Business and Personal.

The Charge for Insertion under this head is One Dollar a Line. If the Notices exceed Four Lines, One Dollar and a Half per Line will be charged.

Notes & Queries

J. O. will find directions for removing moles from the skin on p. 347, vol. 32.—J. F. H. can increase the draft in his boiler furnace and economize fuel by inserting a jet of steam in his shaft. See answer No. 45, p. 396, vol. 33.—Mrs. J. can prevent rust on the bright parts of her sewing machine by following the directions on p. 169, vol. 33.—W. H. H. will find on p. 74, vol. 28, full directions for laying out the sides of a hopper.—O. E. D. will find a description of a speed indicator for railway trains on p. 271, vol. 33.—R. M. can make Pharoah's serpents by following the directions on p. 315, vol. 32.—F. M. can find out the quantity of water which can be delivered by a pipe of any particular size by using the formula on p. 48, vol. 29. Area of a circle=diameter²×0·7854. This also answers P. Q. Sixty feet head of water=1¾+atmospheres =26½ lbs. on the square inch, nearly.—E. T. is informed that vulcanite, as used for jewelry, ornaments, etc., is a patent material. He can clean his printing press blankets by washing them with potash lye.—P. H. G. can glaze his shirt bosoms by following the process described on p. 203, vol. 31.—T. M. D. is informed that full directions for molding in various materials are published on p. 58, vol. 24.—M. M. I. will find full descriptions of the principal forms of the perpetual motion nonsense in vols. 23 and 24.—H. W. H. will find answers as to his questions on the friction and passage of water in pipes on p. 48, vol. 29.—W. K. N. will find directions for tempering rock drills on p. 202, vol. 31.—R. H. H. will find directions for testing the purityof water on pp. 187, 281, vol. 33. This also answers C. L. M.—A. S. will find that greasy cotton waste is very liable to spontaneous combustion. See p. 26, vol. 33.—J. M. P. will find formulæ for calculating the strength of boilers on pp. 116, 165, vol. 28.—W. T. P. will find a description of a calcium light on p. 219, vol. 30.—H. C. will find directions for making friction matches on p. 75, vol. 29.—T. W. can attach glass letters to windows by using the cement described on p. 47, vol. 33.—L. J. T. will find a recipe for black ink on p. 92, vol. 33, for purple ink on p. 315, vol. 33, and for blacking on this or the following page.—E. D. D. M. should read the SCIENTIFIC AMERICAN, and he will then be aware of the impossibility of perpetual motion machines.—S. W. M. will find directions for hardening millpicks on p. 170, vol. 25.—J. G. A. is informed that the plaster composed of gypsum (plaster of Paris) and marshmallow root does not possess the virtues claimed for it.—G. P. A. can nickel plate his iron castings by following the directions on p. 235, vol. 33.—S. L. J. can clean marble by following the directions on p. 330, vol. 32.—G. A. M. can fasten rubber to wood with good glue.—A. W. should put a tablespoonful of brown sugar into a quart of flour paste, and use it to fasten paper labels on tin cans.—C. S. R. will find a good recipe forsealing wax on p. 251, vol. 28.—T. H H. will find a description of the manufacture of vinegar on p. 106, vol. 32.—E. J. S. will find full directions for making plaster molds on p. 58, vol. 24.—A. M. D. S. will find directions for silver plating without a battery on p. 408, vol. 32.

(1) L. E. McK. & J. W. K. ask: Is it healthy to keep plants in a sleeping room? A. Plants in a sleeping apartment are not considered as conducing to health, and some of the medical authorities claim that they are very injurious.

(2) M. E. D. W. asks: By what means can I detect petroleum or cotton seed oil in so-called linseed oil? A. Petroleum may be detected by its property of imparting a fluorescence to animal or vegetable oils, and by its aromatic odor on burning. An oleometer may be used to distinguish cotton seed oil from linseed oil.

