by dissolving out the natural oils, leaving the skin harsh and dry. If in the formula you present the oils are in excess of the alcohol or cologne, then the cologne is of no use on the skin and can be dispensed with; if, on the other hand, the cologne is in excess, the oils are of no use, as the uncombined alcohol is free to unite with the oils and fats of the skin. Unless the skin is diseased, the best lotion is cold water.

(3) F. S. asks: How can I use india rubber in either turpentine or naphtha withoutimpairing its elasticity? A. Caoutchouc dissolves in bisulphide of carbon, coal naphtha, and rectified oil of turpentine. In these liquidsit first swells up very considerably, and eventually forms a ropy liquid, which, on evaporation, leaves the caoutchouc with its original elasticity.

(4) F. W. asks: How is nitro-glycerin made and how is it exploded? A. See p. 91, vol. 32.

Is there such an invention as the screw of Archimedes for elevating water? A. The screw of Archimedes, called after the philosopher that invented it, is one of the simplest machines for raising water, and operates at only short distances. It consists of a tube wound spirally round a solid cylinder, the lower end of which dips beneath the water at an angle of about 35°, the upper end being supported by a suitable arrangement, and fast ened on a crank, which serves to rotate it.

(5) R. S. G. asks: What are the ingredients of Seidlitz powders? A. Rochelle salts 1 drachm carbonate of soda 25 grains, tartaric acid 20 grains. Dissolve the two first in a tumbler of water

add the latter, and drink immediately. (6) N. P. K. asks: 1. How can I prepare hard enamel? A. Mix 100 parts of pure lead with 20 to 25 of the best tin, and bring them to a low red heat in an open vessel. The mixture then burns nearly as rapidly as charcoal, and oxidizes very fast; skim off the crusts of oxide successive ly formed, till the whole is thoroughly calcined. Then mix all the skimmings and again he fore, till no flame arises from them, and the whole is of a uniform gray color. Take 100 parts of this oxide, 100 parts of white sand, and 25 or 30 of common salt, and melt the whole by a moderate heat. This gives a grayish mass, often porous and apparently imperfect, but which runs to a good enamel when afterwards heated. 2. How can I bring a low quality of gold to the color of 18 carat gold? A. Alloy it with the proper proportion of silver and copper. 3. I have a quantity of silver melted with lead; it is so brittle that I cannot roll it. How can I get it in condition to work? A. The desired object may be attained by melting the alloy in a cupel formed of bone ashes. The lead is gradually oxidized, melted, and absorbed by the porous material composing the cupel.

(7) H. P. A. says: I am now using the sap part of the white wood tree, cut to the thickness of 36 to the inch. In order to cleanse it of the sap and woody taste, I boil and frequently change the water, yet do not get it tasteless. How can I cleanse it of the taste without injuring the strength How can I of the wood? A. Try weak lye, and water afterwards.

(8) T. B. C. asks: Is there any way of restoring marble that has been spotted with lemon juice? A. Marble being a carbonate of lime, the action of such an acid upon it would be to enter into combination with the lime, expelling the carbonic acid, forming a different body from the original marble; and from the fact of its being a mealy powder, it was easily wiped away without notice, leaving behind it the blur or depression in the surface of the polished plate you speak of. We do not think it can be remedied.

(9) H. S. says: What is the simplest way to make an apparatus for blowing glass, such as is used by men that travel the country? A. What you require is a current of airforced upon a flame produced from a wide illuminating surface, as a large wick, or, better, a gas flame widened and then subjected to the current of air.

(10) A. C. B. asks: 1. Is there any way to harden coin silver? A. We do not know of any. 2. Is there any hard metal or alloy that can be used for fine work, and will not scale when heated? A. Try the alloy known as packfong, or German silver, a compound of nickel, zinc, and copper, in which the proportions vary considerably. A good alloy consists of 5 equivalents of copper, 3 of zinc, and 2 of nickel. Packfong is of a yellowish white color, and, when newly polished, closely resembles silver in appearance.

(11) F. C. asks: Will anything dissolve lithia carbonate except carbonic acid water? A. Yes, ammoniacal salt.

