Notes & Queries

E. J. T. will find directions for painting tin roofs on p. 202, vol. 30.—G. D. can remove colored writing ink from paper by the process given on p. 410, vol. 32. Water may be purified by the process given on p. 387, vol. 33.—S. H. will find a description of a process for canning green corn on p. 234, vol. 33.—G. G. M. P. will find a description of a tracing machine (pantagraph) on p. 179, vol. 28.—W. R. will find directions for using the lactometer on p. 208, vol. 34.—C. O. R.'s device for improving a vertical boiler is not new.—W. E. S. should address Seth Green, Esq., Rochester, N. Y., as to trout culture.—J. A. G. can ebonize wood by the process described on p. 50, vol. 33. Shirts may be highly finished by the method described on p. 213, vol. 34.—H. P. S. will find directions for silver-plating without a battery on p. 399, vol. 31.—W. F. R. is informed that the sparks from a leather belt in motion are electricity. See p. 10, vol. 34.—C. M. will find a recipe for filling for wood on p. 315, vol. 30.—P. B. T., G. M. G., S. H. W. J. K., B. L., and H. T., who ask us to recommend books on industrial and scientific subjects, should address the booksellers who advertise in our columns all of whom are trustworthy firms, for catalogues,

(1) J. L. W. says: If we use a plain iron pipe in drive wells, in some localities, it will run into holes in about one year; in others it will last a little longer. Why does the pipe not wear out sooner than the pipe 8 or 10 years ago? A. The new pipe may be driven through dissimilar strata of earth, and thus subjected to different conditions from the old; or the old may have holes in it also, but the rust and compact earth around it close them so that they do not show. Rubber coated pipe is now used for gas when laid in the ground, and might be serviceable for drive pipe.

(2) J. E. M. asks: Will it do to cement on soft sand walls in a cistern? A. Dig your cistern in a circular form and cut the sides as true and smooth as you can; put on the cement all in one coat about one inch thick, and float it down to a very smooth surface.

(3) E. A. V. says: A refrigerator is built of brick. It is 4 feet square, and 5 feet 6 inches high inside. The wall is 10 inches thick, having a hollow space of 2 inches wide in the wall. It is cemented on the inside. The room has no ventilation, and the ice melts very fast. How can it be made to work? A. The heat is most probably derived from the earth at the bottom of the refrigerator, and through the brick wall, where the isolation is not perfect. A wooden lining set off from the wall 2 or 3 inches, and up from the bottom the same, and a little ventilation, would most likely improve it.

(4) S. & P. M. Co. says: In the manufacture of artificial stone from Portland cement, we use wooden molds and coat them with shellac varnish; but it becomes soft in a short time. Is there anything that we can coat them with that will become hard and resist the action of the cement? A. Glycerin is sometimes used for plaster molds, but more usually a mixture of lard and oil.

(5) F. N. R. says: Please tell me how I can make a good galvanic battery without many cups. A. Get a glass jar, and at the bottom of it place a circular piece of copper to which a gutta-percha-covered wire has previously been attached. Let the wire be long enough to extend five or six inches out of the jar. Fill the latter, about two thirds full, with water, in which a quarter of a pound of zinc sulphate may be dissolved. Then suspend a piece of zinc in the jar so that its upper surface is just below the level of the water. When this has been done, drop crystals of copper sulphate (blue vitriol) in the jar, taking care that none remains on the zinc. About half a pound will be enough to start the battery; more may be added from time to time as needed, but care must be taken that the blue does not extend quite up to the zinc. A wire leading from the zinc and the one from the copper form the poles. The number of cells required for any given case, as well as their arrangement, will depend upon the work to be done.

(6) J. B. asks: Can shellac be dissolved in sulphuric ether by heat? A. No. It can be dissolved by the alkalies and by aqueous solutions of borax.

(7) H. S. J. says: 1. Please give me the value of paraffin as an insulator, counting shellac as 1,000. A. We do not recollect ever having seen a statement of the relative values, but believe that paraffin stands a very little below shellac as an insulator. 2. In the chloride of silver battery described on p. 390, vol. 33, do you mean that each cell is equal to 1·03 of Daniell's? A. Yes. 3. How many cells of this battery would be necessary to produce a powerful electric light? A. That depends upon the resistance of the battery, which, we believe, is high; consequently the number of cells would be considerable. We have, however, never experimented with it.

(8) E. W. asks: Is there an equal amount of fertilizing material in old dry bones and in green ones? A. The difference is in the loss of nitrogenous compounds arising in the decomposition of the fatty and other matters. The percentage of phosphate of lime in the two cases is the same.