(3) J. H. T., of Flekkefjord, Norway, asks: Am I running any risk in using tubs made of old petroleum barrels for washing underclothes in, or can I in any way make them fit for such use? A. In a short space of time, by the use of soap, the barrels will become deodorized and will suit your purpose perfectly.

1. What is the cause of a person's finger nails becoming concave, warping, cracking, and splitting? A. It shows an impoverished condition of the blood. Dr. Bean claims that certain diseases can be foretold by the condition of the nails. 2. Is there any remedy? A. Consult Wilson "On Skin Diseases."

(4) B. says: It is claimed that if a small quantity of common salt be put into a kerosene oil lamp, the danger of an explosion is lessened, and the illuminating power of the oil is increased. Is this so? A. The statement is entirely without foundation.

(5) N. M. A. asks: What is damp, newly precipitated alumina? In the manufacture of certain commodities, I am recommended to use oxalate of alumina, prepared by dissolving damp, newly precipitated alumina in a concentrated solution of oxalic acid. A. In one vessel prepare a strong solution of alum in water, and at the same time, in another vessel, dissolve a quantity of chloride of ammonium (sal ammoniac) in equal parts of water and strong aqua ammonia. Add the latter solution to the former and stir well for a few moments. Then allow to settle for a short time. Decant the liquid, wash the precipitate in clean water, and digest with hot solution of oxalic acid until solution of the precipitate is effected.

(6) W. V. J. asks: By what process can I transfer decalcomanie pictures to paraffin wax? A. We do not think it probable that you will succeed in employing paraffin in the way you propose. Try softening the paraffin on the surface by the aid of heat, and when ready, press the picture tightly against the surface until the paraffin has hardened again.

(7) J. W. R. says: In your issue for October 9 are directions for making a weather glass. I have followed them with great care and nicety (being well used to chemical manipulations) and succeed only in obtaining a colorless and limpid liquid, which remains entirely unaffected by the most sudden and severe atmospheric changes. Can you give any probable solution for my failure? A. You have employed either too much of the solvents or else your alcohol was not of the desired strength. We have constructed several of these instruments according to the recipe given, and have had no difficulty.

(8) A. A. H. says: I bought a bottle o clock oil: and having a small perfumery bottle with a ground glass stopper, I poured the oil into it. I suppose the bottle was not washed clean, for it turned the oil to the color of soapsuds. What can I do to the oil to purify it? A. This was probably due to the ammonia usually present in these perfumes. Treat with a little oil of vitriol, decant off the oil, and then wash with clean water.

(9) F. F. asks: 1. What is the best method of raising the poppy, and how is the opium extracted from it? A. Opium is the dried juice obtained from the unripe capsules of the white poppy (*papaver somniferum*). For properties, etc., see Pereira's "Materia Medica," also an extensive article by Dr. Eatwell in *Pharmaceutical Journal*, 1852, London, England. 2. Will it flourish in Central Illinois? A. We consider it very doubtful.

(10) B. C. S. asks: How can an oval cylinder be turned in a common iron lathe? A. By putting on a cam to move the slide rest in and out at every revolution of the lathe.

(11) J. says: I am building a sheet iron circular tank about 8 feet in diameter and 5 feet deep, and I wish to know how great is the tensile strain that tends to tear apart any portion of the lowest 12 inches of the sides. If there is no question of resolution of forces, I make out that this strip 12 inches wide has to bear a tensile strain of 3 to 4 tuns, which seems high. A. The pressure will be 36 times the weight of a cubic foot of the liquid in the tank.

(12) E. F. says: I am very much troubled with my hands becoming very rough from constant use of copperas water. Can you suggest a remedy? A. You may avoid this by wearing a pair of india rubber gloves, so as to avoid contact with the iron solution. Use a little good glycerin or glycerin soap as a remedy.

