

## Business and Personal.

The charge for insertion under this head is One Dollar a line for each insertion; about eight words to a line. Advertisements must be received at publication office as early as Thursday morning to appear in next issue.

**Wanted.**—Superintendent for malleable iron foundry; one familiar with air furnaces preferred. Address X. Y. Z., Box 773, New York city.

Safety Elevators, steam and belt power; quick and smooth. D. Frisbie & Co., Philadelphia, Pa.

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**Wanted.**—By a first-class machinist a situation as foreman or engineer. The best references. Address C. H., P. O. box 773, New York city.

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The **Beaudry Power Hammer** is finding its way not only all over this country, but into Russia and other parts of the old world, and to Japan and Australia. It is the best and cheapest belt hammer in the market. Send for circular. Beaudry & Cunningham, Boston, Mass.

Railroads supplied with Pumps for every service by Valley Machine Works, Easthampton, Mass.

Hull Vapor Cook Stoves.—Best in the world; sell everywhere. Agents wanted. Send for catalogue and terms. Hull Vapor Stove Co., Cleveland, Ohio.

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Iron Planer, Lathe, Drill, and other machine tools of modern design. New Haven Mfg. Co., New Haven, Conn.

Every variety of Rubber Belting, Hose, Packing, Gaskets, Springs, Tubing, Rubber Covered Rollers, Deckle Straps, Printers' Blankets, manufactured by Boston Belting Co., 226 Devonshire St., Boston, and 70 Reade St., New York.

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For Steam and Power Pumping Machinery of Single and Duplex Pattern, embracing boiler feed, fire and low pressure pumps, independent condensing outfits, vacuum, hydraulic, artesian, and deep well pumps, air compressors, address Geo. F. Blake Mfg. Co., 44 Washington, St., Boston; 57 Liberty St., N. Y. Send for catalogue.

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**Knots, Ties, and Splices.** By J. T. Burgess. A Handbook for Seafarers and all who use Cordage. 12mo., cloth, illustrated. London, 1884. Sent, postage prepaid, on receipt of 50 cts., by Munn & Co., New York.

Mineral Lands Prospected, Artesian Wells Bored, by Pa. Diamond Drill Co. Box 423, Pottsville, Pa. See p. 388.

C. B. Rogers & Co., Norwich, Conn., Wood Working Machinery of every kind. See adv., page 348.

Stephens' Patent Bench Vises are the best. See adv., p. 348.

Iron and Steel Drop Forgings of every description. Billings & Spencer Co., Hartford, Conn.

We are sole manufacturers of the Fibrous Asbestos Removable Pipe and Boiler Coverings. We make pure asbestos goods of all kinds. The Chalmers-Spence Co., 419 East 8th Street, New York.

The Crescent Boiler Compound has no equal. Crescent Mfg. Co., Cleveland, O.

Steam Hammers, Improved Hydraulic Jacks, and Tube Expanders. R. Dudgeon, 24 Columbia St., New York.

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You are allowed a free trial of thirty days of the use of Dr. Dye's Celebrated Voltaic Belt with Electric Suspensory Appliances, for the speedy relief and permanent cure of Nervous Debility, loss of Vitality and Manhood, and all kindred troubles. Also for many other diseases. Complete restoration to health, vigor, and manhood guaranteed. No risk is incurred. Illustrated pamphlet, with full information, terms, etc., mailed free by addressing

Voltaic Belt Co.,  
Marshall, Mich.

Emerson's *Book of Saws* free. Reduced prices for 1885. 50,000 Sawyers and Lumbermen. Address Emerson, Smith & Co., Limited, Beaver Falls, Pa.

Barrel, Keg, Hogshead, Stave Mach'y. See adv. p. 270.

For best low price Planer and Mather, and latest improved Sash, Door, and Blind Machinery, send for catalogue to Rowley & Hermance, Williamsport, Pa.

Curtis Pressure Regulator and Steam Trap. See p. 365.

Split Pulleys at low prices, and of same strength and appearance as Whole Pulleys. Yocum & Son's Shafting Works, Drinker St., Philadelphia, Pa.

