Business and Personal.

The Charge for Insertion under this head is One Dollar a line for each insertion. If the Notice exceeds four lines, One Dollar and a Half per line will be charged.

Notes & Queries

J. M. L. will find directions for making soap on pp. 331, 379, vol. 31. To make vinegar, read the instructions on p. 106, vol. 32.—R. B. C. will find directions for making printers' rollers on p. 283, vol. 31.—B. C. M.'s question relates to proportional compasses, to be purchased of any dealer in drawing instruments. Copper plates may be flattened by following the instructions on pp. 149, 181, vol. 36.—**A. J. R.** will find a recipe for hair dye on p. 138, vol. 27.—J. F. should read our articles on straightening metal plates on pp. 149, 181, vol. 36.—J. C. G. will find directions for making fulminate of mercury on p. 90, vol. 31.—T. P. H. can make a metal stamp by running type metal into a plaster mould containing the required device.—J. F. M. is informed that crude gutta percha usually contains dirt and other impurities. A cement for leather is described on p. 171, vol. 35.—S. S. K. will find directions for reducing tin scrap on p. 319, vol. 31.—H. L. is informed that the details of Mr. Lowthian Bell's method of making iron rails have not yet reached us.—C. R.W. will find instructions for making lightning rods on p. 277, vol. 35.—J. W. can frost the surface of glass by following the directions on p. 281, vol. 33.—A. will find a description of the postage stamp manufacture on pp. 208, 277, vol. 27.—T. J B. will find something on tanning birds' skins on p. 187 vol. 36.—S A. H. will find something on constructing Rhumkorff coils on p. 219, vol. 32.—J. A. C. will find two articles on the blue glass deception on pp. 129, 145, vol. 36.—J. J. will find a recipe for blue ink on p. 257, vol. 32; for green ink on p. 27, vol. 30.—W. S. will find directions for moulding rubber on p. 203, vol. 35. For giving a black finish to rubber, see p. 122, vol. 30.—J. L. is informed that he can make good soap moulds of pewter.—C. S. C. will find directions for polishing brass on p. 298, vol. 29. For a varnish for brass, see p. 310, vol. 35.—F. G. T. will find directions for making printers' rollers on p. 283, vol. 31. To make rubber hand stamps, see p. 203, vol. 35. For transfer paper, see p. 378, vol. 28.—A. L. W. will find directions for brazing metal plates together on p. 347, vol. 30.—T. H. B. will find something on the extraction of vanillin from pinewood on p. 18, vol. 35.—W. A. M. can paint his model with black paint and varnish with shellac in alcohol.—H. R. F. is informed that lead pipe is made by forcing lead through a hole in a metal plate in which a core is inserted.—W. Y. G., M. A., A. G. L., J. B. C., and others 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) F. J. S. says: 1. I want to make an induction coil 1 foot long. What number and what length of wire shall I use for the primary and secondary coils respectively? A. About 1½ or 2 lbs. of No. 36 for the secondary, and 150 feet of No. 14 or 16 for the primary. 2. Shall I keep each layer of the primary wire separated by placing something between the layers? A. A sheet of paraffin paper is sufficient. 3. Shall I keep each layer of the secondary wire separated? A. Better wind the secondary in two sections and exercise the greatest care in insulating. It is well to place the coils in melted paraffin until well saturated.

(2) J. R. says: 1. You show the misapplication of the word force in many instances but the word is used in a very slipshod manner when speaking of the force of gravity as applied to the atmosphere. All authors agree that the atmospheric pressure is about 15 lbs. on the square inch of the whole earth's surface. But this is not atmospheric pressure, but is the whole effect of gravity, including that of the air also. Gravity is known to extend to the moon and far beyond; whereas the atmosphere does not extend very far. At 45 or 50 miles height it is not dense enough to reflect the sun's rays. It is also asserted that a cubic foot of atmospheric air weighs only 535 grains, and is 820 times lighter than water. A. The pressure of the air is due to its weight; and though the weight of a single cubic foot is very small, the column of air producing the pressure is many feet in height. 2. What has become of the result of Venus' transit? A. The results of the transit observation have not yet been computed; and it will probably be at least a year before they are finished.

(3) W. S. says, in answer to many correspondents who have asked how to cut glass tubes: Take a small round file, break a little off the point to get a sharp edge, then insert it into the tube to where it requires to be cut, and scratch around the inside, when the other part of the tube will fly off instantly. In most cases the crack runs ahead of the scratch.