(12) H. H. asks: How can I make bisul phate of tin? A. You probably mean bisulphide of tin (Sn S2), known also as mosaic gold; it forms a beautiful yellow flaky compound, which is obtained by preparing an amalgam of 12 parts of tin and 6 of mercury; thisis reduced to powder and mixed with 7 parts of sublimed sulphur and 6 of sal ammoniac. This mixture is introduced into a flask with a long neck, and is heated gently so long as any smell of sulphuretted hydrogen is perceptible; the temperature is then raised to low redness calomel and cinnabar are sublimed, and a scaly mass of $\operatorname{Sn} S_2$ remains. If the heat be pushed too far, part of the sulphur is expelled and the operation fails: the sal ammoniae appears by its volatilization to moderate the heat produced during the sulphuration of the tin, which would other wise rise so high as to decompose the bisulphide.

(13) F. C. and others. - Most medical authorities agree that the rightside is the better to sleep upon; but this is not always the case, the number of persons who sleep upon the left being as many as those who use the right side. It is simply a matter of convenience and ease, it being folly to insist upon a person to use one side when it is a discomfort.

(14) J. W. asks: 1. What is the tenacity of gold? A. It will take 24.20 lbs. weight to break a gold wire having a sectional area of a square millimeter, if the gold be annealed. If the gold be drawn, it will require 61.60 lbs. to break it. 2. When gold is consumed by fire, what is the color of the flame? A. Molten gold exhibits a sea green color. 3. What is the color of light transmitted through a pellicle of silver? A. Bluish. 4. When silver is consumed by fire, of what color is the flame? A. The spectrum of silver is green. 5. How can cinnabar be converted into a yellow pigment? A. Continued pulverization will change the brick red color of cinnabar to an orange yellow.

(15) F. W. B. says: I have some white silk which has become yellow by washing. How can I restore it to its original color, without injuring the silk? A. Try steeping it for a short time in vinegar or lemon juice, after having perfectly cleaned it. Rinse in cold water.

(16) J. H. L. asks: How can I illuminate tableaux with a strong light, and have changes of color without resorting to the use of disagreeable compounds? How can I prepare and use the calcium light for the above purpose? A. The magnesium light is sometimes used for this purpose. The method of obtaining it consists in burning maguesium ribbons which may be obtained from any chemist or dealer in theatrical goods. In the calcium or lime light, an ignited jet of the compound gas (oxygen and hydrogen) is caused to impinge against a small cylinder of caustic lime. In the apparatus used for this purpose, the gases are conducted by separate, tubes to the burner, which they enter at opposite sides, a few inches from the tip of the burner. The burner or let should be bent towards the vertical surface of the lime at an angle of about 45°. The lime should approach the tip of the jet within $\frac{1}{16}$ of an inch. The gases are kept in separate bags of india rubber. oxygen gas is obtained by heating together, in an iron or copper bottle, chlorate of potash with one quarter its weight of peroxide of manganese. Hydrogen gas may be obtained by acting upon scrape of zinc in a large bottle with dilute sulphuric acid. The first portions of the gas, if obtained in this manner, should be allowed to escape, otherwise its mixture with the air in the apparatus forms a very explosive mixture. Ordinary illuminating or coal gas, if obtainable, will answer the purpose as well as pure hydrogen. Both the above gases are washed before being allowed to enter the bags This is arranged as follows: A small bottle is obtained, which is partially filled with water; through a tightly fitting cork in the mouth of the bottle pass two glass tubes, one of which passes down and dips beneath the surface of the water, the other barely passes through the cork. In order to use this washer, the tube which dips under the

water is attached by rubber tubing to the genera ting flask, and the end of the other tube, which just passes through the cork, is attached to the receiving bag. Thus arranged, the gas as generated is required to pass through the water. Care should be taken (in the generation of the oxygen) at the end of the operation that the water in the bottle does not run back into the generating flask, otherwise an uncontrollable quantity of steam will be enerated from contact of the moisture with the hot metal.

(17) F. N. J. and others.—The statements made as to the preparation of musk are on the authority of a work recently published on perfumery, and presumably reliable

(18) D. S. M. asks: 1. What effect will alum water have on flour when used for dampening wheat before grinding it? A. Probably the same as when applied after the wheat is ground, as is often done by bakers. 2. Will it toughen the wheat so as to give a better yield? A. We think not. 3. Is it injurious to health? A. Yes. This method of whitening the bread is prevented by heavy fines and penalties in England.

