

Business and Personal.

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Treatises on "Soluble Glass," \$1 per copy; on "Nickel," 50c. per copy; on "Gems," \$1.25 per copy; on "Fermented Liquors," \$3.12 per copy.

Locomotive Balance Valve. Address R., Indiana, Pa.

Wanted—Price Lists of Michigan Lumber Dealers. H. L. Roosevelt, 40 West 18th St., New York.

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A Superior Printing Telegraph Instrument (the Selden Patent), for private and short lines—awarded the First Premium (a Silver Medal) at Cincinnati Exposition, 1871.

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What to Do in Case of Accident—Cuts, Bruises, Broken Bones, Burns, etc. A Book for Everybody. Free by mail for ten cents. Industrial Pub. Co., 176 Broadway, New York.

To Rent, at low rates, a Room with Power. Address Box 679, Birmingham, Conn.

Light Machinery—Articles in Iron or Brass, Model Work, &c. G. E. Parker, Newark, N. J.

Mining, Wrecking, Pumping, Drainage, or Irrigating Machinery, for sale or rent. See advertisement, Andrews Patent, inside page.

Steam Boiler and Pipe Covering—Economy, Safety, and Durability. Saves from ten to twenty per cent. Chalmers Spence Company, foot East 9th St., N. Y.

By touching different buttons on the desk of the manager, he can communicate with any person in the establishment without leaving his seat.

Woolen and Cotton Machinery of every description for Sale by Tully & Wilde, 20 Platt St., N. Y.

Steam Engines—Special Machinery, Shafting, Pulleys & Hangers. D. Frisbie & Co., N. Haven, Ct.

L. & J. W. Feuchtwaenger, 55 Cedar St., N. Y., Manufacturers of Soluble Glass, Water Glass or Silicates of Soda and Potash in all forms and quantities.

Dean's Steam Pumps, for all purposes; Engines, Boilers, Iron and Wood Working Machinery of all descriptions. W. L. Chase & Co., 93, 95, 97 Liberty Street, New York.

Diamond Carbon, of all sizes and shapes, for drilling rock, sawing stone, and turning emery wheels; also Glaziers' Diamonds. J. Dickinson, 84 Nassau St. N. Y.

No inconvenience is ever felt in wearing the New Elastic Truss which retains the Rupture, night and day, till cured. Sold cheap by the Elastic Truss Co., 683 Broadway, New York.

"Superior to all others"—for all kinds of work—Linet & Co.'s French Files. They are better, forged, better cut, better tempered, and cheaper than English files. Send for Price-List. Homer Foot & Co. Sole agents, 20 Platt St., New York.

Price only three dollars—The Tom Thumb Electric Telegraph. A compact working Telegraph apparatus, for sending messages, making magnets, the electric light, giving alarms, and various other purposes.

Brown's Coal-yard Quarry & Contractors' Apparatus for hoisting and conveying material by iron cables. W. D. Andrews & Bro. 414 Water St., N. Y.

Parties needing estimates for Machinery of any kind, call on, or address, W. L. Chase & Co., 93, 95 97 Liberty Street, New York.

Steam Fire Engines, R. J. Gould, Newark, N. J.

For Solid Emery Wheels and Machinery, send to the Union Stone Co. Boston, Mass., for circular.

For Best Presses, Iess and Fruit Can Tools Bliss & Williams, cor. of Plymouth & Jay, Brooklyn, N. Y.

Engines 2 to 8 H.P. N. Twiss, New Haven, Ct.

Protect your Buildings—Send for testimonials. N. Y. State Roofing Co., 6 Cedar St., N. Y.

All Fruit-can Tools, Ferracuta, Bridgeton, N. J.

Lathes, Planers, Drills, Milling and Index Machines. Geo. S. Lincoln & Co., Hartford, Conn.

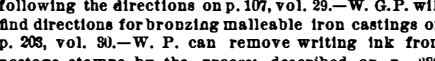
For Solid Wrought-Iron Beams, etc., see advertisement. Address Union Iron Mills, Pittsburgh, Pa., for lithograph, etc.