(13) A. F. O. asks. 1. What book must I consult in order to obtain the most exhaustive information concerning the practical details for compensating the pendulum? A. You will find the principal forms of compensating pendulums described in any good text book of physics. We do not know of any special treatise on the subject. 2. In a recent publication a pendulum is described in the following words: "A wooden rod, dried and varnished, carrying at its lower end (by way of bob) a hollow leaden cylinder. If the rod be about 46 inches long, and the cylinder 14 inches, it will vibrate nearly in seconds." Do you call that a good pendulum? A. It would answer for ordinary purposes. 3. What should be the diameter and weight of the leaden cylinder? A. The cylinder should weigh from 8 to 10 lbs.

(14) C. M. B. asks: At what speed should an ordinary wood-turning lathe run? A. At about 700 feet a minute.

(15) J. P. says: We wish to run a shaft at 60 revolutions per minute. On the shaft is a cam that strikes a plunger, which can be driven forward only by great force. We have on same shaft also a balance wheel weighing 2,100 lbs., with a diameter of 52 inches and face of 6¾ inches. We belt from a 24 inch pulley on a counter to this balance wheel, the balance wheel being the driver. Can we gain more power or momentum by putting a 30 inch pulley on the shaft at the side of the balance wheel, and belting on to the 30 inch pulley instead of the balance wheel? In either case, the speed of the balance wheel would be 60 revolutions per minute. A. We do not imagine that much advantage would result from the change.

(16) C. B. H. says: A friend and myself are discussing how to give a locomotive her full speed. I claim that, to do so, it would be necessary to throw her lever back to the farthest notch and open her throttle in the same proportion; but he says we ought to place her lever on the first notch off the center, and leave the throttle open. Which is right? A. You are.

(17) C. R. says: In your issue of October 20, you say: "Experiment has shown that the velocity of the shell when it leaves the mouth of the cannon is about 1,300 feet per second. The hight from which the projectile would have to fall to acquire this velocity is 26,800 feet. Consequently the work actually done by the powder is equal to 219,000 foot pounds. Will you give the formula by which this result is attained? A. It is the product of the weight of the ball multiplied by the hight due to the velocity.

What pressure per square inch is necessary to press separate pieces of ice into one homogeneous mass, which shall display no joints? A. At ordinary temperatures, a very considerable pressure, more than can be applied without special apparatus, is necessary.

What is a calory? A. It is the amount of heat required to raise the temperature of 2·2 lbs. of distilled water from 39·2° to 41° Fah.

(18) J. E. asks: Is there a process for uniting wrought iron with cast iron? A. We know of none.

(19) J. E. S. says: 1. We are building a steamer, 22 feet long, 5 feet wide, and 3 feet deep. Will an engine with a cylinder 6x3 inches have power enough to run it? A. The engine will answer very well. 2. What size of upright boiler will it take? A. Make a vertical boiler 30 inches in diameter and 4 feet high. 3. Will a three foot wheel, placed in the middle of the boat and having a six inch dip, be large enough? A. Yes. 4. At what speed could we run her? A. Probably 4 or 5 miles per hour. 5. What pressure would the boiler stand? A. About 120 lbs.

(20) H. P. M. asks: What is the best method of hardening malleable iron? A. See "Wrinkles and Recipes," published by H. N. Munn, at this office.

(21) C. R. C. says: A pane of window glass may be cut into pieces by being rubbed by a small portion of the white ash obtained from the ignition of certain woods in contact with air. The ash is to be placed on the glass and briskly rubbed over it with a flat piece of wood. Are the cutting particles crystallized carbon, and can they be utilized? A. When plants, etc., are burned, a portion of the silicic acid (sand) and soda, lime, or potash become fluxed together by the heat to form minute particles of hard glass.

(22) S. G. P. asks: Does a feed tank to a steam boiler need stay bolts in the heads, to carry with safety 100 lbs. to the square inch? It is made of ¼ inch iron, and is 24 inches in diameter and 40 inches long, singly riveted. A. It would be better to stay the heads.

(23) T. H. asks: Should a pulley with curved arms be so put on the shaft that the working strain tends to straighten the arms, or the reverse? A. The former. 2. When the arms have two curves, should the pulley be put on so that the working strain tends to straighten the part of the arm next the hub or that next the rim? A. The former is best.

