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. R. will find a recipe for stove blacking on p. 41, No. 3.—For information on rubber stamps, A. A. R., D. R., and others may consult No. 6, p. 91 (33).—A. B. C., G. H. J., J. B. B. and others are referred to No. 7, p. 100, for information on curving a base ball.—W. S. P. will find information concerning the preservation of flowers on p. 98, vol. 35.—J. M. will find directions for making the American flag on p. 12 (29).—R. L. asks how to prepare sumach leaves for insect powder. The leaves must be thoroughly dried, ground very fine, sifted, and kept dry.—W. B. S. must see reply to W. T. for instructions for etching metals with acids.—T. C. is informed that wood is a conductor of electricity. Glass is a non-conductor.

(1) L. R. asks: How is nitro-glycerin made? A. Nitro-glycerin is produced by treating ordinary glycerin with a mixture of equal parts strongest nitric and sulphuric acids, and then washing the heavy, oil-like product with plenty of cold water. See p. 407, vol. 35, also vol. 34 of the SCIENTIFIC AMERICAN. Nitro-glycerin, when pure, is free from acids. It is a compound in which part of the hydrogen of the glycerin is replaced by nitric acid.

(2) F. W. S. says: I want something that in quantity of only about an inch square will burn with a small flame for about 10 hours? A. We know of no substance a cubic inch of which would be capable of maintaining a notable flame during 10 hours, excepting, perhaps, a quantity of heavy oil controlled in a diminutive lamp.

(3) J. C. D. asks: What kind of mineral do the stone piers of the East River bridge rest on for a foundation? One person claims they stand on clay, or what is called a hard pan, while I claim they stand on solid rock or stone. Is either of us right, if so, which one? A. The piers rest on solid rock in some places, and on gravel or boulders in others.

(4) J. A. says: Would you reproduce the description of the magneto-electric machine given on p. 195, vol. 34? A. No.

(5) J. A.—For the information of C. R. B., in reference to the fluid contained in a storm glass, says: "The mixture is made as follows: Place in a long narrow bottle or test tube, camphor gum 2½ dhm, spirits of wine 11 dhm. When the camphor is dissolved add the following mixture: Water 9 dhm, saltpeter 38 grains, sal ammoniac 38 grains. Dissolve these salts in 9 drachms of water before mixing with the camphorated spirits, then shake the whole together. Cork up tight, and seal with wax, then make a small hole through the cork with a red hot needle, so as to have a small clean hole. Heavy atmosphere will cause the salts to rise; a light atmosphere to fall. Cost of mixture, 10 or 15 cents.

(6) H. M. N. asks for the best method for cooling water without the use of ice, being situated in a place where ice cannot be obtained. A. See "A self-cooling goblet," p. 72, No. 5. We shall soon publish another method of cooling water and liquids.

(7) P. R. asks how the ends of the single wires are joined together to form the strand for the East River bridge cables? A. Short thimbles are made with a right hand thread cut in one end and a left hand thread in the other. Corresponding threads are cut in the ends of the wires to be joined, which are received in the thimbles.

(8) O. B. says: Suppose I suspend two weights from line 50 feet long, say 200 feet apart at the point of suspension. Now it seems to me that, by carefully measuring, the distance from weights would not be quite 200 feet, as both tend to the center of the earth. I think therefore that in this way I might be able to find the radius of the earth by simply measuring the distances between the weights, make calculations where they would finally meet. Am I right or wrong? A. The theory is correct. You may find it difficult to apply under the circumstances.

(9) S. J. S. asks: 1. Would not steam power be more economical or take less steam and wood to pump in air with the steam? A. There would probably be some economy in the arrangement. 2. Are the petroleum engines a success? A. There are some forms that are favorably spoken of. 3. What does the crude oil cost? A. The price is variable, about 9 cents a gallon at present. 4. Does water in boilers protect no thicker iron than ⅜ all over burn out or away? A. It is not usual to make fire surfaces thicker than this. 5. If cast iron boilers are covered with sheet iron, does that do away with the objection to them or make them as safe as wrought iron boilers? A. We think not. Your other questions would require quite a treatise for their proper consideration, and if you will consult the back files of our paper, you will find that they have all been referred to. 6. How much cheaper is water power than steam, say for the length of time that an engine or boiler would last, or in the long run? A. Experiment can alone decide.

(10) A. B. asks how to make sizing for walls? A. Size to make paper stick to walls is made by adding 8 ozs. of dissolved glue to a pail full of hot water. Apply the preparation to the wall with a white-wash brush. Be particular to touch every part of the wall, especially the top and bottom. Allow the size to dry a little, and hang the paper with paste as usual.

(11) E. F. S. says: Will you tell me how to clean guns? A. Remove the barrels, wash with hot water to remove the residuum of the powder, wipe dry and oil lightly with oil that contains neither salt nor acid. Keep the locks dry and do not get water into them.

(12) F. M. Y. says: In procuring alkalies from barks by boiling in dilute muriatic acid, I find great difficulty in separating them from the tannic acid. How can I precipitate the alkaloids moderately pure? A. Heat the solution with a solution of lead acetate (Goulard's solution) as long as a precipitate forms, and then remove the excess of lead by cautious addition of ammonia or by hydrosulphuric acid (sulphuretted hydrogen). Evaporate and crystalize from the filtered solution.

