Business and Personal.

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300 new and 2'd hand Machine Tools, Saw Mills, Planers, Wood Working Machines, Pumps, Water Wheels, Grist Mills, Engines, Boilers, etc., for sale. See first column of page 77, this number.

Notes & Queries

H. H. will find a full description of jade on p. 49, vol. 34.—J. C. will find a recipe for cement for iron pipes on p. 185, vol. 33. Tempering mill-picks is described on p. 202, vol. 31.—W. H. will find on p. 347, vol. 32, a recipe for an alloy fusible below 212° Fah.—D. G. F. will find good recipes for bronzing on iron on pp. 11, 85, vol. 33, and on brass on p. 51, vol. 33. "Electricity, its Theory, Sources, and Applications" is a good book on electro-plating.—H. A. H. will find on p. 139, vol. 31, a formula for the lifting power of gas. The silvery coating on iron wire, given in our recipe, will wear well with careful usage. Steel wire is best for springs that are much used.—E. B. will find a description of leather pulp on p. 296, vol. 31.—E. T. C. will find directions for cleaning brass on p. 102, vol. 25.—J. C. Jr. will find Bloxam's "Chemistry" an excellent work for students' use.—W. S. S. will will find on p. 10, vol. 27, a full description of the phosphorus lamp. This also answers H. W. S.—T. E. will find on p. 11, vol. 31, a recipe for waterproof varnish, which he can apply to his bronzed work.—H. A. P. will find full directions for molding rubber on p. 283, vol. 29.—H. F. H. is informed that no boiler incrustation preventive can be recommended unless the nature of the feed water is known, as the impurities of water differ so widely in their nature.—W. F. McL. will find a recipe for marine glue on p. 42, vol. 32. Mix enough gutta percha with bisulphide of carbon to make a thick varnish.—J. S. is informed that a pump made of a tin pipe with a wooden plunger is commonly used to draw oil out of casks. Coal ashes do excellent service in earth closets.—F. K. will find a good recipe for baking powder on p. 27, vol. 34.—J. N. will find a description of soluble salicylic acid on p. 86, vol. 33.—B. F. will find a description of an apparatus for freezing water in bottles on p. 82, vol. 33.—J. W. will find a description of the Russian circular ship on p. 87, vol. 33.—F. J. C. will find a description of bisulphide of carbon on pp. 114, 283, vol. 30.—W. C. will find a recipe for cement for millstones on p. 251, vol. 31.—R. N. can ascertain the horse power of a small engine by the rules given on p. 33, vol. 33.—T. F. can harden screw plates and dies by the process described on p. 75, vol. 28.—R. J. W. can harden tallow by the process described on p. 202, vol. 24.—W. N. will find a description of the philosopher's or hydrogen lamp on p. 242, vol. 31.—W. N. K. will find, on reference, that the paper stereotyping process is described on p. 363, vol. 30.—M. P. is informed that the only way of ascertaining the power of a spring is by experiment.—J. C. W. will find directions for making spongy platinum on p. 330, vol. 25. Files can be hardened by the process described on p. 212, vol. 26.

(1) J. B. asks: 1. What is the cause of the sulphuric smell in a room where a register is used? A. Your description is too meagre; you should state the arrangements of flues, furnace, etc. 2. Can the air of a room be analyzed so as to find what gases it contains? A. It can, but it requires the tact and skill of a chemist to obtain accurate results.

(2) F. S. W. asks: Please give me a recipe for making blue and red stencil paste, which can be cast into cakes, to be used for branding flour barrels. A. Mix any of the ordinary pigments with sufficient chalk or carbonate of magnesia to form a paste of the required consistence.

(3) G. D. V. asks: What is the effect of ice on milk? I have been using a spring to prepare my milk for cartage over some fifteen miles of country roads, and find that it will churn somewhat in warm weather. I have thought of putting broken ice in the tank used for cooling, thereby lowering the temperature below that of spring water. Do you think this would be an advantage in helping the milk to withstand the shaking? A. A very low temperature, such as that obtained by a mixture of crushed ice and salt, might be of some advantage; but the only sure method is that of filling the vessels full, so that there can be no possibility of shaking.

(4) D. M. C. asks: Can we use cast steel for punching machine mandrils, and will it sustain great weight and not crush in such use? A. Steel castings are far preferable to forgings, and will suit your purpose admirably.

(5) J. M. S. says: One cool Monday morning our fireman, while firing up, burst the globe of the main valve and a quarter turn in the main steam pipe running from the boiler to the engine. The pipe was 20 feet in length and 4 inches in diameter, and took one turn downward: it was probably partly filled with water, the drip cocks not having been opened. Experts here explain that steam, thus let on to confined water, exerts ten times as much force as if the pipes were free from water, bursting the pipes on account of the non-elasticity of water. Is this so? A. There was probably ice in your pipes, and they burst from unequal expansion.