## Notes & Queries

### HINTS TO CORRESPONDENTS.

**Names and Address** must accompany all letters, or no attention will be paid thereto. This is for our information, and not for publication.

**References** to former articles or answers should give date of paper and page or number of question. **Inquiries** not answered in reasonable time should be repeated; correspondents will bear in mind that some answers require not a little research, and, though we endeavor to reply to all, either by letter or in this department, each must take his turn.

**Special Information** requests on matters of personal rather than general interest, and requests for **Prompt Answers by Letter**, should be accompanied with remittance of \$1 to \$5, according to the subject, as we cannot be expected to perform such service without remuneration.

**Scientific American Supplements** referred to may be had at the office. Price 10 cents each. **Minerals** sent for examination should be distinctly marked or labeled.

(1) W. S. H. asks: How is brilliantine made, such as is used by barbers for the mustache? Also, how is face powder made in block, for ladies' use? A. Among the various formulas given for brilliantine, we find the following:

Honey.....	1 fluid ounce.
Glycerine.....	1/2 " "
Cologne.....	1/2 " "
Alcohol.....	2 " "
Mix.	

An emerald powder frequently used is made as follows: Take equal parts finely scraped talc or French chalk and pearl white; sufficient rouge or carmine to slightly tinge it. Mix. This mixture is used to conceal discolorations; and without the coloring, to whiten the skin. Cake magnesia is used to whiten the skin.

(2) L. A. R. Co. ask if there is any process of restoring vulcanized rubber to its former state, so that it can be used again to vulcanize. A. Old rubber that has become hard is softened in a very short time by putting it in a vessel with vapors of carbon disulphide. The action of carbon disulphide is, however, too powerful if it lasts too long, hence it must be taken out and put in the vapor of kerosene afterward. As a general thing, however, old vulcanized rubber is simply reworked and combined with new rubber, thereby giving rise to a second and inferior quality of rubber. See SCIENTIFIC AMERICAN SUPPLEMENT, Nos. 249, 251, and 252.

(3) E. S.—An infusion of quassia in water makes a protection against gnats, mosquitoes, etc.

(4) M. A. S. asks for a receipt for a mucilage that will stick paper so it can be easily separated if desired. A. No properly made adhesive possesses such a quality. Flour paste when carelessly made will often separate easily. You might try it. 2. Is a dollar bill issued in 1862 worth more than face value? If so, how much? A. It is worth no more.

(5) F. S.—Metallic zinc precipitates from solutions of tin chloride, in the presence of free acid, metallic tin in the shape of small gray scales or as a spongy mass. The operation is best conducted when an excess of hydrochloric acid is in the mixture. It is much easier and far simpler to prepare the "chloride of tin" by simply evaporating the solution to crystallization. See "Removing Tin from Tin Scraps," SCIENTIFIC AMERICAN SUPPLEMENT, No. 114.

(6) C. W. M.—Commercial white lead frequently contains barium sulphate, and sometimes chalk. The former may be detected by its insolubility in dilute nitric acid, and the latter by the nitric acid solution yielding a white precipitate with oxalic or dilute sulphuric acid after the solution has been treated with hydrogen sulphide in order to remove the lead. A pure white lead can always be purchased from a reliable dealer.

(7) W. J.—A boy 16 years old, whose voice is changing, should not exercise it sufficiently to cause fatigue until the change is complete. You cannot alter the natural quality of your voice except by cultivation, and it is generally considered best to confine yourself to the part your voice is best fitted for, that is, don't try to sing both base and tenor, or soprano and baritone, etc.

(8) H. B. R. asks for an ink black at the time of writing, but will disappear after a short time. A. Boil nutgalls in aqua vite, put Roman vitriol and sal ammoniac to it, and when cold dissolve a little gum arabic, and it will, when written with, vanish in twenty-four hours.