(13) M. L. T. asks: What is the process and appliances used for extracting oils from herbs? A. The volatile oils are generally obtained by distilling in a deep narrow retort the articles along with an equal weight of water; but some substances that give out their oil with difficulty are first soaked for 24 hours in twice their weight of water, to each gallon of which 1 lb. of common salt has been added, by which its boiling point is raised, and consequently the oil comes over more readily. The distillate separates into two layers, the water being drawn off and returned to the retort, and this is repeated until distilled water ceases to come over mixed with oil. The rectification of the oil is performed without water, by the careful application of heat just sufficient to cause them to flow over pretty rapidly, so that they may be kept heated for as short a time as possible.

(14) J. G. S. asks how to clarify neats' foot oil? A. The oil is usually agitated by means of injected steam, first with solution of tannin (hot infusion of oak bark), next with water and chloride of lime, and then with dilute oil of vitriol. Solution of blue vitriol (copper sulphate) and salt is also sometimes used, and the oil filtered through dried and powdered fuller's earth or charcoal in large bags of Canton flannel.

(15) S. L. E. asks: What is the best method of making black and violet ink that will dry immediately? Also what will take such ink stains from hands and clothing? A. The purple ink made from aniline violet solution with a little gum is among the best of its kind. A purple or violet ink may also be made by triturating 6 parts of finest Prussian blue and 1 part of oxalic acid into a smooth paste with a little water, and, after standing 24 hours, diluting with sufficient quantity of water and enough extract of Brazil wood to strike the desired color. A little alum solution and an ounce of gum to the gallon should then be added. For other ink recipes and methods for removing ink stains see p. 76 (54) vol. 37, pp. 155 (30), and 315 (26), vol. 36, and pp. 101 and 297, vol. 35 of SCIENTIFIC AMERICAN.

(16) W. G. says: How can I save apple and pear trees attacked by the blight? A. A good lime wash is recommended, with the addition of a little soot or lampblack to neutralize the glare if this is objectionable. This wash destroys the eggs of insects and germs of fungi, and keeps the bark free to swell as the cells grow. Some farmers have used strong hot solutions of common soap applied with a swab, also linseed oil where the white scales abound.

How can I separate nickel from a solution of nickel coins dissolved in nitric acid (HNO_3)? A. Heat the solution gently, slightly acidified with dilute sulphuric acid, and pass a slow current of sulphuretted hydrogen through it until a filtered drop of the solution no longer gives the copper reaction when brought into contact with a drop of potassium ferrocyanide solution. Filter, cautiously add a little potassium chlorate, heat to boiling, and precipitate as oxalate (with oxalic acid). The dried oxalate heated in a closed crucible will yield pure nickel.

(17) W. E. S. asks: What is the quickest way to make vinegar? A. What is known as the German process is the most rapid method of making a good vinegar. In this, dilute alcoholic liquor to which $\frac{1}{10}$th part of honey or extract of malt has been added is caused to trickle down through a mass of beechwood shavings previously steeped in vinegar and contained in a vessel called a vinegar generator (*essigbilder*). It may consist of a large oak hogshead or barrel furnished with a loose lid or cover, a few inches below which is fitted a perforated shelf, having a number of small holes loosely filled with packthread about 6 inches long, knotted at the upper end to prevent their falling through. Several small glass tubes long enough to project slightly above and below the shelf are also fitted in perforations in the shelf to serve as air vents. The vessel at the lower part is pierced with eight or ten holes equally distributed around the sides at about six inches above the bottom, to admit of the entrance of air. A small siphon tube, the upper curve of which is an inch below the air holes, serves to carry off the liquid as fast as it accumulates at the bottom. The alcoholic liquid at a temperature of 75°—83° Fah. is run in on the shelf, and slowly trickles down through the holes by means of the packthread, diffuses itself over the shavings, slowly collects at the bottom, and runs off by the siphon exit. The air enters by the lower holes, passes freely through the shavings, and escapes by the glass tubes. The temperature within the apparatus soon rises to about 100° Fah., and remains stationary at this point while the action goes on favorably. The liquid generally requires to be passed three or four times through the cask before its acetification is complete.

(18) C. says: I have used the following recipe for making hard soap: 7 lbs. common yellow soap, 4 lbs. sal soda, 1 oz. hartshorn, 2 oz. borax, ¼ lb. rosin, to be dissolved in 22 quarts water, and boiled about 20 minutes. It hardens sufficient on cooling to be cut in bars, but after a short time it becomes greasy, with particles of soda appearing in it. A. Use a larger proportion of sal soda and boil with the rosin and borax some time before adding the soap. It should be kept in a dry place for a time after cutting.

(19) H. R. says: I wish a preparation to coat paper moulds so that a mixture of glue and molasses will not adhere to the paper? A. Dip the moulds in melted paraffin, and when cold cover them uniformly with a thick oil.