I want to make a model that will require a considerable number of very small, thin castings. Can you tell me of a composition that will flow quite freely at a not very high temperature, will be about as strong as ordinary brass, and will file, drill, tap, etc., comfortably? A. You describe the properties of good brass.

Can you tell me of any easily got and easily applied solvent for borax, to clean it off work where it has been used as a flux for brazing? A. It is best to scrape or file the joint.

(24) J. S. asks: What thickness of cast iron should a hollow globe of 18 inches diameter be, to sustain a steam pressure of 120 lbs. to the square inch? A. About ¼ inch.

(25) S. & H. G. P. say: We are using a 40 horse power tubular boiler, for the purpose of pumping oil wells. Four wells are worked by the boiler. One steam line (1½ inch pipe) extends up a hill to a well 1,150 feet from the boiler. Another line (2 inch pipe) extends in another direction, on almost level ground, to a well 1,078 feet from the boiler. Another well is 300 feet from the boiler on the 2 inch pipe, both engines taking steam from the same line. The fourth well is near the boiler house, and the engine (in the boiler house) supplies the boiler with water. We use about 2,700 gallons of water every 24 hours. We carry 100 lbs. steam pressure, and run our engines 55 revolutions per minute. Our steam pipes are laid in 8 inch square boxes, packed with sawdust, and are tight. The connections with the engines and the safety valve are also tight, so that there is no escape of steam except through the several engines, which are in ordinary good working order. We use for fuel principally natural gas from the wells; but at times the flow of gas is not sufficient, and we have to use some bituminous coal. Now W. W. S. claims that, if we reduce the pressure in the boiler to 40 lbs., it would not take so much water nor so much fuel to do the same amount of work. I claim that it would take more water (because we would not work our steam so dry as at present) and consequently more fuel, as we should have an increased amount of water to heat. Which is right? A. Your consumption of steam and of water will, in proportion to the work done, be more economical at the higher pressure.

(26) C. R. says: There is a pipe, 2 inches in diameter inside and about 800 feet long, with 4 or 5 feet fall. The water will run for 4 or 5 days and then stop There is no leak in the pipe. What is the cause? Is it not the friction on the inside of the pipe? A. Probably air collects at a high point.

(27) J. C. P. H. says, in reply to a correspondent who asked if there was a gain in power in having the area of the sails of a windmill equal to the whole area of the circle, over the old style of 4 sails: You answered: No. In a technical point of view you are correct; but I hardly think you mean to state that the full leverage area of any given diameter does not contain more power than the same diameter or area, only half or quarter filled with leverage area or wind surface. Do you so mean, and upon what principle is the statement based? A. If a windmill could utilize all the power in a cylinder of wind with a diameter equal to that of the sails, of course it would be well to give the sails the greatest area possible. As this is not practicable, however, it is easy to see that there will be an area which is best for any given case. This area might possibly be determined by analysis; but it is generally fixed by experiment.

(28) M. A. asks: 1. When was power first obtained from electricity? A. Page's magneto-electric engine, described in Silliman's *Journal*, vol. XX, 1831, was probably one of the first constructed in this country. 2. Which is the best direction in which to cover magnets with wire? A. Dr. Joule's very powerful electro-magnets were wound in the direction of their length.

(29) W. L. P. asks: Is there any difference between one inch square and one square inch? A. No.

(30) M. A. G. says: We desire to put a lightning rod upon a church spire, 120 feet high. About 12 feet of the top is a galvanized iron finial, which terminates in a point covered with gold leaf. Would you advise us to carry the rod above the finial, or would it be better attached to it, so that the finial will constitute a part of the rod? If the latter is the best plan, how would you attach the rod to the galvanized iron? Would it be well to simply put the rod around one of the waists of the finial? A. The rod should be attached to the base of the finial by a firmly soldered and riveted joint, so as practically to make an unbroken connection. All joints in the rod should be firmly soldered and secured against separation. If the soil is dry, you will need a large amount of conducting material placed underground in connection with the rod. See p. 400, vol. 33.