(9) H. L. B. asks: 1. What is the best method for procuring ozone for experimental purposes, in considerable quantities? A. Ozone is most abundantly produced by the action of electricity upon the air. Machines for this purpose have recently been devised, and are now for sale. Ozone is also generated when phosphorus is exposed to the action of moist air. 2. Has it ever been produced from nitrous oxide? A. Its production from nitrous oxide is not described by leading chemical authorities. 3. Can the statement of "compound oxygen" dealers, that it is absorbed in certain liquids which they vend, be true? A. Ozone is practically insoluble in water, and therefore we do not see how it can be a constituent of "compound oxygen."

(10) H. M. J.—The Great Eastern was begun in 1854 and completed in 1859 for passenger traffic.

She was engaged in the laying of the second and third cables of 1865 and 1866, and was altered for the work then undertaken.

(11) W. V.—To ebonize wood use the following: Dissolve 4 ounces shellac with 2 ounces borax in 1/2 gallon water, boil until a perfect solution is obtained, then add 1/2 ounce glycerine; after solution add sufficient aniline black soluble in water, and it is ready for use.

(12) L. H. A. desires a formula for violin varnish. A. We suggest the following: Rectified spirits of wine, 1/2 gallon, add 6 ounces gum sandarac, 3 ounces gum mastic, and 1/2 pint turpentine varnish; put the above in a tin can by the stove, frequently shaking till well dissolved; strain and keep for use. If you find it harder than you wish, thin with more turpentine varnish.

(13) E. M. D. asks: 1. I have a small revolver which I want to silver plate; will you please give me a receipt that will answer my purpose? A. See the article on Electro Metallurgy in SCIENTIFIC AMERICAN SUPPLEMENT, No. 310. 2. Is it legal to sign your name to a promissory note with an indelible lead pencil? A. The law does not designate with what you shall write; anything which makes plain proof will do. 3. Can you give me a receipt for making red aniline ink? A. Dissolve 25 parts by weight of saffranine in 500 parts warm glycerine, then stir in carefully 500 parts alcohol and 500 parts acetic acid; dilute in 9,000 parts water containing a little gum arabic in solution. Or 1 part magenta in 150 to 200 parts hot water likewise forms a red ink used somewhat.

(14) P. B.—The sun enters the constellations of the zodiac in the order of their names, the same as the moon. The position of the sun in its relation to the constellations of the zodiac and the equinox and solstice was fixed in the early ages of astronomy, but by reason of the precession of the equinoxes for 2,000 years or more the sun has gone back in the signs, so that it is now about one sign behind its assigned place on the star maps. No stars have a parallax to the naked eye. It is very doubtful if the nebula in Ursa Major can be identified in a 2 1/2 inch telescope.

(15) F. J. W. desires a receipt for making ginger ale and sarsaparilla, such as is sold in bottles. A. For ginger ale see the receipt given in SCIENTIFIC AMERICAN SUPPLEMENT, No. 270, under title of "Efferescent Beverages." Sarsaparilla sirup is made as follows: Take oil of wintergreen 10 drops, oil of anise 10 drops, oil of sassafras 10 drops, fluid extract of sarsaparilla 2 ounces, simple sirup 5 pints, powdered extract of licorice 1/2 ounce, mix well. This can be diluted with water or charged with carbonic acid as you may desire.

(16) O. K. writes: 1. I would like a recipe for making a cement (with silicate of soda) for furnaces and stoves. A. This cement is prepared by mixing finely pulverized iron with silicate of soda to a thick paste, and then coating the cracks with it. The newer we are then becomes, the more does the cement melt and combine with its metallic ingredients, and the more completely will the crack become closed. 2. A recipe for making a glue for labeling on tin. A. See answer to query No. 21, in SCIENTIFIC AMERICAN, May 9, 1885.

(17) E. W. S. writes: Is there any way to take the taste of onions out of milk and butter? A. Make a strong solution of saltpeter, say a pint of boiling water upon an ounce of saltpeter, and, when thoroughly dissolved, put it in a bottle and stand in a cool place. Before milking put into the milk pail a spoonful of this solution or more according to the quantity of milk expected, and all vegetable flavor will be entirely destroyed. The same substance will also in a great degree destroy the bad flavor given to butter by various plants, etc.