(20) A. B., and others who ask how to make marine glue: Dissolve 1 lb. best caoutchouc (gum rubber) in 4 gallons of pure gas naphtha, with frequent agitation. After ten or twelve days add 2½ lbs. of shellac, in finest powder, and allow to stand for about a week in a well stoppered flask. The mixture must then be carefully heated in an iron vessel having a discharge pipe at the bottom, and, when the whole has become liquid, drawn out upon large metal slabs to cool. When required for use it should be heated to 258° Fah. (best in an oil bath), and applied with a brush. It forms, when properly prepared, one of the strongest and most insoluble cements known.

(21) T. J. S. asks: What ethers will mix with naphtha or gasoline of 62° without danger of explosion? A. As we understand you, most of the common ethers are miscible with the oils mentioned, and the vapors are explosive only when mixed with air and ignited.

(22) L. H. asks how to make ozone in large quantity? A. Ozone may be formed in large amount by electrifying air or oxygen. It is by this process that it is usually made when required in large amount and in very concentrated form. You should consult some standard work on inorganic chemistry.

(23) W. C. R. says: 1. I made some fulminate of mercury, and instead of exploding with a loud report, it only made a puffing noise and very bright blaze. A. The detonation of the fulminate in small quantities is not very violent unless it occurs in a confined place. 2. Will you tell me how to explode torpedoes made of chlorate of potassa and sulphur? A. The ingredients must be reduced separately to the finest powder and intimately mixed; the mixture explodes either by concussion or ignition.

(24) L. A. L. asks: What action will lager beer have on elastic rubber, when in constant contact with it? A. It will probably soften it considerably after a time.

(25) G. H. E. asks: 1. What is the difference between pot and pearl ashes, and how made? A. The crude carbonate of potash of commerce is obtained by lixiviating the ashes of plants with water, and boiling down the liquid to dryness in iron pots. The dark-colored residue is called potashes, and this when calcined in a furnace so as to burn off most of the coloring impurities, affords the impure carbonate known as pearlash. 2. Who use ashes, and for what purpose are they used? A. These find extensive use in technical operations, such as soap-making, glass making, dyeing, metallurgical and chemical operations, and are the source of nearly all the potassium preparations and salts in use.

(26) A. P. asks: How can I prevent souring and putrefaction of flour paste? A. A small quantity of solution of corrosive sublimate or chloride of zinc will prevent the souring and putrefaction of the composition. These antiseptics are poisonous when taken into the system.

(27) D. F. asks how to prepare chewing tobacco? A. Chewing tobacco is prepared by some unprincipled persons from the leaf by soaking in cheap rum and molasses, with the addition of ammonia and niter, and pressing; but it is, we believe, a common practice to first soak it in urine and then in molasses water, etc. See p. 68 present volume of the SCIENTIFIC AMERICAN. Common smoking tobacco is prepared from the wet pressed leaf, the waste of cigar making, and stems similarly treated, dried, and broken, or cut. It is usually thought proper to improve (?) it with various quantities of safflower, rhubarb, potato, cabbage, coltsfoot, dock-leaves, sawdust, malt combings, medicinals, and sand.

(28) E. D. asks how to construct a Leclanché battery? A. The Leclanché battery consists of a plate of zinc placed in a solution of ordinary commercial sal ammoniac (chloride of ammonium). The porous cup should hold a plate or prism of carbon surrounded with a dry mixture of manganese black oxide and pounded gas carbon. The contents of the cup is usually sealed at the top with a layer of asphaltum, through which the end of the carbon plate projects for connection. See (40), p. 60, present volume of SCIENTIFIC AMERICAN. 2. Is the Leclanché battery durable and strong by always leaving it together? I like to have a very strong and durable galvanic battery, preventing the use of acids and vitriols if it can be helped. A. On open circuit it lasts a long time, and, at the moment of closing circuit, has an electromotive force greater than the Daniell's or gravity form of battery, if in good order.

(29) J. H. C. asks for a simple way of purifying coal gas? A. Hydrated oxide of iron or coke dust saturated with a strong alkaline solution will answer; but for large quantities of gas, lime or lime water is the cheapest. Washing with water will not completely purify it.

(30) I. M. asks: Can scent of coal oil be removed without injuring its qualities? A. A great part of the disagreeable odor may be removed by treating the oil with milk of chloride of lime (bleaching powder) at a temperature of 138° Fah. for some time, decanting from the sediment, agitating with a few per cent of soda solution, and washing well with water.

(31) H. W. S. asks if there are any compounds or liquids that will explode or ignite when brought in contact with each other? A. Hydrogen phosphide ignites explosively on contact with air or oxygen. On contact of calcium phosphide with water, hydrogen phosphide is formed, and inflames immediately in contact with air. Iodine inflames phosphorus (vitreous) by contact. A mixture of potassium chlorate with fine sugar or ether is ignited by a drop of oil of vitriol. Pure hydrogen and chlorine (gases) combine explosively by contact in strong sunlight. The ozone liberated by the action of a little strong sulphuric acid on dry, powdered potassium permanganate directly ignites coal gas, cotton, oil, or other combustible substance brought in contact with the generating mixture. Other similar reactions might be cited.

(32) W. T. asks how to etch on steel? A. The clean plate must be covered with an even film of wax, either applied while the plate is uniformly heated, or dissolved in alcohol and flowed on the warm plate. The etching fluid may be made as follows: Pyroligneous acid 4 ozs., alcohol 1 oz., nitric acid 1 oz.; by measure, Or use iodine 1 oz., iron filings ½ drachm, water 4 ozs. The lines are cut through the wax with a fine steel point. so as to leave the metal surface bare under the lines. The etching fluid is then poured on, and removed as soon as the metal is sufficiently etched.