(9) T. K. asks: Do wire hair brushes make the hair stiff and harsh? A. The excessive use of a stiff brush should be avoided, as it irritates the scalp and promotes the formation of dandruff. We have found that thorough cleansing of the hair with tepid water and pure white Castile soap (the soap being completely removed by rinsing with pure water) once in two or three weeks, and thoroughly rubbing the scalp and roots of the hair with hair oil, will keep the head clean and the hair soft and free from dandruff.

(10) J. A. G. says: What can I use to prevent the disintegration of rubber hose? A. Try the following: Flow the interior of the tube with a solution of strong glue in water, and immediately afterwards with a strong solution of tannic acid in water. India rubber is partially dissolved by kerosene oil.

(11) A. B. asks: What is the reason of the heat produced when lime and water are mixed? A. When two liquids or a solid and a liquid combine to form a solid body, the action is always accompanied by a considerable evolution of heat. As might be expected, the contrary is the case when a solid passes into the liquid form, as in the case of ice and salt. When caustic lime is mixed with about one half its weight of cold water, the lime and the water combine to form a white dry powder (which is the hydrate of lime), and the heat that is evolved by the chemical combination is often sufficient to ignite gunpowder.

(12) C. P. says: In November last I was traveling in the west, and the prairie fires had spread over hundreds of square miles, and the ground was black. During the bright daylight, the ground was continuously spread over with a gossamer covering of spiders' webs for miles and miles. Whence came the multitude of insects that spun the webs? A. The fire had been superficial and would not have destroyed the germs of vegetable and animal life concealed beneath the surface.

(13) F. W. G. asks: What is the best method of polishing hard rubber? A. Use pumicestone and rottenstone. Some varieties of hard rubber goods are given a natural polish by the presence in their composition of bodies similar to asphaltum.

How can I stain pearl to an color? A. We have never heard of this having been done.

(14) W. W. B. asks: How many lbs. of marble does it take to make 100 cubic inches of carbonic acid gas? A. About 200 grains.

(15) B. G. asks: 1. Please tell me the amount of correction to be applied to an aneroid barometer for an altitude 6,000 feet above sea level. We have a mercurial barometer from which to make the adjustment. A. The adjustment is best made directly from the mercurial barometer itself. Graduate your aneroid according to the readings of the mercurial, or (by observation) make a table of comparative values. 2. Water boils here at some 11° below the temperature required at sea level. By the same rule, should water freeze at a different temperature than at sea level? A. The freezing point is not displaced in any appreciable quantity.

(16) A. B. says: Galvanized iron nails throw the putty when the latter is made of lead. Would a putty made of zinc do better? A. Yes, try it.

With what, better than with white lead paint, can wood be coated to render it impregnable to water? A. Fill the pores of the wood with a good covering of shellac varnish.

(17) B. V. P. asks: Is there any way to avoid the use of sulphuric or other acid in wire drawing? A. The acid pickle may be omitted, but if so the tool is in danger of being rapidly corroded by the scale of oxide formed on the surface of the wire during the operation of annealing. Wash your wire immediately as it comes out of the pickle in alum water, and dry as quickly as possible. This method, if the acid used is free from copper, will, in most cases, be all that is required. Another method is that of neutralizing any of the acid liquor that adheres to the wire after removal from the pickle by means of a weak lye, washing with water, and drying quickly. The wire should not be allowed to remain, while moist, in contact with the air any longer than possible. Sawdust may be used for absorbing the moisture, but in some cases it will be found advisable to employ good lime instead.

(18) J. W. L. asks: What cheap stuff can I use to dye hemp or feathers to a deep red or scarlet color? A. Use aniline red.

(19) T. W. A. asks: Can you give me any information in regard to the manufacture of illuminating gas from fine sawdust? A. Very rich illuminating gas may be obtained from wood by subjecting it to destructive distillation in retorts similar to those employed in the production of coal gas. It has been found necessary, however, in order to convert the empyreumatic vapor that first passes over into a permanent gas, to pass the vapor through tubes heated to redness. The gas thus obtained contains a larger proportion of carbonic acid than coal gas, and consequently requires a larger percentage of quicklime for the elimination of this impurity. It is, however, free from sulphur and ammonia compounds. Wood gas requires larger burners than coal gas because of its greater specific gravity. If this precaution is not taken, the luminosity of the gas flame will be greatly reduced.

