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## Notes &amp; Queries

R. J. W. can prepare gun cotton by following the formula on p. 232, vol. 31. Cone pulleys can be proportioned by the rules given on p. 180, vol. 26.—F. K. will find a recipe for cement for grindstones on p. 251, vol. 31.—W. C. will find a description of the manufacture of bicarbonate of soda on p. 125, *Science Record* for 1875.—W. N. can proportion his safety valves by the formula given on p. 363, vol. 29.—W. & Co. can produce a fine black finish on German silver by using the method described on p. 288, vol. 31.—W. J. W. will find directions for gilding with leaf gold on p. 347, vol. 31.—J. F. Y. will find a description of saicylic acid on p. 96, vol. 33.—C. F. M. will find directions for refining cotton seed oil on p. 11, vol. 32.—J. E. J. will find directions for calculating the horse power of an engine on p. 33, vol. 33. This also answers J. McD. A cement for fastening leather on pulleys is described on p. 42, vol. 26.—T. H. S. can blue iron by the process described on p. 123, vol. 31.—B. S. S. will find directions for melting small quantities of brass on p. 54, vol. 31.—F. P. will find a good recipe for black ink on p. 92, vol. 33.—W. H. Jr. will find a recipe for marine or waterproof glue on p. 42, vol. 32.—J. M. C. will find directions for gilding on marble on p. 59, vol. 30.—R. A. E. will find some excellent directions for painting carriages on p. 308, vol. 33.—W. A. McG. will find a recipe for yeast on p. 183, vol. 33, and one for baking powder on p. 123, vol. 31.—B. W. S. will find directions for laying out a wind wheel on p. 241, vol. 32.—H. B. will find a recipe for aquarium cement on p. 80, vol. 31.—O. C. L. will find directions for producing the Etruscan finish on gold on p. 363, vol. 33.—P. W. will find an answer to his query as to sizes of boilers on p. 43, vol. 34.—A. B. will find a description of Pharaoh's serpents on p. 315, vol. 32.—R. T. W. will find a recipe for indelible ink for stamping on p. 129, vol. 28. This also answers A. F.—W. P. will find directions for painting outdoor work on p. 409, vol. 31.—W. L. S. will find full directions for burning coal dust economically on p. 107, vol. 32.—I. O. Y. will read the SCIENTIFIC AMERICAN regularly, he will not waste his time over the perpetual motion nonsense.—N. R. H. will find a recipe for a dipping acid on p. 139, vol. 31.—H. R. will find directions for making a tar concrete sidewalk on p. 50, vol. 32.—C. R. will find directions for enameling the insides of iron vessels on p. 362, vol. 32.—E. D. J. will find a description of a depilatory on p. 362, vol. 32.—W. K. will find a recipe for scarlet ink on p. 200, vol. 30.—C. W. can fireproof shingles by the method described on p. 280, vol. 28.—F. R. can tan skins with the fur on by the process described on p. 233, vol. 26.—C. J. can preserve wood from decay by the process detailed on p. 319, vol. 31.—W. D. will find directions for making plaster of Paris on p. 399, vol. 29.

(1) D. L. says: 1. I wish to construct a magic lantern for parlor use. I have a pair of 3 1/2 inch condensers, and I want to know if the object glasses of a large opera or field glass will do for the magnifying lens. They are two inches in diameter, and achromatic. A. Yes. 2. I have also a compound microscope. I should like to throw objects from it upon a screen. Can I attach it to my lantern? A. By using the lowest power objective you have, without the eyepiece, and placing it and the object in the most concentrated portion of the light, you may be able to get a small projection if your light is good. See p. 101, vol. 34.

(2) S. A. asks: 1. Can you give me a recipe for a lead glazing that will stand a white heat for hours? A. The lead glazings are all characterized by their easy fusibility. You will have to look in some other direction for so refractory a glazing as you describe. 2. Has there ever been any instrument for testing the heat used in burning stoneware? A. Yes, various forms of pyrometer have been employed for this purpose. See p. 130, vol. 24.

(3) G. S. T. says: In walling wells with timber, I find that the wood renders the water unwholesome. Is there any remedy for it? A. Yes, char the wood on its surface.