Temples and Oilcans, Draper, Hopedale, Mass.

Hydraulic Presses and Jacks, new and second hand. E. Lyon, 470 Grand Street, New York.

Peck's Patent Drop Press. For circulars, address Milo, Peck & Co., New Haven, Conn.

Small Tools and Gear Wheels for Models. List free. Goodnow & Wightman, 23 Cornhill, Boston, Ms.



W. W. S. can improve his bottled beer by following the directions on p. 107, vol. 29.—W. G. P. will find directions for bronzing malleable iron castings on p. 205, vol. 30.—W. P. can remove writing ink from postage stamps by the process described on p. 356, vol. 26.—H. S. can make an eolian harp by following the directions on p. 330, vol. 26.—J. B. R. & Co. will find a recipe for Babbitt metal on p. 122, vol. 28.—H. W. C. will find directions for making transfer or impression paper on this page.—P. M. will find that marine glue, as described on p. 202, vol. 28, will answer his requirements.

The paper mache decorations are described on p. 16, vol. 27.—A. J. C. will find descriptions of solder for all purposes on p. 251, vol. 28.—A. N. can make a silver wash by the process detailed on p. 299, vol. 28.—H. C. S.'s query doubtless relates to the method of Dr. De la Perouse, fully described on p. 119, vol. 30.—L. C. will find a good recipe for paste on p. 280, vol. 28.—M. E. will find the required information in "Perpetuum Mobile," in two series, by Henry Dircks, C. E.

R. G. asks: "To one gallon of gasoline, add one tablespoonful of salt, one tablespoonful of soda, pounded fine, and a piece of alkanet root one inch long." Is this a recipe for a safe oil? A. These bodies do not diminish the danger of burning very light and cheap oils in kerosene lamps, and fatal accidents happen every day from persons being deceived by such statements.

L. D. C. asks: Which is the best treatise on geology? A. Lyell's "Manual of Geology." Read also, if you have a chance, Hugh Miller's works.

H. W. C. asks: Will you give me a recipe for black printers' ink? A. Take pure balsam copaiba 9 ozs., lamp black 3 ozs., indigo and Prussian blue, each 1/2 oz., Indian red 1/2 oz., dry yellow soap 3 ozs.; grind to smoothness with a muller on a stone.

J. W. R. asks: How can I make a paste that will stick paper firmly to new bright tin? A. Mix a tablespoonful or two of brown sugar with each quart of flour paste.

T. asks: Where can I procure a work on steam heating? A. Box on "Heat" is a standard authority. See our advertising columns for booksellers' addresses.

J. J. asks: 1. What will make glue remain soft and elastic after it is dried on cloth? A. The solution of caoutchouc described on p. 251, vol. 29, will perhaps serve your purpose. 2. How is emery stuck to emery cloth? A. The best glue is used.

W. G. P. asks: How can I dye small pieces of wood green? A. Try crystals of verdigris dissolved in water.

S. asks: Can you give me a recipe for making an imitation of rosewood without the use of nitric acid? A. Dissolve 4 ozs. potash in 1 gallon hot water, and 4 ozs. red sanders wood; when the color of the wood is extracted, 2 1/2 lbs. gum shellac are added and dissolved over a quick fire. Use this on a groundwork stained with logwood.

R. H. asks: 1. How are red and green fires made? A. Red light is a mixture of nitrate of strontia, sulphur, and chlorate of potash. Green light is a mixture of carbonate of baryta with sulphur and chlorate of potash. 2. Of what does the smoke, resulting from burning these fires, consist? A. The smoke is a mixture of the sulphides of barium, strontium, and potassium, with sulphuretted hydrogen, sulphurous acid, hyponitric acid, carbonic acid, hypochloric and chlorous acids, and the chlorides of sulphur and potassium. All these bodies would be unpleasant and some very injurious to breathe. 3. A young man burnt his hand by igniting these; what is his best remedy? A. The burned hands should have been wrapped in strips of soft linen or muslin, which were covered over with a mixture of equal parts of linseed and sweet oil.