(19) S. C. B. asks: Does soap boilers' refuse contain anything unfavorable to its use for agricultural purposes? A. Not that we know of.

(20) W. O. P. says: We frequently find melted lead flowing from stove and grate in which we are burning coal. A boy once showed me a piece of what I presume was lead ore; I could cut it with ease with my pocket knife. A few days ago we heard a snapping report in the stove, and melted lead splashed out on the floor and burnt my brother's hand. Are not these facts indications of lead in quantity somewhere in the district? A. Yes. 2. If so, would it be found above or below the coal vein? A. It might be found below as well as above. 3. If there be lead, how could the vein be most easily found? A. By carefully examining the exposures of the rocks for the vein, and by surface indications of minerals containing lead.

(21) K. B. F. asks: Is carbolic acid a poison taken internally or applied outwardly? A. It is a poison in both cases. It acts similarly to creosote.

(22) S. T. asks: How are paper magnetic fishmade, so that when they are put in the palm of the hand they will draw up and turn over as if alive? A. They are made of thin gelatin, called gelatin paper. Collodion films may also be used for the same purpose.

Will tobacco smoke have any effect upon soft rubber tubing? Will vinegar corrode it? A. Neither will have any permanent effect.

(23) J. S. & Co. ask: What is a good solution for tempering steel for drilling rock? A. Be careful not to overheat it in hardening and forging, and quench in salt water, drawing to a brown

(24) J. P. S. says: I recently came across a strange stone; it weighs 2 or 3 tuns, and is formed of small stones about the size of a hen's egg. It seems to have been ground off on the outside, for it is perfectly smooth. It lies half a mile from a small stream, and on a hill fully 100 feet above the stream. What is it? A. Such rocks are called conglomerates, and are quite common in some parts of New England and elsewhere.

(25) O. A. Jr. asks: How can I drill hard cast iron, without annealing it? A. Harden the drill to a straw color, and run it slowly.

Should an icehouse be set on or above the ground? A. See p. 251, vol. 31.

(26) W. W. B. says: An apparatus for gold and silver plating is constructed as follows: Bath: 4 ozs. cyanide of potassium and 4 ozs. carburet of ammonia,dissolved in Igallon rain water. Then add 12 grains gold (orsilver), apply battery, and add blue vitriol until a blue color is obtained. Battery: Put nitric acid in the porous cup, and diluted sulphuric acid in the outer. Suspend a carbon plate in the porous, and zinc in the outer, with small copperwires. I use the gold solution hot. I am very careful to clean thoroughly thearticles plated, but the work will not last six months. Can you inform me of a process by which I can do plating that will last one, two, or three years? A. To make a silver solution, dissolve the silver in four parts of nitric acid and one of water; the diluted acid is heated in a vessel and the silver added by degrees. After the metal is dissolved, put it in a large vessel and dilute with water. Then add a solution of cyanide of potassium so long as a white precipitate is formed. When the precipitate of cyanide of silver has settled, the clear solution is carefully decanted, and the vessel filled with water, which is again decanted as soon as the precipitate has settled. Repeat this three or four times, and then add a solution of cyanide of potassium until the precipitate is all dissolved. The solution is ther ready for use, after filtering. Dilute the cyanide of potassium so that the plating solution shall contain one ounce of silver to a gallon. A preparation of solution of gold is prepared by dissolving gold in three parts muriatic acid and one of nittic acid, which forms the chloride of gold. This is digested with calcined magnesia, and the gold is precipitated as an oxide. The oxide is boiled in strong nitric acid, which dissolves any magnesia in union with it. The oxide, being well washed, is dissolved in cyanide of potassium, which gives cyanide of gold and potassium. A Smee or Daniell battery is better than a carbon battery for silver and gold plating.

(27) B. D. T. asks: How are plow castings chilled? A. Cast them in an iron mold, and let them cool in the mold.

(28) L. G. acks: 1. What kind of grease is est to use in the oil cups of engine cylinders? A. Tallow. 2. Which oil is best to use on engine slides? A. Lard oil.

(29) Y. P. says: I have made a nickel solu tion of 1 lb. sulphate of nickel, and 4 ozs. salammoniac or chloride of ammonia to a gallon of sul-