(4) C. T. C. asks: 1. Is it true that benzine will dissolve india rubber? A. Benzine dissolves caoutchouc but sparingly in the cold. Bisulphide of carbon is the proper solvent, but it also dissolves readily in hot naphtha. 2. Can india rubber be colored? A. Yes, by means of the aniline dyes. 3. Will the benzine, when the solution is exposed to the air, evaporate and leave the rubber? A. If an object be covered with either of these solutions as a varnish, on exposure to the action of the air the solvent will evaporate, leaving behind the rubber as a thin pellicle.

(5) G. P. W. asks: What proportion of fish glue shall I mix with common glue in making bait cement? A. Use 2 ozs. isinglass to every 4 ozs. of glue.

(6) M. H. K. asks: We solder rings with various kinds of precious stones in them, with hard solder, by placing them on a block of metal while blowing on them. I claim that the success of the operation is due to the mass and the conductivity of the block of metal, and that therefore the best conductor of heat of equal size is the surest. A friend contends that it is the mass alone, and that the poorer the conductor of heat, the better. Please state which is right. A. The mass and its conductivity should both be taken into consideration.

Which will preserve ice the longer, of two vessels of equal size, etc., one which is kept free from the water that results, or one which the water fills up, mingling with the ice? A. The former.

(7) J. McC. asks: What will prevent aniline red ink from fading? A. This cannot be remedied. Use some other coloring matter.

(8) G. E. E. says: I send you a specimen of graphite. It is at present impure. Is there any process for purifying it? A. No. 2. Does a large deposit of it indicate the neighborhood of coal, lead, or emery? A. No. 3. Considering the enormous consumption of plumbago, and the working out of many graphite deposits, is an immense mine of it likely to become of any value? A. Yes.

(9) R. R. asks: 1. What will prevent the colors running when carpets are washed? A. Carpets whose colors are not properly mordanted or fast cannot be washed without injury.

How can I make a liquid ink eraser? A. Oxalic or hydrochloric (dilute) acids, and sometimes cyanide of potassium, are employed for this purpose.

(10) S. C. D. asks: 1. What apparatus is necessary for measuring the indices of refraction and dispersion of a specimen of optical glass, for calculation of curvature for grinding correct lenses? A. It requires a circle graduated into degrees and minutes, upon which is mounted a telescope similar to the theodolite, with cross wires in the eyepiece. A small table is attached to the objective end, so as to move with it: a narrow vertical slit illuminated by sunlight is placed 10 or 15 feet distant from the instrument. The telescope is then turned on the slit, and the position read off. Then a prism (made of the glass you wish to try, whose angles are known, is placed upon the table in front of the objective, and the telescope turned so that the solar spectrum is seen at the position of smallest deflection: and then the position is again read. From this the index of refraction is determined. The dispersion is found by observing the fixed lines of the spectrum. 2. Should the edges of the disks be finished before or after grinding the lens? A. After. 3. How is the roughing out for lenses of short radius (concave) done, before applying the tool? A. The convex sides may be shaped by grinding off the edges on a flat tool until it nearly fits the templates. The concave side is ground on convex tools. Opticians who have different tools use those of longer curves first.

(11) M. R. C. S. asks: 1. How can I cover small twigs, leaves, and gauzy textile materials with crystals resembling frost or ice? A. Hot concentrated solutions of gum arabic, white sugar, alum, and chloride of ammonium (sal ammoniac) are employed to produce these effects. 2. How can I produce the appearance of icicles? A. Icicles may be imitated by means of pure gelatin (isinglass).

(12) F. W. B. says: I have made some attempts to manufacture sal soda from soda ash, by putting into boiling water all the soda ash it will take up or dissolve, carefully skimming off all the scum that rises, then taking it off to cool; but before it begins to crystallize, I carefully turn it off and leave the sediment. This I repeat three times, and get a clean and clear crystal, but there seems to be quite a waste in the dark sediment left. Is this the best way to make sal soda? A. Crush the crude soda ash into small pieces and calcine in a reverberatory furnace along with a quantity of fine sawdust. Digest the refined ash for some time with clean, hot water (not boiling), draw off the clear liquid into rather shallow troughs, and, by means of a proper ladle, remove the crystal from time to time. The residue is treated to recover the sulphur.