(4) A. J. L. says: Is steam turned directly on to lumber to dry it, or is it conveyed into a heater and the lumber dried from the heat generated? A. In the great majority of cases steam is used confined in pipes, and circulating to and from the boiler, thus heating the air in the room, and, by the circulation of the latter, drying the lumber. 2. I have a dry house, 14 x 16 feet, and would be glad to know if a ¾ supply pipe will be sufficient to convey steam to it? A. Yes, if arranged as above described and with a return pipe to boiler. See No. 6, p. 123, vol. 36.

(5) G. W. S. says: You give a recipe for paint made of Portland cement and sand. Is it for wood? Can it be used on a frame house instead of white lead and oil? A. It is only suitable for brickwork, stonework, or concrete walls.

(6) R. P. W. says: 1. Please give me your opinion of nitrous oxide gas. Is it safe to use in dental surgery? A. If the gas is made from pure nitrate of ammonia, and subsequently well washed in a solution of protosulphate of iron, it is one of the least objectionable and safest of known anæsthetics. If free from nitrous acid and chlorine, it may be administered without danger except in cases where there is already an over active circulation in the brain. 2. What are its effects? A. When inspired into the lungs, owing to its solubility, it is rapidly dissolved in the blood, and quickly diffused throughout the body. The transient intoxication which it causes is due to augmented oxidation produced in the system by the gas.

(7) J. T. H. asks: Please give me a recipe for staining wood a dark cherry red, a permanent and bright color? A. 1. Boil ½ lb. logwood in 3 pints of water, and add ½ oz. salt of tartar. Stain the wood with the liquor boiling hot. 2. Boil ½ lb. madder and ¼ lb. fustic in 1 gallon water; use hot, as before. 3. Boil 1 lb. Brazilwood and 1 oz. of washing soda in 1 gallon of water, apply hot, and then brush over it before dry, a solution of 2 ozs. alum in 1 quart of water.

(8) N. C. L. asks: 1. By what process are medals cast? A. Medals are usually stamped out by means of machinery similar to that employed in making coin. 2. How are stereotypes copper plated? A. The deposition of copper is obtained by electro-plating the form in a bath of sulphate of copper. 3. How can I prepare the plaster of Paris for stereotyping, so as to prevent airholes in the mould? A. Slightly but uniformly oil the face of the type, and then pour over it a thin cream of the plaster, which work well into the letters with a camel's hair brush. Then run the thicker plaster, and allow to set. Dry the cast well in an oven and, by means of a soft brush, uniformly coat the matrix with a film of black lead (plumbago).

(9) F. H. asks: If the temperature is at zero, and stays so for two weeks, and ice forms two feet thick in that time, if then you take two thermometers that indicate alike, place one on the ice, the back of it lying on the ice, and hang the other two or four feet above the ice; will they indicate the same after being there a little while? A. Yes, all the conditions being the same.

(10) J. W. R. asks: What is the best method of preventing heat in rooms in hot weather, under flat tin roofs where the center rises some 2½ to 3 feet? We are greatly discomforted in hot weather by the heat in our upper rooms; and we propose to put on another story with French roof, which will also be flat, or as much so as the present one. In doing this, how can the excessive heat be prevented in this new story? A. Inclose a space under the roof about 3 feet in height at the ridge and about 1 foot at the eaves, by hanging a cribbed ceiling from the roof beams. Provide a special flue in each chimney, opening by a stationary register, or by a number of small openings in the brickwork, near the top of this inclosed space, and provide similar openings to the exterior air under the eaves of the house, which latter openings will come near the bottom of the inclosed space. By this means a circulation of air may be secured under the roof that will keep the temperature nearly as low as that of the exterior atmosphere.

(11) F. P. F. says: I wish to use kerosene to make a liniment and for other purposes where the strong smell is objectionable. Is there any way to get rid of the smell without destroying the nature of the kerosene? A. By agitation for several days with powdered chloride of calcium, the disagreeable odor of the oil may be removed; but the oil cannot be completely deodorized.

(12) C. H. asks: 1. What size of wire is the best for winding a large electro-magnet of horseshoe shape to give it the most power? A. The size of the wire should be made to suit the battery used with it. Nos. 14 or 16 will probably answer your purpose. 2. How many cells (Daniell), each holding about 3 quarts, will be needed to make an electric light sufficient to light a room 50 x 100 feet? A. It is difficult to get a light with less than 40 or 50 Daniell cells, and they should be large, so as to give but little internal resistance. 3. How can I coat the inside of a large tin can with copper, so that it will not come off? A. By the battery process, after the usual cleaning. Place the solution in the can, connect the latter to the zinc of the battery and the copper of the battery to a copper plate in the solution. 4. How shall I make the carbon points for an electric light? I have coke carbon, but it is not of the right shape. A. It is better to buy them, but you can saw them out of coke taken from gas retorts if you have patience enough.