(18) T. O. O.—A cement which is proof against even boiling acids may be made by a composition of India rubber, tallow, lime, and red lead. The India rubber must first be melted by a gentle heat, and then 6 to 8 per cent by weight of tallow is added to the mixture while it is kept well stirred; next day slaked lime is applied, until the fluid mass assumes a consistence similar to that of soft paste; lastly, 20 per cent of red lead is added, in order to make it harden and dry.

(19) L. W. writes: I want to finish a house inside with Georgia yellow pine and white or spruce pine doors and sashes. The yellow pine I want to finish with oil, so as to bring out the native grain, and the doors and sash I wish to stain say dark cherry or mahogany. A. The following is a commonly employed oil finish: Linseed oil 16 ounces, black resin 4 ounces, vinegar 4 ounces, rectified spirits 3 ounces, butter of antimony 10 ounces, spirit of salts 2 ounces. Melt the resin, add the oil, take it off the fire, and stir in the vinegar, let it boil for a few minutes, stirring it; when cool, put it into a bottle, add the other ingredients, shaking all together. For dark mahogany introduce into a bottle 15 grains alkanet root, 30 grains aloes, 30 grains powdered dragon's blood, and 500 grains 95 per cent alcohol, closing the mouth of the bottle with a piece of bladder, keeping it in a warm place for three or four days, with occasional shaking, then filtering the liquid. The wood is first mordanted with nitric acid, and, when dry, washed with the stain once or oftener, according to the desired shade; then the wood being dried is oiled and polished. A cherry stain is readily made by adding 4 ounces annatto to 3 quarts rain water; boil in a copper kettle till the annatto is dissolved, then put in a piece of potash the size of a walnut, keep it on the fire about half an hour longer, and it is ready to bottle for use.

(20) A. D. F. asks: 1. What preparation, and how made, can be used to clean, brighten, and properly restore kid shoes after they have been scratched or show the surface of kid worn off? A. Find some Judson's dyes the color you require, and dilute until desired shade is obtained. When dry, finish with glair, i. e., the white of eggs whipped up and allowed to stand. The liquid is poured off, and this is the article required, or use the following: Take of bruised blue galls 4 ounces, logwood, coppers, iron filings, free from grease, and sumac leaves each 1 ounce. Put all but the iron filings and coppers into 1 quart good

vinegar, and set the vessel containing them in a warm bath for twenty-four hours, then add the iron filings and coppers and shake occasionally for a week. It should be kept in a well corked bottle. It should be applied to faded spots with a sponge. It will restore the black color of leather when it turns red, the leather being previously well cleaned with soap and water. 2. What will remove a tarnish (greasy-like appearance) from a new nickel plated student's lamp? A. Polish with rouge.

(21) J. G. writes: I have a base ball made of (New York) plaster of Paris, 16 inches in diameter, containing the names of the clubs in the National League in three-sixteenths inch raised letters. The surface dirties very quick. I would like a receipt or coating that would keep off the dust and give it a marbled appearance. A. By a thin covering of water glass, a coating will be formed. Another method consists in first thoroughly drying the article in a warm dry atmosphere; then place it in a vessel and cover it with the clearest linseed oil, just warm. After twelve hours, take it out, drain, and let it dry in a place free from dust. When dry it will look like wax, and can be washed without injury.

(22) W. P. & Co. write: I have in my business occasion to cement large quantities of "Manila cardboard," and would like to have you give me a recipe for a cheap, light colored cement or glue having the following qualities: Quickness of tack and pliability. A. A good glue insoluble in water may be prepared by soaking gelatine in cold water, dissolving it in glycerine, and then adding 2 ounces of tannin for every pound of gelatine used. Heat the mixture in a water bath until perfectly homogeneous and as free from excess of water as possible. It may be colored if desired. Melt when wanted for use if possible. See also SCIENTIFIC AMERICAN SUPPLEMENT, No. 158, in which numerous receipts, etc., will be found for cements of every description.