(13) McC. Bros. ask: What substance, when mixed with cane tops and corn tops (out of which and mold a compost has been made) will rot or decompose the said tops, and thus give us a valuable manure? A. Disintegrate the vegetable fibers of the cane tops as completely as practicable, and treat with a suitable quantity of good lime. Sulphate of lime will not answer.

(14) M. L. W. asks: 1. What is the chemical composition of the mineral witherite, and what are its uses in the arts? A. Witherite is a carbonate of baryta. In 100 parts it contains: carbonic acid 22.3, baryta 77.7. It is used in chemical works, in the manufacture of plate glass, and in France in the manufacture of beet sugar. It is also employed in the production of the rarer salts of barium. 2. Are any deposits of it found in this country? A. It is not of common occurrence in the United States, but is found in considerable quantity near Lexington, Ky., with barite.

(15) J. A. H. says: The carrying boards under flour reels are flat, and consequently, in cold weather, with hot air inside and cold air outside, moisture forms on the boards and clogs them with flour. Can you give me a recipe for a varnish that will retain its gloss under these disadvantages? A. Varnishing them would not rid you of the annoyance. It will be necessary for you to jacket them with some non-conducting substance, so as to equalize as far as possible the immediate interior and exterior temperature of the boards, and thus prevent the precipitation of the moisture from the warmer air within.

(16) J. W. T. asks: What are the relative velocities of three planets whose orbits are to each other as 15, 19, and 12, in times which are to each other as 7, 3, and 5? A. If we understand the question aright, the answer will be

15	19	12 multiplied by
7	3	5 respectively.
—	—	—
105	57	60

(17) F. G. H. asks: Will malleable iron rust when in water, or when exposed in a damp place? A. Yes.

I would like to know of a good process for tinning malleable and gray iron castings. A. Pickle your iron castings in oil of vitriol, then immerse

them in muriate of zinc (made by putting in muriatic acid as much zinc as it will dissolve), and then dip them in a mixture of 3 parts tin and 1 part lead.

(18) C. W. S. asks: A friend contends that a locomotive exerts a greater power when the crank is on the bottom center than when it is on the top. I say there is no difference. Which is right? A. You are.

(19) M. H. says: I wish to build an oven for heating wagon tires. Can you give me an idea how to make it? A. Build a circular trough with a fireplace on one side and the chimney over the top of it. The roof may be about 12 inches from the top of the trough, and should be of bars of iron, supporting bricks. In heating the tire, keep it covered all over with wood or charcoal, and revolve it in the fire as usual.

(20) C. W. L. C. asks: 1. At what speed shall I run a smooth disk to saw cold iron and steel? A. About 25,000 feet per minute. 2. What shall I use for belting to drive it? A. Leather.

(21) W. E. D. says: I have been using a steel mill for milling brass screws. It was made of round bar steel 1/2 inch in diameter, with a 3/8 hole drilled in lengthwise to the depth of 1 1/2 inches. While using the mill, it became heated by friction, and I cooled it by pouring water on it. While turning up a screw, the mill exploded with a sharp report: at the same time a puff of steam came out from the hole; it blew out a piece nearly 1/2 inch long and about 1/2 the size of the mill. What was the cause? A. Some of the water used in cooling remained in the hole, and the heat vaporized it; the pin fitted the hole too tight to allow the steam to escape, and hence the explosion.

(22) N. S. B. Jr. asks: 1. What kind of wood will make the best sled runners? A. Lance wood. 2. How shall I bend them? A. Boil them in water. 3. I have a pair of red ash poles 1 x 1 1/2 inches, which I wish to make into runners by bending them up the 1 1/2 inches way. Can I do so safely by boiling them in water for 4 or 5 hours? A. Yes.

(23) C. says: We are building a steamboat for hunting and fishing purposes, to carry a party of 10 or 12. She is to be 50 feet long, 10 feet wide, with 24 inch gunwales, with a flat bottom, and she must not draw over 8 to 10 inches water. Could a propeller be used in so little water, or should side wheels be used? A. Side wheels would be preferable for this case. Make them as large as convenient, if they have fixed floats. 2. What size of portable engine with horizontal boiler is necessary, and what size of side wheels, to attain 5 or 7 miles per hour up stream? A. If a portable engine is used, it will be necessary to introduce gearing, so as to get the proper speed for wheel shaft, in which case an engine rated at 15 or 18 horse power will probably answer, if sufficient boiler be given her.