(33) F. H. asks how to obtain the color of the "liqueur absinthe"? A. The substances used by the French to color their liqueurs are, for blue, sulphate of indigo neutralized with chalk, or the juice of blueberries; fawn and brandy color, burnt sugar; green, spinage and parsley leaves digested in spirit, also by mixing blue and yellow; red, powdered cochineal, either alone or mixed with a little alum; violet, litmus; yellow, an aqueous infusion of safflowers or French berries, or a spirituous solution of turmeric.

(34) A. E. G. asks: 1. What solid substance is most sensitive to changes of temperature, or has the greatest coefficient of expansion? A. Zinc, we believe, suffers the greatest change. 2. What substance is most sensitive in lengthening and shortening for changes in humidity? A. Porous bodies, such as light wood, are most notably affected.

(35) C. E. F. asks for some liquid of a volatile nature that will reduce sawdust and scrap white paper to a pulp? A. Ammonio-cupric oxide and aluminous chloride dissolve and soften woody fiber and paper.

(36) J. D. S. asks how to make the putty used by carriage painters? A. Take dry white lead and mix with 1 part brown Japan and 1 part carriage rubbing varnish. A common wagon putty is made by using whitening in the place of dry white lead and adding a small quantity of white lead in oil, from the keg. This putty should be kept in water when not in use, to prevent drying.

(37) E. D. asks: 1. Can I leave a sulphate of copper battery together without the blue vitriol eating the copper? A. You can let the battery stand, but after a short time the copper solution will get to the zinc and coat it with copper. If the solution does not contain a free acid the copper will not be corroded to any extent. A little sulphate of zinc solution is better than salt water as the zinc fluid. 2. Is it unhealthy to leave the filled battery uncovered in a bedroom over night, where the windows are open? A. If the chemicals are pure, no. 3. Are the solutions very dangerous? A. They are only dangerous when taken into the system; they are not volatile.

(38) H. T. R. asks: What boat ever made the fastest time from New York to Albany? A. It is stated that the trip of the Chauucey Vibbard from New York to Albany in six hours and twenty minutes, April 18, 1876, is the fastest on record. If any of our readers possess records of faster time over this route, we would be glad to hear from them.

(39) R. J. K. asks: How fast will a 15 foot boat go with a screw propeller 12 inches in diameter and 18 inches pitch, a boiler 12 x 20 inches, cylinder 1½ inches, bore 3 inches stroke. A. Probably between 3 and 4 miles an hour.

(40) R. S., Jr., asks: What size engine, boiler, and propeller would work to the best advantage in a small boat 15 feet long and 5 feet beam, and what speed may I expect to obtain in smooth water? A. Boiler 24 inches diameter, 3½ feet high. Cylinder 2½ by 3 inches. Propeller, 18 to 30 inches diameter, 30 inches pitch. Probable speed 5 to 6 miles an hour.

(41) J. W. W. asks: Can you send me a prescription for weak kidneys? A. You should consult a physician.

Is an improvement in link motion for steam engines patentable? Are any links on locomotives patented? A. Certainly it is. There have been many patents relating to link motion, and it would be well for you to study up the subject and become acquainted with the most advanced practice before attempting to effect improvements.

(42) E. H. R. asks: Is it safe to carry 120 lbs. steam on a boiler of the following description: Diameter 48 inches, length 26 feet, four 12 inch flues. Thickness of the boiler iron $\frac{3}{16}$ of an inch. A. We do not think that this figure allows a sufficient margin for faults of construction and deterioration by use.

(43) J. C. asks; Why do propeller shafts break? A. In such cases as have come to our notice, the cause was insufficient strength, either by reason of being too small, or on account of imperfections.

(44) A. A. McN. asks: What is the horse power of a 4 x 8 steam engine when worked up to its fullest capacity, also if the length of stroke is 7 and the cylinder 4, has it the same power as a 4 x 8? A. See p. 33, vol. 33.

(45) R. W. K. says: I have a steam boiler 30″ x 42″, 18 2″ tubes (party from whom I bought it said it was a 5 horse power boiler); how large an engine, screw, and boat could this run, and what speed? I have a small 2 cylinder oscillating engine, each cylinder is 2″ x 2″. How large a boiler should I use to run my boat (12 feet x 3½ feet) with side wheels, for safety? A. See pp. 33 and 225, vol. 33.

(46) B. C. M. says: I think G. W. W., July 28 (31), would find the information he desires in Thomas Oxley's "Gem of the Astrial Sciences," in which the author treats at length on the construction of planispheres.

(47) Machinist says: Suppose a piece of inch iron was cut with two threads, one right and the other left handed, commenced opposite and of the same pitch, would the screw enter a nut cut with the same threads, the same pitch? A. Yes, but if the threads were fine and of small pitch, the thread in the nut would be nearly obliterated.