G. S. T. asks: 1. What is the most simple form of anemometer? A. A good one is described on p. 246, vol. 26, and another on p. 233, vol. 29. 2. Where can I find a description of Professor Coffin's card anemometer, referred to in his memoir on p. 82, vol. 30? A. Address Lafayette College, Easton, Pa.

G. S. asks: How can I obtain the frosted appearance upon silver ware commonly called oriental finish? It is done with some kind of acid. A. Your best mode will be to experiment with muriatic, nitric, and other acids until you get the desired results. 2. What ingredients are used as a paint for fancy gilding? A. The metal may be gilt by using a solution made by dissolving as much gold in aqua regia as it will take up. Fine linen rags are soaked in this solution, carefully dried, and afterwards burnt to tinder. The substance to be gilt must be well polished; a piece of cork is first dipped into a solution of common salt in water, and afterwards into the tinder, which is well rubbed on the metal to be gilt, and the gold appears with its proper luster.

C. R. asks: How can I make fumigating pastils? A. Take 1 lb benzoin, 1/2 lb. cascarilla, 1 1/2 ozs. myrrh, 1 1/2 lbs. charcoal & oz. otto of nutmegs, 1/2 ozs. otto of cloves. Powder the first four and mix by sifting. Add the ottos, and also 2 ozs. of niter which has been previously dissolved in tragacanth mucilage. After well beating in a mortar, the pastils are formed into shape in a mold, and gradually dried.

A. M. T. says: 1. I have constructed the telescope described on p. 7, vol. 30, and I have had perfect satisfaction so far in seeing the mountains and craters of the moon, which were visible very plainly. I have been trying to look at the sun, but by its brilliancy it is impossible to do so without different arrangements. How can I look at the sun with the above named telescope? A. Put as many pieces of red glass between the eyepiece and the eye as will enable you to look at the sun without being dazzled. 2. How and in what part of the heavens can I find the planets? A. The Nautical Almanac gives the position for every day and hour during the year. See our Astronomical Notes, published monthly. 3. Where can I find the nebulae? A. Their position is marked in any map of the heavens.

M. W. M.—A preliminary examination would be necessary to ascertain the novelty of your piston packing. See our advertisement in this issue.

C. T. S.—Such a trap could be constructed, but it would be complicated and expensive.

J. W. B. asks: Does pure hydrant or other non-stagnant water contain animalculae? If so, what power of microscope is required for detecting them? A. Pure hydrant water should not contain animalculae. 2. I have tried the recipe on page 351, vol. 24, for kalsomine, which covers and adheres well, but has no glaze. It is over a rough whitewashed wall, and the stains from the soot of the chimney show through. What can I do to cover them, and to give the kalsomine a glazed appearance? A. Kalsomine has no glaze. It should have been so mixed that it would have been thin enough to work well, without being too thin to cover. In answer to your other question: No.

C. E. W. says: We have recently introduced a new system for making gas from petroleum; and for safety's sake, we use only oils that have all volatile gases, such as naphtha, rhigoline, benzine, etc., driven off by heater otherwise. The only objectionable feature in this new gas is that it smokes; and although, by reducing the burners to a minimum, we have improved it, we have not entirely overcome the difficulty. We use now 1/2 foot, 3/4 foot, and 1 foot burners only. We are using hardly any pressure. What is the cause of the gas smoking, and how could it be obviated? Why do fish tail burners make it smoke worse? A. These oils are highly carbonized, and require a large supply of air for their perfect combustion. In a fish tail burner, the gas at the moment of combustion is in contact with the air only on the outside of the flame. You must use some form of argand burner, which will admit air to the interior of the flame.

E. B. S., F. C. R., F. E. P., A. F. S. C. H. J., C. J. K., N. L. F., C. E. M., J. E. T., J. G. M., J. W. P., and F. G. H. have sent correct answers to the snip and cannon question. F. G. P. does not clearly understand the query.

W. J. S. asks: Is the Walter printing press used in this country? A. The Walter press is in use in the New York Daily Times establishment here.