(24) W. L. McG. asks: What has become of the report of the commission appointed by Congress for ascertaining the causes of explosions of boilers? A. The commission that made the experiments last season has decided, we believe, to keep them private until the whole series is complete.

(25) S. D. P. Jr. says: In operating a steam boiler, the firemen keep a bed of coal about 10 inches deep. They claim to save coal over the plan of working a lighter bed, for the reason that it does not require stirring up so often, and there is, in consequence, less waste of coal through the grate. I will add that the draft is not very strong. The boiler is 4 1/2 x 12 feet, with 71 three inch flues, in brickwork setting. A. It is difficult to give a general rule, as much depends upon the draft, the kind of fuel, etc. But if you have any doubts in regard to the correctness of your firemen's views, you can settle the matter conclusively in a very short time, by experimenting with fires of different thickness.

(26) J. L. G. asks: Would it be practicable to set a boiler 500 yards from the engine, packing the pipes in sawdust? A. It can be set at this distance, if careful provision is made for draining the pipes.

(27) A. C. asks: Will 16 sticks, each 1 foot in diameter and 8 feet long, make a cord? In other words, what is the legal rule for measuring round timber? A. If you are buying the logs as timber, the general rule among lumbermen is to compute the cubic contents according to what the logs will square. In the case of cord wood, there is so much difference of opinion among measurers, and such variety in the decisions of the courts, that it is not possible to tell you what the legal rule is.

(28) R. D. says: I can take apart, put together, and run one form of engine, but have had no experience with any other. If I applied for a license to run such a one as I understand, would I be examined on engines generally (of which I know but little) or for the one I want to run? A. The examination is generally intended to test the candidate's knowledge of the particular boiler and engine of which he desires to take charge.

(29) A. S. says: I am informed that to measure the capacity of a vessel I should weigh the water it will hold, and that for every 8 lbs. of water it will hold a gallon of liquid. Is this so? A. This rule will give a rough approximation. At ordinary temperatures, the weight of a United States gallon of water is about 8.32 lbs.

(30) C. R. says: A 10 inch pipe is laid on an incline 300 feet long, and then a 20 inch pipe on the same incline. If we put a plug or a fire hydrant on each pipe, give them the same opening, and put the same sized nozzle on each, which nozzle will throw the farther? A. The hydrant on the 20 inch pipe should throw a little the farther under the circumstances, because the head required for velocity and friction would not be as great as in the case of the 10 inch pipe.

(31) J. L. W. asks: How can I prevent the twisting of belts? A. By using a good quality of belting, setting the pulley true, and lacing the belt even and straight.

(32) G. W. G. says: 1. I am about building a steam yacht 36 feet long and of 7 feet beam. Are there any objections to using iron for the hull? A. We see no objection to using iron. 2. Of what thickness should the iron be? A. About  $\frac{1}{2}$  of an inch thick, or less. 3. Would galvanized iron be the best? A. Galvanized iron will be best on many accounts. 4. Would it be advisable to use side wheels? A. If the boat is to be generally run in smooth water, side wheels will answer well.

(33) J. B. F. asks: What shall I use on the point of a small drill to prevent it from clogging and heating in boring copper, silver, and gold? A. Lard oil.

(34) R. B. says: I sent you last June the dimensions of a tow boat I was building. At her first trial trip we started out with 65 lbs. of steam, and made the run of 2 miles in 11 minutes, the propeller making 109 revolutions per minute, and the steam being cut off at  $\frac{3}{4}$  of the stroke. She has been running and towing ever since, and has proved herself to be one of the best boats in Baltimore. She has towed a three-masted schooner, laden with 750 tons of coal, 20 miles in 3  $\frac{1}{4}$  hours, and made the run back in 2 hours. She has a 16 x 16 inch square cylinder. Her dimensions are as follows: Length 60 feet over all, width 14 feet, depth of hold amidships 7 feet. She draws 7 feet 4 inches water aft and 4 feet forward. Her propeller is 6 feet in diameter. She cost about \$9,000, complete. A. You seem to have a very satisfactory and powerful boat. We are much obliged for your letter.

(35) F. M. L. L. says: What kind of power is best for operating coal-mining machines? A. Compressed air or steam.