(48) T. E. asks: What is enamel made of, and how is it put on iron? A. Enamel is a species of vitreous varnish, colored with metallic oxides, applied in a thin stratum to metallic surfaces. In small articles it is fused on the surface by the flame of a blowpipe and in larger articles by means of the heat of a furnace. Ordinary enamel is common glass fused with oxide of lead. Hollow ware is enameled by a mixture of powdered glass, borax, and carbonate of soda, mixed, fused, cooled and ground. The ware is cleansed with acid, wetted with gum water, the powder dusted on, and then fused by heat carefully applied.

(49) L. D. asks for a good ink that has a pale color when first written, then turning to a deep black. A. For 1 quart of ink take Aleppo galls 4 ozs., soft water 1 quart; macerate in a clean corked bottle for ten or twelve days with frequent agitation; then add 1¼ oz. gum arabic dissolved in a wine glassfull of water, ½ oz. lump sugar. Afterward add 1½ oz. sulphate of iron; agitate occasionally for two or three days, when the ink may be decanted for use, but it is better if the whole be left to digest together for two or three weeks. When time is an object, the whole ingredients may be put into the bottle at once and agitated daily until the ink is made, and boiling water may be used instead of cold.

(50) S. T. asks for the process of making an impression of a photograph on glass. A. In photographing on glass the clean plate is first coated with a thin, uniform film of collodion (gum cotton dissolved in ether and alcohol) containing a little ammonium iodide or bromide, and often similar salts of cadmium. While the film is still moist, the plate is immersed in the dark in a bath of silver nitrate dissolved in water. This causes the film of collodion to become filled with insoluble iodide and bromide of silver, and in a few minutes the plate is ready to be placed (wet) in the camera and exposed therein for half a minute, more or less. On removal from the camera it is treated in the dark room, first with a strong aqueous solution of ferrous sulphate (copperas), which developes the picture, and then, after washing, immersed in a fixing bath, which may be either a solution of sodium hyposulphite, or of potassium cyanide. The photograph is finished by washing with water, drying, and coating with a film of transparent varnish. In the Woodbury and similar processes for preparing glass photographic transparencies, the picture is printed with a fatty ink from the impression in a plate of zinc of a photographic gelatin bichromate film. Consult Vogel's "Chemistry of Light and Photography."

(51) J. L. & Co. ask: By what method can we temper the blades of our steam shears, so that they will stand to cut old saw blades or any thin tempered steel? A. Harden as for ordinary tempering and draw the temper to a bright straw color.

(52) J. C. says: I have an engine which requires lining up on the crosshead. Having no adjustable gibs I pour in Babbitt metal, which does not answer. I want some harder metal which can be poured and will not cut the guides. A. You can harden Babbitt metal by melting it and adding a quantity of antimony.

(53) G. L. L. says: What is the new process of coating old table knives so they look like silver? A man has been collecting knives and plating or coating them so they look like silver. He claims they will last for years and that it is neither silver or nickel but some kind of metal which is kept secret and that no battery is used. A. The coating may be of tin, or an alloy of this with some other metal, applied to the clean blades by simply dipping in a bath of the molten metal under suitable conditions. We cannot say positively, from your statements. Such a coating would not be very durable.

It has been our custom for thirty years past to devote a considerable space to the answering of questions by correspondents; so useful have these labors proved that the SCIENTIFIC AMERICAN office has become the factotum, or headquarters, to which everybody sends, who wants special information upon any particular subject. So large is the number of our correspondents, so wide the range of their inquiries, so desirous are we to meet their wants and supply correct information, that we are obliged to employ the constant assistance of a considerable staff of experienced writers, who have the requisite knowledge or access to the latest and best sources of information. For example, questions relating to steam engines, boilers, boats, locomotives, railways, etc., are considered and answered by a professional engineer of distinguished ability and extensive practical experience. Inquiries relating to electricity are answered by one of the most able and prominent practical electricians in this country. Astronomical queries by a practical astronomer. Chemical inquiries by one of our most eminent and experienced professors of chemistry; and so on through all the various departments. In this way we are enabled to answer the thousands of questions and furnish the large mass of information which these correspondence columns present. The large number of questions sent—they pour in upon us from all parts of the world—renders it impossible for us to publish all. The editor selects from the mass those that he thinks most likely to be of general interest to the readers of the SCIENTIFIC AMERICAN. These, with the replies, are printed; the remainder go into the waste basket. Many of the rejected questions are of a primitive or personal nature, which should be answered by mail; in fact, hundreds of correspondents desire a special reply by post, but very few of them are thoughtful enough to inclose so much as a postage stamp. We could in many cases send a brief reply by mail if the writer were to inclose a small fee, a dollar or more, according to the nature or importance of the case. When we cannot furnish the information, the money is promptly returned to the sender.