(6) R. S. B. M. says: I have often observed men riveting steel plates together with soft iron rivets. Will the resistance of the plates to the contraction of the rivet, as the latter cools off, lengthen the time occupied in cooling? A. Theoretically, yes.

(7) A. M. B. says: I put a set of tubes into a boiler, and in less than a year one of them gave out. They have been going out one at a time until 8 have given out. There are small holes in them, that look as though they had been drilled. I use nothing but rain water in the boiler, but the condensed steam drips back to the cistern of a condenser, and I use tallow in the cylinder. Can you tell me a remedy? A. There are possibly chemical impurities in the tallow. Try purifying it by the process given on p. 182, vol. 29.

(8) C. C. R. asks: Is there any objection to using the common expansion valve (on the back of the slide valve), worked by another pair of eccentrics and link, in order to have the exhaust independent, for locomotives? A. It would give no advantage.

(9) T. C. says: I have built a small steam engine with cylinder 1½x3 inches, and have an upright boiler 12x16 inches, with one 3½ inch flue in the middle. Boiler and flue are made of copper, of No. 18 wire gage. What is a safe pressure? A. Safe working pressure 30 lbs. per inch. 2. Will the boiler run two such engines? A. No. 3. What books would you advise me to study, to get a thorough knowledge of land, marine, and locomotive engines and boilers? A. Bourne's "Handbook" and "Catechism of the Steam Engine," Forney's "Catechism of the Locomotive," and Colburn's work on the "Steam Engine."

(10) W. A. B. asks: Which of the following oils are best for shafting and printing machinery: Black lubricating oil, lubricating castor oil, or light engine oil? A. Lubricating castor oil

(11) E. H. R. says: Last year I had trial gages to my steam boiler of a kind that worked with a hinge by raising the handle end. These handle ends, if raised too high, would drop out, letting the steam escape (if above the water level) until readjusted. One day I noticed, when the handle had become detached and a full head of steam was on, that, although there was the usual hissing by the escape steam (or what I thought should be escape steam) there was no steam visible, although the escaping gas was through an open door and with sufficient force to prevent, for some minutes, the readjustment of the handle. My curiosity was then excited, and I inquired of the engineer what was the reason that no steam was visible, only what appeared to be hot air or gas? He said he did not know. He only knew that, when mud was in the gage pipe, no steam was visible. When the pipe was clean, steam would issue. Now if this mud filtered all the steam out or decomposed the steam, what was this escaping gas, that seemed to have lost no force but to have entirely changed from steam to hot air or gas? The escaped gas did not deposit any moisture upon cooling. A. We have heard of many similar cases, and can afford no satisfactory solution of the question. We shall be glad to hear from any of our correspondents having had any experience in this matter.

(12) J. H. asks: Is there anything with which a horseshoe magnet could be covered so as to stop its influence or attracting force, a wax or paint of any kind, for instance? A. No.

(13) C. D. P. F. asks: 1. Is it practicable to heat a house 40 by 50 feet, three stories high, a greenhouse 16 by 100 feet, a stable, and two small cottages by steam from one boiler? A. Yes. 2. How large should the boiler be, the buildings being within a circle of 500 feet radius, and a separate steam pipe leading from the boiler to each building? A. You do not give the hight of stories of the buildings, from which the cubic feet of air to be heated might be computed, and upon which the size of the boiler should be predicated. Assuming the stories to be of about the usual hight, the boiler would require to have about 185 feet of heating surface, or about 14 horse power. There should be two pipes leading to each building in order to secure a circulation—one for the return; and these may be about 2½ inches in diameter. They should be packed with a cement of asbestos and cattle hair to about one inch in thickness, to save steam by preventing the radiation of heat. 3. How deep should the pipes be buried in the earth? A. At least three feet, and the boiler should be set in a cellar or vault low enough to receive the return pipe above the bottom thereof. The greenhouse could be warmed to a more uniform and safe temperature by means of a hot water apparatus of its own.

(14) C. H. A. asks: How can I silver the inside of glass globes? A. Make a reducing solution of one fourth, and a silvering solution of one tenth, the strength as published in No. 22, vol. 33, SCIENTIFIC AMERICAN, and fill the globe with equal parts of each solution.

(15) G. A. A. asks: 1. What should be the length of focus of the pair of 4 inch plano-convex condensing lenses for a magic lantern? A. The crossing (or smallest) point of the beam of light when in use may be ten or twelve inches from the condensers. 2. What should be the diameter and power of the pair of magnifiers corresponding to the 4 inch condensers? A. The quarter size photographic portrait tube, of 1¾ inch aperture and 6 or 7 inches focus, works very well. 3. What is the advantage of having the condensing lens made up of two glasses? A. That the focus may be made sufficiently short, and not lose too much light by reflection.