(20) J. M. N. asks: What is the best way of protecting the iron bottom of an aquarium from rust? A. Mastic varnish will answer the purpose very well.

(21) S. W. N. asks: What is a good stove polish? A. The best stove polish is the purest graphite, ground very fine and mixed with a little alcohol or vinegar; the addition of other carbonaceous substances only injures its polish and refractory qualities. The plumbago now employed is in many cases adulterated with finely pulverized gas carbon, which, although it resists high temperatures, detracts greatly from the polish.

(22) P. A. says: If I have an inverted siphon, one end being larger than the other, filled with water and closed at each extremity with a closely fitting piston, and a weight or pressure of 100 lbs. be applied to the larger end, what will be the amount of pressure at the smaller end? If applied at the smaller end, what will be the pressure at the larger end? A. The pressure per square inch will be the same at each end of the tube, so that the total pressure will be in proportion to the area.

(23) H. B. asks: How can I make the mixture of clay that is used in the place of firebrick for stoves? A. Fire clay is a common article of trade. When required for use, it is mixed with with a little water, kneaded into a thick dough, and used at once. The clay is sometimes mixed with a little plaster of Paris, and alum water is occasionally employed in place of clear water.

(24) J. M. asks: Is there not a method by which rock can be blasted by electricity? A. Not by electricity alone. Gunpowder and gun cotton can be fired by electricity, and dynamite and nitro-glycerin by a suitable percussion cap ignited by an electric current.

(25) J. D. G. says: 1. I wish to warm several chambers and a bath room. Is it practicable to do it with 1 inch iron pipes of water, passing through 2 stoves with constant fire, water being supplied from a barrel on the second floor, passing down to stoves on first floor, thence up to the chambers, and back to the barrel? A. It can be made to work if properly set. The pipe in the stove should be in a spiral coil, the water from the reservoir entering at the bottom and the warm water passing out at the top; set the coil against the lining of the fire chamber, and let the coal lie in against it. The reservoir should be 4 or 5 feet higher than the highest part of the pipe, and the pipe so set that the water will all drain back to the lowest point at the stove, where a faucet should be provided to discharge it when required. A coil from the same pipe could be placed in a second stove, providing regard is had to discharging the same as above. The water in the reservoir will become heated, and with proper pipes could be supplied to the bath tub, etc. 2. What surface of pipe would be needed in each 100 cubic feet of space in the rooms? A. One foot of radiating surface to every 50 to 100 cubic feet of air, according to the conditions of exposure to winds, etc.

(26) L. P. L. asks: What is best to prevent sourness in mucilage made of gum arabic and water? A. Try a few drops of oil of cloves.

(27) A. O. W. asks: 1. Does wind affect a thermometer? A. If the glass bulb of the thermometer be perfectly dry, its indications will be the same whether the surrounding air is in motion or at rest. The truth of this is very easily demonstrated by experiment. If we moisten the bulb of the thermometer, however, we shall find that the temperature indicated will be decidedly lower when the air is in motion than when at rest. The difference in the indications is dependent upon the rapidity with which the water on the exterior of the bulb is evaporated. The analogy between the human body and the wet bulb thermometer in this respect is obvious. 2. How much colder is it at the surface of the earth than 5 feet above, in the shade? A. Practically the difference is very slight, and the difference is by no means uniform. 3. How can I make a rain gage? A. The cheapest form of rain gage we know of is that composed of a graduated bottle, having a narrow neck with a perforated stopper, through which passes the leg of a glass funnel, the mouth of which is of known area. For one of the best forms of pulviometer, see p. 150, vol. 34.

(28) A. L. S. asks: How can I make a good liquid acid for soldering iron? A. Dissolve zinc in hydrochloric acid until it will hold no more.

(29) B. asks: Is it possible for a lady to attain proficiency in the arts of engraving, etching, and carving without a master? A. There are many artists of both sexes who, having natural ability, have made great progress in these arts with little or no instruction except what is gained from books and diligent practice. The demand for art workers is increasing, and is likely, in the future, to be great enough to insure remunerative employment for really capable persons.

(30) W. X. C. asks: How can I wash printer's rollers? A. When printing ink was made with burnt linseed oil, as it should be, a little pearlash lye would clean any roller fresh from the press, and dried ink could be removed with a little turpentine. But the inks of the present day are many of them, made with mineral oil: and caustic lyes and petroleum benzine, with much labor are required to clean rollers or type.

(31) F.E.H. asks: What size of wire is best for a magnet (½ inch core) to ring a small bell? A. No. 18 copper wire will be found about right.