(23) M. A.—Madstones are said to be formations found in the bladders of deer, and only exist in those animals that live in a high and dry climate, where there is not a full supply of water and the water drank is impregnated with limestone. In plain English they are simply formations of calcium carbonate, and we do not believe that they will cure hydrophobia at all.—You will be unable to obtain sufficient power from batteries for the purpose of illuminating a dwelling house, except at a very high cost.—For preserving eggs see SCIENTIFIC AMERICAN SUPPLEMENT, No. 317, on "How to Preserve Eggs for the Market."—There are no practically successful street car motors to take the place of horses except steam, or possibly the cable system, as in Chicago and San Francisco, although in Berlin there is a line of railway run by electricity.

(24) B. B. writes: The hour and minute hand of a clock are exactly over each other at 12 o'clock; when are they next over each other? A. 5 1/11 minutes or 5 m. 27 2/11 seconds, after 1.

(25) H. A. L. desires a formula for a mucilage that will answer to stick labels on mineralogical specimens.

A. Starch.....	2 drachms.
White sugar.....	1 ounce.
Gum arabic.....	2 drachms.
Water.....	4 s.

Dissolve the gum, add the sugar, and boil until the starch is cooked.

(26) J. A. M.—Dynamite when ignited in the open air simply burns slowly away.

(27) J. A. L.—A No. 12 blacklead crucible is worth 55 cents. Chemical analysis must be resorted to in order to determine the constitution of minerals. Selenium may be separated from tellurium by treating a mixture of these two elements with potassium cyanide, giving rise to telluride of potassium and a cyanide of selenium. This test is described fully in Watt's "Dictionary of Chemistry." The behavior of tellurium ores has never been very perfectly investigated.

(28) J. J. & Co.—We cannot tell the ingredients of the coating on the specimen sent without having it analyzed. A superior waterproof paper, transparent and impervious to fat, may be prepared by saturating good paper with a liquid prepared by dissolving shellac at a moderate heat in a saturated solution of borax. Such a mixture may be colored by the addition of various aniline dyes.

(29) J. B. asks (1) a receipt for a No. 1 harness polish. A. Alcohol 1 gallon, white turpentine 1/2 pounds, gum shellac 1/2 pounds, Venice turpentine 1 gill. Let them stand by the stove till the gum is dissolved, then add sweet oil 1 gill, and color as you wish with lampblack. 2. A receipt for a whitewash that will not crack or peel off the walls of the engine house or brick. A. The following receipt for whitewashing, sent out by the Lighthouse Board of the Treasury Department, has been found, by experience, to answer on wood, brick, and stone nearly as well as oil paint, and is much cheaper: Slake 1/2 bushel lime with boiling water, keeping it covered during the process. Strain it, and add a peck of salt dissolved in warm water, 3 pounds ground rice put in boiling water and boiled to a thin paste, 1/2 pound powdered Spanish whiting, and a pound of clear glue, dissolved in warm water; mix them well together, and let the mixture stand for several days. Keep the wash thus prepared in a kettle or portable furnace, and when used put it on as hot as possible with painter's or whitewash brushes. 3. Is there any difference in the time at which different electric alarms go off, for the same alarm on one circuit? We have two circuits connected with a four circuit repeater; we have left the question to you to decide. A. Practically the gongs all strike at once; but theoretically there is a difference, that gong which is furthest off striking last. The difference in time cannot be measured, it is so infinitely small.

(30) F. E. asks: 1. Is there such a thing as unfermented wine? If so, what is used to prevent fermentation? A. The pure juice of the grape is unfermented wine. Sulphite of lime is frequently employed to arrest fermentation. 2. If cider is boiled direct from the press, will the boiling prevent its fer-

mentation, and be consequently non-intoxicating? A. No; more or less fermentation is likely to occur. Cider is only intoxicating in consideration of the amount of alcohol it contains.