(36) F. W. B. says: Wishing to build a dam and to put up a mill, and having on hand a 21 inch turbine wheel, I desire to learn if, by suitable gearing, I can use the wheel for the small amount of work to be done, say not over 5 hours grinding per day, or from 20 to 30 bushels? The head of water is from 20 to 25 feet. A. As you have a wheel that can exert more power than is needed, you will scarcely experience much trouble in reducing the effect somewhat.

(37) E. B. asks: What is the best method of straightening stencil plates, after cutting the letters, so that they will lay flat on the work? A. Place each plate on a large block of wood, then straighten it with a small block of wood and a light hammer.

(38) S. K. J. says: In your issue of January 1, you speak of the conductor in Mr. Edison's experiments not requiring insulation, and say that it may be wound round large bodies of metal. Will these bodies of metal, round which it is wound, yield the spark? That is to say, will the "etheric" fluid leave its conductor and pass to the mass of metal, and can the spark be obtained from the mass? So also in the case where it has trailed along the ground, or in the water: can the spark be obtained from the ground or the water? Its practical application depends on this very important point. A. It is now generally believed that the "new force" referred to is electricity, consequently it should be subject to electrical laws. Provided insulation is good, we would, therefore, expect to obtain sparks by induction from the bodies about which the wire is wound.

(39) W. K. asks: What is the best remedy for leaks round the flues and seams of a steam boiler? A. Caulk the leaks.

(40) J. H. L. asks: 1. How are the electro-magnets in the Gramme magneto electric machine wound, to make the poles come in their centers? A. The armature coils are wound separately, the inside end of one coil being connected to the outside end of the one next following. Wires also lead from the junctions to strips of metal attached to a cylinder of some insulating substance. The latter is placed on the armature axis. The coils, for what are called the "field magnets," are all wound one way, but the connections are so arranged that north and south poles come on opposite sides of the armature. If coils with like ends pointing in one direction are put on a magnet, similar poles will be produced at opposite ends of the latter when the inside ends of the coils are connected together and the outside ends joined to a battery. 2. Why could not the frame and magnets be cast in one piece, making the magnets of cast iron? There would be no work on this part but to bore out the journals and cover parts intended for the electro-magnets with copper, thus saving considerable cost. A. They are now made that way.

(41) R. B. asks: Which is the correct way to connect a throttle valve on an engine, that is, which end of the valve should take the steam first? A. The steam should enter on the underneath side of the valve, so that it can be packed whether the steam is on or off.

(42) J. N. P. says: In an article in your issue of January 20, the writer claims that the breakage of band saws is due to the saw being obliged to turn a wheel or pulley, which causes friction, straining of the saw, etc. Could not that be very easily remedied by turning the pulleys by a mechanical movement, independent of the saw? A. The device mentioned is already in use. Another and a beautiful device supplies the supplementary outer rim on the upper or loose pulley. The friction of the supplementary rim is sufficient to turn the loose or upper wheel. But when the lower or driving wheel is stopped suddenly, the upper or loose wheel turns inside of the supplementary rim, which effectually prevents the sudden jerk on a thin narrow blade, which causes most of the breakage. Another device is to belt from the shaft of the driver to that of the upper

or loose wheel shaft, so that, when the lower shaft is suddenly stopped, the belt stops the upper one also.—J. E. E., of Pa.

(43) L. R. asks: What is the best substance as a non-conductor of heat, which can be packed in a cavity in iron? A. A mixture of  $\frac{1}{2}$  plaster of Paris and  $\frac{1}{2}$  alum is a good one.

(44) O. H. Y. asks: What is the fastest speed at which it is safe to run circular saws? A. Nine thousand feet per minute, that is, nearly two miles per minute, for the rim of a circular saw to travel, may be laid down as a rule. For example: Run a saw 12 inches in diameter, 3 feet around the rim, at 3,000 revolutions; 24 inches in diameter, or 6 feet around the rim, at 1,500 revolutions; 3 feet in diameter, or 9 feet around the rim, at 1,000 revolutions; 4 feet in diameter, or 12 feet around the rim, at 750 revolutions; 5 feet in diameter, or 15 feet around the rim, at 600 revolutions. Of course it is understood that the rim of the saw will run a little faster than this reckoning, on account of the circumference being more than three times as large as the diameter. Shingle and some other saws, riveted to a cast iron collar or very thick at the center and thin at the rim, may be run with safety at a greater speed.