M. asks: 1. I have a plunger pump attached to the crosshead of my engine, which runs at 120 revolutions per minute. This pump has the full stroke of engine. The delivery pipe and suction pipe are of the same size; and when the engine runs fast, the check valve thumps dreadfully. I cannot use the pump when she is running fast; but when running slow, it works very well. There is an air chamber on the delivery valve. Now I wish you would tell me what is the cause of this. I think that, when running fast, the plunger leaves the water. A. Probably the plunger runs faster than the water can flow into the pump. 2. What do you call wire-drawing steam? A. Reducing the pressure, by allowing the steam to expand without performing work. 3. Does it make any difference in leading the steam to a gate, whether the pipe is the same size all along? A. No. 4. What does "Fahrenheit" mean? Is it the name of the man who first invented the thermometer? A. It refers to the thermometric scale graduated by Fahrenheit. The thermometer was not invented by Fahrenheit, but he first made mercurial thermometers. 5. What is the greatest perpendicular ligat to which a double acting pump will lift water? A. From 30 to 32 feet.

L. D. S. asks: 1. Are there any rules for finding the distance and vanishing points when drawing from Nature? An English work says there are none. A. No. None are needed. To sketch from Nature, one must learn to see correctly, and this must be acquired by practice. In drawing ideal pictures, the distance and vanishing points are located according to the judgment of the artist, so as to produce the best effect. 2. Who publishes the best book of instruction on pencil and india ink drawings? A. We know of none that we can recommend. Many are published, however. We do not believe that free hand drawing can be learned from books. 3. What kinds of paint are used for painting pictures on the glass slides used in magic lanterns? A. See p. 123, vol. 30.

C. asks: What sized boilers shall I require to give me steam enough to do the following work: To keep 6 drying chambers, 30 feet in depth, with end and one side wall of stone, divided off by frame partitions every 4 feet, and with total front of 36 feet, heated by one inch coil steam pipe at a temperature of 156° Fah. night and day. To supply steam at 60 lbs. pressure to run a 12x20 engine for 6 hours per day. To supply steam sufficient to keep 18,000 gallons water at 80° day and night in winter, in the latitude of St. Louis, Mo. A. Professional question. Should be submitted to an engineer.

T. C. H. asks: How can I make transfer paper, to copy a drawing by tracing with a steel point? A. Make a stiff paste of lard and plumbago, and smear over the paper with a piece of rag.

E. H. B. asks: Why does pork, when it is killed in the wane of the moon, shrink from the bone when boiled? A. It does nothing of the kind.

W. T. Mc L. asks: Who was the scientist Nuttall? He seems to have been one of our most thorough naturalists in botany and ornithology. A. An English naturalist who resided for some years in this country. He explored nearly all the States of the Union; and was, from 1822 to 1834, Professor of Natural History at Harvard. He died in England in 1859.

A. R. G. asks: Would a turbine gain any power by having two spiral flanges or buckets run up the shaft to the top of the penstock? A. No. There is a certain proportion of the height of the penstock to which the spiral flanges can be extended with economy. But putting such flanges all the way up only distributes the power due to the head of water.

W. G. B. asks: When patent claims are separable, or can be used in some other combination even if it be for the same purpose, is not inserting them the same thing as trying to get several patents by merely paying for one? In reality, is not the combination the only thing patented? A. The patent relates to one invention only, and all claims that relate to another must be put in a separate application.

W. A. M. H. asks: How can I make corn starch? A. In making starch, the corn, wheat, or other grain is steeped in water for some days till the saccharine portion ferments and the starch granules become free from glutinous matter. The sour liquor is then drawn off, and the feculous residue washed on a sieve; what passes through is allowed to settle, the liquid again drawn off, and the starch washed from the "slimy water." It is then drained in perforated boxes, and dried by exposure to the heat or to the air. In treating corn, about 200 grains of alkali, in the form of caustic soda, are added to each gallon of liquid to facilitate the separation of the gluten and other nitrogenous matter.

F. C. asks: Is there a chemical compound which, applied to paper, will be decomposed by an electric current passing on a wire in contact with it, so as to leave a permanent mark? A. Yes. Prussiate of potash.