(13) C. V. W. asks: How can I clean a bronze statue? A. Rub it with a little oxalic acid solution and pipeclay, afterwards with a brush and tripoli powder.

(14) W. H. V. asks: 1. What is the best method of constructing a refrigerator or butcher's ice box? These boxes are generally about 9 feet long, 4 feet wide, and 6 or 8 high, and are built of tongued and grooved stuff, with 3 inches of sawdust between the outer and inner lining. What is the proper position for the ice crib? A. Near the top of the box. 2. Should the dripping pan be placed directly under the ice or not? A. It should consist of V-shaped gutters a little distance below the slots in the bottom of the crib, conveying the water away. 3. What will cause the cold air to circulate through the box? A. The air coming in contact with the ice will fall to the bottom of the box, and the warmer air will take its place, thus establishing a circulation. 4. Will a bottom of cement be any better than one of wood? A. No. 5. What is the best to put between the linings? A. Sawdust is good; but some have the interior of inclosing walls lined with paper pasted over the surfaces, and no other filling. We ought to say that many of the above devices are covered by a patent.

(15) G. W. asks: How can I unite vulcanite (in which artificial teeth are set) so as to make a durable joint that will resist the heat and moisture of the mouth? A. Dissolve 1 part of sulphur and 3 parts pure caoutchouc in 6 parts alcohol and 100 parts bisulphide of carbon, and evaporate to the consistence of a thin paste. Join the fractured edges with this, and heat the whole to about 310° Fah. for 4 hours.

(16) W. D. says: 1. I want to lay 1,000 feet of water pipe from soft water spring to house and barn. Which, lead, galvanized iron, or common iron pipe, is most durable? A. Galvanized iron pipe will be the most serviceable. 2. Is lead pipe dangerous on account of poisonous matter? A. If lead is exposed to the combined action of pure water and air, an oxide of lead is formed on the exposed surfaces which is dissolved by the water with which it is in contact. This solution is highly poisonous, as are all of the lead salts. The presence of chlorides or nitrates in the water assists this corrosive action, while it is retarded by the sulphates, phosphates, and carbonates. Bicarbonate of lime, a salt found in many spring waters, prevents this corrosion by depositing a coating on the exposed surfaces. In the use of lead pipes as conduits for drinking water, it should be carefully ascertained whether the water to be conveyed contains foreign matters, which will prevent its action upon the metal. 3. Should I plumb my house with iron water pipe and protect the pipe from cold by filling around the pipe with sawdust? A. Yes. The method is a good one. 4. Will iron pipe sweat and rust in the sawdust? A. It is difficult to keep such pipes perfectly dry in warm weather, even when protected as above. The pipes may, however, be in a great measure prevented from rusting by coating them with asphalt varnish.

(17) T. P. H. asks: What degree of heat is required to harden rubber in a vulcanizer, so as to answer for hand stamps? A. It requires a temperature of 260° Fah. There is no danger about it.

(18) J. E. S. says: If a locomotive pull a train of cars around a curve, I say that every one of the cars would bear the flange of its outer wheels against the inner side of the outside rail. A friend says the last five or six cars would not, because the train in front would be gone around the curve so far as to have a tendency to pull the rear part of the train against the inner rail. Who is right? A. You have about the right idea.

If I am 150 lbs. in weight, and fasten said weight to one end of a rope, and take hold of the other end, can I pull up any more than that weight over a single sheave, everything being in balance? I contend that I cannot pull up any more than 150 lbs. unless my feet were pinioned to the ground. Am I right? A. As we understand the question, you are right.

(19) E. H. A. says, in answer to correspondents who ask for a cure for chilblains: Dissolve 1 lb. alum in about 1 gallon of water, soak the feet or parts affected in the solution just before going to bed every night for from 5 to 8 nights, using the same water, and having it as warm as the flesh will bear easily. It will restore the flesh to its natural color and feeling.

(20) E. L. asks: Of what diameter or size should drills be to fit ⅛, ¼, ⅜, ½, ¾, 1 inch, and us to 4 inches pipe taps? A. Make the holes just so large that the end of the tap for each respective size will just enter the hole.

(21) B. W. L. asks: How is sulphuret of iron manufactured? A. Heat iron turnings to bright redness in a black lead crucible; and, while in this condition, throw in an equal weight of crude sulphur, in small pieces. The combination will take place immediately; and as soon as the sulphide formed is thoroughly fused, it should be poured out and covered with sand, to cool slowly.

(22) E. J. asks: Can rubber be made considerably hard and yet retain its flexibility and toughness, so as to bend quite short without cracking? A. Yes. There is vulcanized rubber in the market that will answer all your requirements.