(45) E. D. E. asks: 1. What is the smallest shaft, 14 inches in length, that I can put in a steam engine, the crank being 2 inches long and the pressure on the end 600 lbs.? A. Use a  $\frac{1}{2}$  inch shaft. 2. What is the best iron for the purpose? A. Low Moor iron or Uster iron.

(46) G. B. C. asks: Can you give me a good recipe for lathe cement, for holding small articles? A. Use beeswax 1 oz., resin  $\frac{1}{2}$  oz., pitch  $\frac{1}{2}$  oz.; melt, and stir in fine brickdust.

(47) D. L. R. asks: After a current of electricity has passed through an electro-magnetic engine and done its work, what becomes of it? Does it not pass on in its circuit? If it does, why will it not run another engine of same capacity? A. The energy is absorbed in performing the work.

(48) G. S. D. asks: 1. Will a magnet, placed near a piece of iron or steel, impart its magnetism to the iron and steel to that extent that an equilibrium between the two bodies will take place, and so that neither will have any power to attract the other? A. No. If the iron or steel is free from magnetism, there will be attraction; if not, there will be attraction or repulsion: attraction when unlike poles are opposed, repulsion in the opposite case. 2. Will an artificial magnet always retain its magnetism in full force, without any loss from any cause? A. No, unless special precautions are taken with regard to it. 3. Is an artificial magnet as strong as a natural one? A. Artificial magnets can be made with power greatly exceeding that of natural magnets.

(49) T. P. says: Joshua Rose writes the most interesting articles in your journal. This makes it a pity that he should say that, to divide the circumference of a circle into 60 equal parts, "we have only to divide the radius of our circle into 10 equal parts to get the required distance." A. In "Practical Mechanism," No. XLI, the division of the radius of a circle was given as an aid to setting the compasses approximately; it was not intended to imply that by such a rule the compasses could be set correctly to the exact distance. We are obliged to T. P. and other correspondents for calling our attention to the matter.

50) W. S. says, in reply to J. B. R., who asked for a solution to clean articles after brazing: I have succeeded by dipping, while hot, into a dilution of sulphuric acid in water.

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

G. H. S.—It consists mainly of sesquioxide of iron and silica.—R. B. J.—It is argentiferous galena.—S. P. W.—Write to Professor C. D. Cope, Corresponding Secretary of the Academy of Natural Sciences, Philadelphia. The petrified wood is not rare enough to be of much value.

S. asks: What amount of flour of both grades is contained in a bushel of good wheat, and how much bran and other refuse?—H. V. says: We get from a cow milk of which the cream is of a light red color, as if there were blood in it. Can any one tell me the cause and the remedy?—(J. W. C. asks: How can I repair a rubber comb?—S. asks: Is there any veterinary college in America?—H. G. H. asks: How can I make the flexible composition of which toy heads are made, which looks somewhat like vulcanized rubber?

#### COMMUNICATIONS RECEIVED.

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

On the Ocean. By C. O.  
On Spontaneous Generation. By S. R.  
On Cleaning Chimneys. By W. P. E.  
On a New Motor. By A. F. G.  
On the Mississippi Jetty. By E. G. F.  
On the Life of Matter. By J. R.  
On a Pneumatic Tube and Carrier. By A. B. H.  
Also inquiries and answers from the following:  
B. M. Jr.—C. P. S.—J. E.—W. S. M.—J. L.—Z. & S.—W. C.—C. D.—W. M.—A. B. C.—R. K.—F. C. W.—N. Y.—B. D. W.—N. J.—F. C.—J. T. B.—R. C. N.—W. D.—J. McB. S.—E. T. D.

#### HINTS TO CORRESPONDENTS.

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

Inquiries relating to patents, or to the patentability of inventions, assignments, etc., will not be published here. All such questions, when initials

only are given, are tarrown 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 galvanometers, and what do they cost? Who makes an economical rotary engine, and what is its cost? Who makes ice-making machinery? Who sells the best amateur printing press? Who sells barber's chairs? Who sells agricultural machinery? Who makes machines for tearing up tarred rope? Who sells the Gramme magneto-electric machine?" 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.]

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