(16) J. F. asks: What kind of ammonia is used in a nickel bath to keep it neutral? A. The sulphate is preferable.

(17) C. C. M. asks: 1. Can I use a small telegraph machine for striking bells in different portions of my factory with simply the use of two wires? A. If you mean what telegraphers call a sounder, yes. 2. Will it be necessary to have a coil below the bell, so as to make the bell a magnet? A. No.

(18) J. D. B. says: The teacher of our astronomy class says that, were it not for the reflecting power of the atmosphere, we could see nothing not in direct sunlight. I claim that the reflection from the earth and adjacent objects would be sufficient to enable us to see many things not in the direct rays of the sun. Am I not right? A. Yes.

(19) W. H. A. asks: Has electricity been used in deep sea soundings? A. We do not recal any instance where it has been used for this purpose.

(20) J. A. S. says: If we had a material which was a non-conductor of magnetism, wrought into thin slips, which could be used as an interposer to cut off magnetic influence suddenly, and at regular intervals, would we then be able to propel light machinery by the power derived from common steel magnets of good quality, that is, could we utilize the power in magnets? A. Certainly, but if such a substance existed no economical advantage would result; work must be done to operate it, and this would more than overbalance any power which it would give.

(21) D. J. C. asks: Is it possible to make an aqueous solution of rosin? A. No.

(22) A. H. T. says: 1. I have constructed a Jamin magnet, but was unable to magnetize it on account of its peculiar shape and form. I was unsuccessful in the attempt, because I could not apply the electro-magnet to the surface of the steel ribbons. How should I proceed to make a magnet of great power? A. You ought to be able to magnetize it with an electro-magnet of the bar or curved form. Use one wound with No. 14 or 16 copper wire, and charged with two or three Grove cells.

(23) R. J. S. asks: How can I settle rain water taken from a pond, so as to make it clear for culinary purposes? A. Mix with a small amount of lime water, and allow to settle until clear.

(24) L. L. asks: 1. Which is the best way to make a stereoscope? A. For what purpose is it to be used? 2. What lenses are the best? A. Double convex, with one side thicker than the other. 3. How many times should they magnify? A. About twice. 5. What should be the distance between the lenses and the picture? A. About six or seven inches, for ordinary eyes. 5. How are the endless chains to hold the pictures in revolving stereoscopes made? A. Formerly they were made of either cloth, leather, or rubber belts, as wide as the picture is long. Across them were fastened narrow strips of wood, with wires at each end for holding the views. The latest improvement is a hinged metal band, but the principle is the same in each case.

(25) P. D. S. asks: How can I make bichromated gelatin? A. Make a hot saturated solution of bichromate of potash in water, and in another vessel make a strong solution of gelatin. Then pour them together, stir well, and allow to cool. Or flow your plate with gelatin in the usual way, and then place it in a bath of bichromate of potash for a short time.

(26) F. C. S. says: Please give me directions for nickel-plating apparatus. A. Take a wooden box and line the inside with sheet lead, having about one quarter of an inch between the box and lead. About midway between the ends place two upright copper poles, and across these lay a copper wire, upon which hang the articles which are to be plated. Insulate the copper wire or rod from the lead cell and connect it to the zinc pole of the battery. The positive pole should terminate in a nickel anode placed in the solution.

(27) F. W. B. asks: What metal will most cheaply and effectually resist the action of phosphoric or phosphorous acid, and the vapor arising from the oxidation of phosphorus? A. Gold or platinum.

(28) W. T. says: I have a quantity of butter from 3 to 5 years old, which is of no use except for grease. How can I get the oil out of it, to use for lubricating purposes? A. Butter is a mixture of several fats. You can obtain these free from salt and other impurities by digesting for a short time in hot water, and then allowing to cool. We do not know of any method by which these fatty bodies may be economically separated.

(29) W. M. M. asks: What chemical preparation can be burnt to produce a dense smoke? A. Try pastilles.

(30) E. B. asks: What is the best solvent for gum copal? A. Copal dissolves in turpentine, which is the usual solvent employed for the gum. Oil of rosemary is said to be one of the best solvents; ether is probably the best solvent, but it evaporates so rapidly that the varnish cannot be equally spread. The oils of spruce and lavender have also been used as solvents. It is almost insoluble in alcohol.

(31) C. asks: In speaking of the 81 tun English gun, is the tun 2,000 or 2,240 lbs? A. 2,240 lbs.

(32) S. G. C. asks: How can I remedy a trouble with a large stationary pot in a furnace? It was used for washing, making lard, etc., without the least trouble; now it is unfit to use, as it makes the water black. How can it be cleaned? A. We are as much at a loss to explain the strange action as yourself. You should have stated whether the pot is of iron or other metal, and if there is any incrustation, in which case please send a sample. State whether or not the water