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

J. J. S.—The clay may be used for brick and tile making, etc. It is too impure for fine pottery.—C. W. G.—The clay is of a low quality and would not probably pay to mine for market. It might be used in the vicinity for the manufacture of bricks and some kinds of pottery. The other specimen is not logwood extract but asphalt.—S. L. P.—It consists principally of oxide of iron. The glimmering particles are magnetite. The specimen in bottle will be noticed subsequently.—G. G.—It is iron pyrites. See p. 7, vol. 36, SCIENTIFIC AMERICAN.—D. C. S.—It is magnetite—magnetic oxide of iron.—H. C.—It consists of lime carbonate and a little clay, sand, and oxide of iron. Properly calcined it might yield a good lime or cement, but it does not excel as a polishing powder.—D. L. P., Curaçao, South America.—The sample of cave earth much resembles bat manure, as the per cent of organic matter and ammonia is very small. It contains a large quantity of phosphates—principally calcium phosphate—together with some lime carbonate, a little iron and silicates—clay and sand. If treated with oil of vitriol so as to form the superphosphate it would be of some value as a fertilizer, alone or mixed with others. Its value could not be named even approximately, until a quantitative analysis determines its composition.

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 Puzzle of Ropes and Pulleys. By A Subscriber.
On Bacteria. By F. G. Fairfield.
On How to Draw an Octagon. By I. M.
On a Lightning Draughtsman.

Also inquiries and answers from the following:
A. A. R.—P. G. H.—W. C. C.—M. B. M.—T. D. S.—J. A. McC.—J. M.—E. M.—H. F.—J. W.—E. F.—O. C.—C. B. C.

HINTS TO CORRESPONDENTS.

We renew our request that correspondents, in referring to former answers or articles, will be kind enough to name the date of the paper and the page, or the number of the question.

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 makes covering for steam pipes, to prevent radiation of heat? Who makes steam road engines? Who makes steam pumps? Who makes instruments to assist the hearing of deaf persons? Who makes kerosene lamps suitable for lighting cotton mills? Who makes a utensil for scrubbing, made of iron rings?" 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.

OFFICIAL.

INDEX OF INVENTIONS

FOR WHICH

Letters Patent of the United States were Granted in the Week Ending

July 17, 1877,

AND EACH BEARING THAT DATE.

[Those marked (r) are reissued patents.]

A complete copy of any patent in the annexed list, including both the specifications and drawings, will be furnished from this office for one dollar. In ordering, please state the number and date of the patent desired, and remit to Munn & Co., 37 Park Row, New York city.