G. P. H. asks: How many feet of gas does one burner burn in one hour? A. It depends on the size of the orifice of the burner. The larger the orifice, the more gas escapes. Street gas burners are generally bored to burn three feet of gas per hour. Five feet burners are often used in dwellings and churches.

W. W. H. asks: Is there any danger of injuring the enamel on one's teeth by cleaning with an ordinary brush and water twice a day? A. No. The danger is that, if the cleaning be neglected, not only the enamel but the entire substance of the teeth will sooner or later become injured and decay.

M. C. M. asks: 1. How can I find the contents of a cylindrical vessel or drum that shall be equal to the contents of a rectangular cistern, and also the contents of a cistern that shall be equal to the contents of a cylinder? A. Find the area of the base of the cylindrical vessel, and divide the contents of the box by that area. The quotient will be the height. Or if the height is given, divide the contents of the box by that, and the quotient will be the area of the base. 2. Does a caveat for a patent have to undergo the same examination as an application for a patent? A. No examination is required in filing a caveat. In applying for a patent afterwards, the same regulations must be complied with as if you had not taken out a caveat.

G. C. H. asks: How can I construct a simple, cheap, and efficient electrical battery for the cure of disease? A. The magneto-electric machine is the one generally used for the administration of electricity in disease. By this instrument a rapid succession of shocks, the intensity of which can be graduated, are given, either to the whole body or to the particular part affected. In this machine either a permanent magnet, or an electromagnet, for which a battery must be used, is employed to generate a secondary current in a long coil of fine wire. Consult some good physician as to the best form of apparatus.

G. T. P. asks: How can I make a leather cement? A. Dissolve 1 part caoutchouc in 3 parts chloroform.

H. E. R. asks: 1. What solution is used in plating with nickel, and how can I make it? A. The nickel salt used in plating is the double sulphate of nickel and ammonia. It will probably save you time, trouble, and expense to purchase this salt already made from the manufacturers who supply the nickel platers in New York. 2. Is there any substance which, if added to the solution, will cause the plating to appear bright, or will it have to appear burnished? A. You can polish the ware after plating.

P. D. asks: 1. What is the quantity of cyanide of potassium required to precipitate 5 pennyweights gold from the nitro-muriatic solution? If too much cyanide be used, how can I recover the gold that has been dissolved by cyanide in the acid solution? A. About 1 pennyweight 16 grains. You cannot dissolve the cyanide of gold by cyanide of potassium in the acid solution. 2. What are the proportions used to make a gold solution (about 1 quart) so as to get a good yellow, bright color on chains? A. Agitate ether with a solution of perchloride of gold for some time, allow it to repose, and decant the supernatant portion. 3. What is the chemical name for what is generally called the E. Bray tallow? A. The name you mention is probably a trade mark or brand of some kind of tallow. 4. How can I braze thin sheets of copper and brass for cooking utensils, and what is the best spelter to use, and how is it made? A. The edges after being filed or scraped quite clean are covered with a mixture of hard solder and powdered borax made into a paste with water. The whole is then allowed to dry, and afterwards exposed in a clear fire to heat sufficiently to melt the solder. Spelter is the commercial name for zinc. For hard solder, apply to the plumber.

A. B. asks: 1. What ingredients are used in the manufacture of Pharaoh's serpents' eggs? A. Pharaoh's serpents are said to consist principally of the sulphocyanide of mercury, which we would not advise you to attempt to make, but to apply to a chemist, and then to be careful in using. 2. What will remove superfluous hair from the head and not injure the skin and remaining hair? A. There are numerous depilatories or hair removers. We do not advise you to use them, as they are more or less injurious to health. 3. How can I separate alcohol from home made grape wine without injuring it for drinking purposes? A. If you distill your home made wine, you will drive off most of the alcohol, obtaining a kind of brandy, and only water will be left behind. 4. How can I make gold and silver ink, to be of use? A. Gold or silver in very fine powder is ground up with a little gum water. A cheap gold ink is made with what is called mosaic gold, the bisulphuret of tin.