(23) C. C. says: I have an emery wheel 1 foot in diameter, the hole of which is very rough and too large for the spindle. Could I run Babbitt or other metal in it and turn it out to fit the spindle to make it run true? A. Make a Babbitt metal bush, and insert it in your emery wheel. 2. How fast should it run for gumming saws? A. At about 4,000 or 5,000 feet of circumferential speed per minute. 3. How many teeth should a circular saw of 14 inches diameter have for ripping hard and soft wood? A. There is a difference of opinion upon this point. 4. Does hard wood need more teeth than soft wood? A. As a rule, yes. 5. What should be the size and length of journal for arbor of foot lathe for turning wood? A. Two and a half times the diameter of the arbor. 6. Would there be much difference in the necessary amount of power required to drive said lathe if two journals were used on said arbor instead of one? A. Not if properly adjusted.

(24) W. W. M.: Send for information about windmill to T. K. A., 22 East 12th street, New York city.

(25) A. T. N. asks: What solutions are used in coloring articles of horn or vegetable ivory? A. For black, lay the articles for several hours in a strong aqueous solution of nitrate of silver, and then expose to strong sunlight; or boil in a strong decoction of logwood and then in solution of acetate of iron. For blue, immerse for some time in a dilute solution of sulphate of indigo, partly saturated with potash. For green, boil in a solution of verdigris in vinegar. For red, dip the articles first in a tin mordant and then into a hot decoction of Brazil wood or cochineal. Scarlet, use lac dye instead of the preceding. Violet, dip in the tin mordant and immerse in a decoction of logwood. For yellow, impregnate with nitrohydrochlorate of tin and then digest in a strong decoction of fustic. The coal tar colors are now generally used for this and similar purposes.

(26) T. S. asks: What is chloroxynaphthalic acid ($C_{10}H_5ClO_3$)? A. Chloroxynaphochinone ($C_{10}H_5ClO_3$) is a yellow crystalline powder. Its salts are used as dyes. It may be obtained from any large dealer in the coal tar colors.

(27) J. H. asks: 1. Can I get an elastic rubber of a white or light tint? A. You can purchase such rubber as you mention. 2. Is there any way to bleach it? A. The rubber cannot be bleached by any ordinary means, but by the introduction of such bodies as chalk, sulphate of barytes, pipeclay, sulphide of zinc, etc., before vulcanization, an artificial whiteness may be produced in the rubber.

MINERALS, ETC.—Specimens have been received from the following correspondents, and examined, with the result stated:

F. W.—No. 1 is basalt, containing crystals of iron pyrites (sulphide of iron). No. 2 contains chrysocolla, a hydrous silicate of copper, also a little malachite (carbonate of copper).—A. D. W.—It is a piece of flint containing crystals of iron pyrites. We found neither silver nor lead.—W. M. W. says: I send you herewith a box containing specimens of coal, with some white substance in the seams. Will you please inform me what it is, and whether it is of frequent occurrence? A. It is paraffin. We have had similar samples sent us before; but it is not of common occurrence.

COMMUNICATIONS RECEIVED.

The Editor of the SCIENTIFIC AMERICAN acknowledges, with much pleasure, the receipt of original papers and contributions upon the following subjects:

On a Driver's Seat.
On Planetary Meteorology. By R. M.
On Hydrophobia. By M. G.
On Geographical Anatomy. By A. W.
On Spiritualism. By J. H. P.
On the Shape of the Earth. By W. E. B.
On the Lost Paradise. By C.
On Lightning Rods. By J. H. P.

Also inquiries and answers from the following:

A. S.—A. S. G.—W. M. M.—P.—H. T.—J. K.—T. W.—W. R.—J. D.—J. B. D.—J. H.—B. L.

HINTS TO CORRESPONDENTS.

Correspondents whose inquiries fail to appear should repeat them. If not then published, they may conclude that, for good reasons, the Editor declines them. The address of the writer should always be given.

Inquiries relating to patents, or to the patentability of inventions, assignments, etc., will not be published here. All such questions, when initials only are given, are thrown into the waste basket, as it would fill half of our paper to print them all; but we generally take pleasure in answering briefly by mail, if the writer's address is given.

Hundreds of inquiries analogous to the following are sent: "Who sells roller skates? Who sells the best foot lathe, with circular and jig saw attachments? Who sells file-cutting machinery, and what does it cost? Who sells vanadium? Who sells substances for preventing boiler incrustation? Whose varnishes are the best for carriage builders' use?" All such personal inquiries are printed, as will be observed, in the column of "Business and Personal," which is specially set apart for that purpose, subject to the charge mentioned at the head of that column. Almost any desired information can in this way be expeditiously obtained.