Anchor points, W. N. Fisher ... 193,236
Anchors, W. N. Fisher ... 193,237
Animal trap, F. E. Rice (r) ... 7,798
Artists' appliances, W. H. Brownell ... 193,140
Ash sifter, Dean & Kingsbury ... 193,230
Bale tie, R. G. Stewart ... 193,194
Baling press, B. F. Miller ... 193,265
Balloon, W. Beckley ... 193,136
Bed bottoms, F. P. Edmans ... 193,148
Bed bottom, O. Brewster ... 193,218
Bed spring, J. A. Johntry ... 193,031
Beer cask, M. Brand ... 193,074
Billiard table, W. Gardner ... 193,156
Binder, T. Orton ... 193,128
Bobbin holder, Slater & Ball ... 193,290
Boiler, tube expander for, O. Pagan ... 193,275
Book binding, E. S. Boynton ... 193,109
Book binding, O. & J. S. Routh ... 193,183
Book cover protector, C. B. Browne ... 193,139
Book, memorandum, W. A. Cooke ... 193,146
Boot, etc., machine, M. V. B. & F. N. Ethridge ... 193,079
Boot crimper, A. T. Moore ... 193,310
Bottle stopper, A. E. Rich (r) ... 7,797
Brake, H. L. Perrine ... 193,279
Brake, J. Raddin ... 193,178
Brakes, F. W. Eames ... 193,078
Brick machine, J. L. Haws ... 193,245
Brush, R. Bisbee ... 193,137
Brush, A. Worthington ... 193,308
Buckle, S. Ward ... 193,303
Burglar alarm, B. N. Bailey ... 193,210
Burglar alarm, J. C. Mackie ... 193,260
Button mold, A. Alexander, Jr. ... 193,103
Butter worker, E. D. & E. W. Kitchen (r) ... 7,793
Canal boat propeller, J. Tascher ... 193,196
Canal locomotive, G. De Nottbeck ... 193,147
Car axle box, O. Tomlinson (r) ... 7,800
Car coupling, G. W. Mathews ... 193,262
Car door, E. E. Pratt (r) ... 7,795
Car, T. Purviance ... 193,281
Car, M. Van Wormer ... 193,101
Car, G. W. Bemis ... 193,214
Car replacer, J. B. Barnes ... 193,211
Carbureter, O. P. Drake ... 193,232
Carpet bags, A. Kaufmann ... 193,162
Carriage poles, C. K. Mellinger ... 193,263
Cartridge implement, C. Eutebrouk ... 193,150
Chair fan attachment, C. F. Ruset ... 193,184
Check, etc., F. W. Brooks ... 193,221
Churn, D. A. Fiske ... 193,151
Churn, S. Jeffers ... 193,119
Cloth-finishing machine, Springborn & Baush ... 193,193
Cloth-measuring machine, T. M. Brintnall ... 193,219
Clothes drier, C. B. Koon ... 193,164
Clothes drier, J. Simmons ... 193,132
Clothes pin, E. F. Clearwater ... 193,143
Coating metal rollers, H. Wilde ... 193,204
Composition, H. Bayle ... 193,214
Cock, gage, H. A. Distelrath ... 193,231
Cordage, C. E. Brownell ... 193,141
Corn sheller, C. D. Read ... 193,130
Corset, I. D. V. & L. C Warner ... 193,200
Cotton, treating, F. G. Wheeler ... 193,203
Cotton cleaner, R. Kitson ... 193,094
Counterfeiting, preventing, W. A. Smith ... 193,299
Curry comb, C. A. Hotchkiss ... 193,251
Curtain fixture, A. Fontayne ... 193,239
Cutlery, Hallas, Flower, & Pearson ... 193,115
Dental engine, G. W. Tripp ... 193,300
Dish cleaner, D. C. Buell ... 193,222
Dish washer, J. J. Hoffman ... 193,249
Door check, J. Francis ... 193,154
Dredge bucket, J. McSpirit ... 193,172
Dyeing yarn, etc., W. J. S. Grawitz ... 193,158
Ellipticspring, A. French ... 193,090
Emery wheels, W. W. White ... 193,306
Faucets, W. Cleveland ... 193,111
Feed trough, A. J. Rush ... 193,185
Fence, D. R. Ostrander ... 193,274
File, D. H. Thomas ... 193,296
Fire arm, revolving, D. Moore ... 193,269
Fire escape, Lewis & Holman ... 193,259
Fire escape, E. R. Menzel ... 193,264
Fire escape, C. Palatini ... 193,176
Fluting machine, C. Felder ... 193,113
Fruit drier, S. R. Griffith ... 193,243
Fuel, machine for pressing, etc., J. E. Hackett ... 193,159
Furnace, J. J. Jarves ... 193,089
Grain binder, J. H. Gordon ... 193,241
Grain binder, O. O. Storle ... 193,287
Grain drier, T. S. Morris ... 193,267
Grain drill, Brennan, Taylor, & Lynam ... 193,075
Grain elevator and bag filler, G. R. Hockenhull ... 193,248
Grate bar, J. R. Kelly ... 193,093
Grate, L. P. Rider ... 193,180, 193,181
Grinding machine, G. W. Jones ... 193,255
Hair switch, S. J. Wells ... 193,304
Harrow, O. Slagle ... 193,292
Harvester, J. H. Elward ... 193,112
Harvester, G. Esterly ... 193,234
Harvester, C. W. Levalley ... 193,122
Harvester, W. B. Mayfield ... 193,170
Harvester, S. Johnston ... 193,121
Hay elevator, Banks & Coning ... 193,107
Hay press, F. Boalt ... 193,073
Heating, etc., apparatus, B. Holly ... 193,086
Heel stiffener, C. Y. Gardner ... 193,240
Hinge, spring, G. Greer ... 193,157
Hoe handle, W. R. Littleton ... 193,165
Hog-catching apparatus, I. E. Winchell ... 193,207
Hoop machine, G. B. Selden (r) ... 7,799
Horse hay rake, W. Adriance ... 193,205
Hose coupling, C. F. Littlejohn ... 193,166
Hot air furnace, G. T. Flint ... 193,238
Hydrant valve, F. Shriver ... 193,188
Hydraulic press, A. H. Emery (r) ... 7,790, 7,791
Ice creeper, H. Antes ... 193,104
Ice machine, R. Schultz ... 193,286
Insect-destroying machine, K. C. Atwood ... 193,105
Key, machine, H. G. Hotchkiss ... 193,252
Ladder, G. Gay ... 193,081
Lamp and lantern, J. H. Richardson ... 193,282
Lamp bracket, J. Forster ... 193,153
Lamp burner, A. W. Sangster ... 193,186
Lantern, O. I. King ... 193,257
Latch, etc., G. F. Joyce ... 193,092
Leather-crimping machine, J. Smith ... 193,191
Leather-cutting gage, J. Potter (r) ... 7,796