(31) De W. C. K. writes: I have two pieces of convex glass, one 10x12 and one 8x8. I wish to coat them with something so as to make a looking glass. What is the quickest way of doing it? A. Lead and tin of each 2 ounces, bismuth 2 ounces, mercury 4 ounces. Add the mercury to the rest in a melted state, and remove from the fire; mix well with an iron rod. This amalgam melts at a low heat, and is employed for silvering convex mirrors, etc. The glass being well cleaned, carefully warmed, and the amalgam rendered fluid by heat is poured in and the vessel turned round and round, so that the metal may be brought in contact with every part of the glass which it is desired to cover. At a certain temperature this amalgam readily adheres to the glass.

(32) L. A.—The following is one of the popular receipts for making mead for a summer drink: 1 pound of Spanish sarsaparilla; boil 5 hours and strain off 2 gallons, add sugar 16 pounds and tartaric acid 10 ounces. Half a wineglass to half a pint tumbler of water and half a teaspoonful of soda is a fair proportion for a drink. See also list of "Summer Beverages," contained in SCIENTIFIC AMERICAN SUPPLEMENT, No. 142, and the "Effervescing Beverages," given in SCIENTIFIC AMERICAN SUPPLEMENT, No. 270.

(33) A. P. F.—To clean silver, mix two teaspoonfuls of ammonia in a quart of hot soap suds. Put in the silver ware and wash it, using an old nail brush or tooth brush for the purpose. 2 Caustic soda is the article generally used. The amount to be used depends upon the variety or kind of soap you desire to make, hard or soft, and fat you have at your disposal.

(34) H. R. S. asks how to make fish glue so it can be used cold and be waterproof without injuring it much. A. White lead added to glue is said to make it waterproof as well as to strengthen it. Potassium bichromate, when added in proportion of about 2 per cent and the glue exposed to the light, causes it to become insoluble. We can send "A Practical Treatise on the Raw Materials and Fabrication of Glue, Gelatine," etc., by F. Dawidowsky. Price \$2.50.

(35) W. W. A. writes: I wish to ascertain the process of manufacture of the common chalk or school crayon—the materials of which it is composed, but the machinery used in its manufacture and the different processes through which it goes to completion. A. The crayons consist of equal parts of washed pipe clay and washed chalk mixed into a paste with sweet ale made hot, into which a chip or two of isinglass has been dissolved. This paste is rolled out with a rolling pin, cut into slips, then rolled into cylinders by means of a small piece of flat wood, cut into lengths, and finally placed in a slow oven or drying stove until hard.

(36) N. C. R. asks what to put with pine tar to make a chewing gum. Something that would be healthy to chew is a desideratum. A. THE FOLLOWING PROCESS IS USED IN MAINE: Large quantities of the gum are purchased from the lumbermen and gum hunters for the purpose of refining it, as they say. But as a general thing, the refining consists in adulteration with rosin. They throw it into a big kettle, bark and all, and boil it to about the consistency of thick molasses, skimming the impurities off as they rise to the surface. Then, if the purpose be to adulterate, some lard or grease and a lot of rosin is added, and in some cases a little sugar. The mixture then becomes thicker, and, after more stirring, is poured out on a slab, where, while it is yet hot, it is rolled out in a sheet about a quarter of an inch thick, and then chopped with a steel die into pieces half an inch wide and three-quarters of an inch long. These pieces are wrapped in tissue paper and packed in wooden boxes. There are 200 pieces in a box. Some gum is treated in this way without adulteration.

(37) J. R. N. asks a cement for stopping a cavity in bottom of a canoe dug out of a poplar tree. A. After you have plugged the hole up, fill the interstices and coat the outside with a cement consisting of shellac 4 ounces, borax 1 ounce; boil in a little water until dissolved, and concentrate by heat to a paste. —The best means of preserving posts consists in charring them and then coating with tar.

(38) C. W. H. writes: Chlorine is generated by the action of dilute sulphuric acid in chloride of lime. It possesses a more pungent odor, we think, even than sulphur. We would recommend you to consult the article on "Disinfectants and their Special Application," contained in SCIENTIFIC AMERICAN SUPPLEMENT, No. 162.