Lifting jack, W. Z. Black ... 193,138
Link, adjustable, C. J. E. Thompson ... 193,295
Lubricating compound, J. H. Pitt ... 193,280
Match safe, E. K. Haynes ... 193,246
Milk cooler, E. F. Preston ... 193,177
Millstone-dressing machine, F. Miller ... 193,173
Mould for casting, S. H. Bingham ... 193,072
Motion, converting, T. Tascher ... 193,197
Mower, I. N. Hall ... 193,160
Mower, H. L. Hopkins ... 193,250
Musical instruments, W. Spethmann ... 193,192
Nut lock, J. A. Nicols ... 193,272
Nut machine, J. R. Blakeslee ... 193,215
Oil can, W. H. Bartels ... 193,212
Oil can, J. Fleming ... 193,114
Oil can holder, G. D. Clark ... 193,142
Oil well tubing, L. Patterson ... 193,278
Ores, etc., A. B. Paul (r) ... 7,794
Overalls, J. Wallach ... 193,199
Overalls, S. H. Emanuel ... 193,149
Pail, P. Hickey ... 193,247
Paper cutting, etc., G. L. Jaeger ... 193,161
Paper cutting machine, clamp for, J. Keith ... 193,256
Paper holder, A. Newbury ... 193,175
Paper pulp, G. E. Marshall ... 193,261
Parer, apple, W. E. Brock ... 193,220
Pedometer, B. S. Church ... 193,224
Pen and pencil case, J. B. Smith ... 193,190
Pen, H. C. Benson ... 193,071
Pen holder, A. S. Hubbell ... 193,118
Pen holder, P. Schrag ... 193,285
Pipe coupling, R. H. Moss ... 193,174
Pipe couplings, E. Griffin ... 193,082
Pitcher, E. A. Parker ... 193,277
Plaiting machine, M. M. Macdonald ... 193,169
Plaiting machine, H. B. Rorke ... 193,131
Planter, W. L. Chism ... 193,110
Planter, Lancaster & Schull ... 193,258
Planter, N. A. Palmer ... 193,129
Planter, W. Moores ... 193,268
Plow, Lauer & Hartmann (r) ... 7,803
Plow, J. W. Wood ... 193,102
Plow, T. J. Crump ... 193,226
Plow, J. L. Florence ... 193,152
Plow, J. Coles ... 193,225
Press, H. W. Clum ... 193,144
Printing press, J. Milligan ... 193,027
Pulley covers, W. R. Norris ... 193,273
Pump, J. W. Collins ... 193,145
Pump, E. Daggett ... 193,227, 193,228
Pumps, C. Jarecki (r) ... 7,792
Railroad, W. H. & H. M. Stow ... 193,291
Railroad switch, J. H. Ainsworth ... 193,206
Rear hound, A. Muhleison ... 193,127
Road scraper, U. & L. L. Thompson ... 193,297
Rotary engine, J. Davenport ... 193,229
Rotary engine, A. Vivarttas ... 193,133
Saddle bags, Suter & Furney ... 193,288
Safe and vault, Taylor & Williams ... 193,293
Safes, door and hinge, P. F. King (r) ... 7,802
Safety pin, P. Miles ... 193,125
Sand conveyer, R. C. Garcia ... 193,155
Sash fastener, E. Leverich ... 193,124
Saw mill gage, F. Wheeler ... 193,202
Saw set and file guide, H. C. Root ... 193,182
Saw sharpener and tooth gage, G. W. Atkins ... 193,209
Scales, J. Parnall ... 193,276
Seed heaters, R. Macdonald ... 193,168
Sewer cleaner, C. Loscher ... 193,096
Sewer, trap, J. B. Moore ... 193,266
Sewing machine, G. H. Thiele ... 193,294
Sewing machines, H. A. Blanchard ... 193,216
Shade holder, G. H. Reck ... 193,179
Shears, T. H. Brady ... 193,217
Sheet metal can, G. W. Bell ... 193,108
Shoe, bathing, C. C. Clayton ... 193,077
Shuttle boxes, H. Wyman ... 193,309
Slate, C. C. Shepherd ... 193,099
Slate frame attachment, M. Hills ... 193,117
Soap, machine for cutting, Chandler & Boesch ... 193,223
Spark arrester, P. H. Grace ... 193,242
Stamp, hand, H. W. Bardwell ... 193,070
Stamp, india rubber, S. B. Scott ... 193,187
Stamp mill, H. H. Scoville, Jr ... 193,289
Stamp, revenue, E. A. Locke ... 193,167
Steam boiler, Allen & Farrington ... 193,069
Steam boiler, J. Hughes ... 193,253
Steam boiler, Millen & Feely ... 193,126
Steam valve, W. Andrews ... 193,134
Stone quarrying machine, J. B. McRae ... 193,171
Stove, B. Duerstock ... 193,233
Stove, Thompson & Knappenberger ... 193,198
Strainer, Guillemin & Lehman ... 193,244
Straw cutter, Silberzahn & Hayssen ... 193,189
Street guide, M. J. Vieira ... 193,302
Tan bark, process, J. J. Johnston ... 193,120
Tank regulator, A. Fuller (r) ... 7,801
Thread, etc., art of making, A. R. Arnold ... 193,207
Toy buzz, J. B. Wells ... 193,201
Trunk hinge, J. Arnold ... 193,208
Turbine wheel, Risdon & Tyler ... 193,283
Vaccinating instrument, T. S. Brinkerhoff ... 193,076
Valve, W. J. Westwood ... 193,305
Vehicle holdback, A. B. Roberts ... 193,284
Velocipede, J. H. Nolan ... 193,098
Ventilating apparatus, M. A. Morton ... 193,270
Ventilator, car, H. E. Finney ... 193,235
Ventilator, E. Leverich ... 193,123
Warming buildings, etc., B. Holly ... 193,085, 193,088, 193,087
Wash basin, J. Hamilton ... 193,016
Wash basin, J. H. Lapham ... 193,095
Wash board, G. W. Hunter ... 193,254
Wash boiler, W. A. Kellogg ... 193,163
Washing machine, Jenne & Creighton ... 193,090
Water closet valve, J. Muirhead ... 193,271
Welding chain links, B. Hershey ... 193,083, 193,084
Whip socket, J. H. Sunderman ... 193,100
Window grating, C. T. Steckel ... 193,195
Wines, W. Thompson ... 193,298
Wrench, ratchet, M. Vassar, 2d ... 193,301
Wringer, E. Banfield ... 193,135
Yarn spoolers, W. Bancroft ... 193,106

DESIGNS PATENTED,

10,095.—CARPETS.—A. Baye, Paris, France.
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10,099.—PLAYING CARDS.—A. J. Manning, N. Y. city.
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