(39) M. W. W. writes: I have a photograph that I would like to color, but the colors run off, it seems owing to oil upon the picture. How can I get it off? A. There should be no oil on the surface of the photograph. It frequently happens that the face of the picture is coated with a colorless varnish, but this will readily wash off, whereupon the paints or water colors are mixed with ox gall and applied direct.

(40) Casarey. —The Louisiana Fiber Making Company, of New Orleans, La., own and control the only process by which bagasse can be readily and economically decorticated and prepared for the pulp mill. The New Orleans Daily Picayune of May 15, 1884, was printed on such paper. The process requires machinery similar to that used in the manufacture of the chemical wood pulp. An experienced and intelligent superintendent is more essential than able workmen. The Swedish filtering paper is composed of flax fiber, and the fibers are very much crushed and broken. The linen pad evidently did duty elsewhere in the rag before it found its way into the paper. The fibrillae of the broken fibers serve to fill up the pores, and prevent solids passing through the paper. Only the purest materials are used in the manufacture of Swedish filter paper. Its small amount of ash is its chief characteristic.

(41) S. asks: Does a human being weigh more after consuming two pounds of solid food than before? A. Weighs 2 pounds more.

(42) J. R. E. asks: What city on the earth has no horses? A. Venice, Italy.

(43) F. P. S.—Nickel melts at upward of 3,000° C.—Water gas is a mixture of nearly equal parts of hydrogen, carbon monoxide, and marsh gas with about 15 per cent of illuminants. See SCIENTIFIC AMERICAN SUPPLEMENT, No. 395.

(44) G. P.—We do not believe any horse ever made such distances in the time as were made by the competitors in the recent walking match.

(45) G. W. S.—The smallest engine and boiler on the market is 1 horse power, price \$200 complete. Locomotive engineering is perhaps as good a trade as any. See SCIENTIFIC AMERICAN SUPPLEMENT, No. 341, for the dimensions and weight of the largest locomotives. Also SCIENTIFIC AMERICAN SUPPLEMENT, No. 285, for illustrated description of a 1,000 horse power Corliss engine.

(46) N. R. W.—Cast iron cannot be welded to cast iron with any practical benefit. The Chinese method of burning is only a curiosity. It may also be sweated together by heating the pieces in contact to nearly their melting point with a flux of caustic soda.

(47) M. M.—The sun in its general influence upon the atmosphere may indirectly influence the draught of chimneys. The relative position of the roof in regard to prevailing winds probably has a larger influence than the sun. The heat of the fire and height of chimney determine the draught. It has been found economical to burn culm or screenings for many uses; good draught and a fine grate are requisite.

(48) J. G. P.—A corrugated iron roof should be lined to prevent sweating, in places where the air is liable to become moist, or where many persons are congregated. Cover the frame with matched boards, then lay the corrugated iron.

(49) C. F. M. desires a good receipt for curing natural flowers by immersion or dipping. A. Dip the flowers in melted paraffin, withdrawing them quickly. The liquid should be only just hot enough to maintain its fluidity, and the flowers should be dipped in one at a time, held by the stalks, and moved about for an instant to get rid of air bubbles. Fresh cut flowers free from moisture make excellent specimens in this way.

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

C. H. D. & Co.—The specimen is principally quartz, with possibly a small quantity of serpentine mixed with it, producing the green color.—T. J. W.—The specimen appears to be an excellent quality of fire clay. Nothing positive concerning its value can be determined until it has been burned. It is not likely to be marketable in New York, on account of the excellent deposits situated in New Jersey.—D. W. S.—Others themselves are clays containing varying amounts of iron oxide. The specimen sent is a variety in the sense that it is a clay colored by iron oxide, but it is a very poor variety, for it is principally clay.—E. G. L.—The specimen is hematite (iron peroxide), and appears to be a valuable ore of iron. The expense of analysis would be \$15.00.—W. S. R.—The specimen is limestone, and contains no metal apparently.

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