Notes & Queries

A. J. can polish starched linen goods by following the directions on p. 203, vol. 31.—C. W. will find a description of a calcium light on p. 219, vol. 30.—C. K. R, will find directions for making friction matches on p. 75, vol. 29.—C. F. will will find directions for hardening millpicks on p. 170, vol. 25.—M. W. can make vinegar by the process described on p. 106, vol. 32.—A. B. R., C. W., B. L., J. K., J. C. M., E. T. H., F. W., and others, who ask us to recommend books on industrial and scientific subjects, should address the booksellers who advertise in our columns, all of whom are trustworthy firms, for catalogues.

(1) W. H. L. asks: Does a person, in lifting one wheel of a 4-wheeled wagon off the ground, lift more or less than a quarter of the whole weight? A. More than a quarter if the vehicle is rigid and the load equally distributed.

(2) A. Y. asks: Is there any practical way of leveling without a theodolite? A. You can construct an instrument with an ordinary builder's level, that will enable you to get the hight. As such matters are discussed in special treatises, and would occupy too much space for these columns, we must refer you to some good book on the subject. There is a cheap level in the market, which is accompanied by full directions for use.

(3) A. C. F. asks: What is the proper speed for grindstones, wet and dry? A. Circumferential velocity, 1,800 to 2,000 feet per minute.

I have a 10 horse power locomotive boiler; it will hardly make steam enough for a 10 horse power engine. Would it be practicable to wall in the boiler and form an arch over the top, arranging it to lead the heat (after leaving the flues) under the boiler towards the firebox, along the side of the firebox toward the front, then up and over the top of the boiler, back to rear end, and up the stack? A. If you have a strong draft, you may gain something by the change.

(4) T. P. F. asks: If two launches were built, one 30 and one 40 feet long, the same in every particular except length, which would run the fastest? A. The first.

(5) B. P. R. asks: 1. In a hot blast or air-tight steam boiler furnace, which is the best way to supply the air, under the grates or on top of the burning coal? A. Under the grates. 2. How many lbs. steam to the square inch will a boiler 24 feet long by 40 inches diameter, of ¼ inch iron, stand with safety? A. About 60 lbs. 3. What dimensions of smoke stack ought I to have for the boiler, with two flues, each 14 inches in diameter? A. The cross section of the chimney should not be less than about ⅛ of the grate surface.

(6) J. S. C. asks: Is the statement that a body will weigh less at the equator than at the poles based on an actual test by weighing, or is it theoretical? A. Based on actual test.

(7) C. F. S. asks: 1. How large a boat will a boiler 44 inches high and 20 inches in diameter, and an engine with 3½ inches stroke and about 3½ inches bore, drive, and at what speed? A. The machine will be suitable for a boat from 18 to 30 feet long. 2. What size of wheel and what pitch should I use? A. Use one 20 or 24 inches in diameter with 3 feet pitch.

Where does ice form in freezing, on top or at bottom of the water? A. You can probably settle the matter to your satisfaction by observations on a pond in which ice forms. First there will be a thin sheet of ice, which gradually thickens on the under side.

(8) J. K. asks: Why will not iodide of potassium form in large crystals when made according to United States Pharmacopœia? A. In order to obtain good crystals of K I, it is necessary that the crystalization should proceed as slowly as possible in a cool place, and under a good vacuum. The best results are obtained when large quantities of the materials are operated upon at once. The solution of the iodide should be as neutral as possible.

(9) M. asks: 1. Is the common commercial potash in solution a good fertilizer for a grape vine when applied to the soil about its roots? If so, of what strength should it be used? A. We would not recommend the use of potash. 2. Are ground or pulverized bones good for the same purpose? A. The finely-ground bones mixed with soil or peat make a very desirable manure. It would be better, however, to treat the ground bones with about one third the weight of oil of vitriol (specific gravity 1·70) in order to obtain the soluble superphosphate. The acid should be diluted with about 2 parts of water, and well stirred in with the bone dust; it should then be allowed to stand for about 12 hours, when enough loam should be stirred in to absorb all the liquid. This is one of the best manures known. 3. If these articles were applied to a loamy or porous soil, situated 10 feet from a well of water, would there be any danger of contamination to the water? A. No.

(10) E. M. L. asks: In cutting up tortoise-shell, a lot of small scraps are made. How can they be worked up into a solid mass, by dissolving, or otherwise? A. The larger scraps might possibly be utilized for small inlaid work. Send us a few of the scraps and we may possibly be able to suggest some other application.

(11) W. S. C. asks: What produces the phosphorescent light known as fox fire? A. We do not recognize the name, but suppose you refer to the strongly phosphorescent solution of phosphorus in hot olive oil. Bisulphide of carbon or one of the essential oils may be made to replace the olive oil as the solvent. It would, perhaps, be well to state that the employment of the bisulphide solution of phosphorus is liable, when the liquid is in contact with the air, to produce spontaneous combustion.

(12) S. W. J. asks: What is a simple and harmless preparation for turning dirty brownish red hair to a white color? A. There are methods by which this might be accomplished, but we cannot recommend any of them.

(13) F. S. M. asks: Which is the best way to make a solution for silverplating? I have made a solution, but the silver comes off again. I made it by dissolving some silver in nitric acid; and after making the salt dry, I put it in a solution of cyanide of potassa (K Cy) in water. It plates very well: but when I come to burnish it, it all comes off again. A. Your method of preparing the solution is a good one; the trouble doubtless arises from the inefficient manner of preparing the articles. Different metals require different treatments. As a rule, the first thing to be done is to remove the greasy films with which most objects are covered; this is effected by boiling and rubbing in a solution of caustic soda, made by boiling about 2 lbs. of common soda crystals with milk of lime, produced by slacking ½ lb. of quicklime with hot water, and well stirring. After this alkaline bath, the objects should be washed in several waters or in a running stream. They are next cleaned in acids, again washed, and then transferred to the depositing solution. Copper, brass, and German silver articles should be immersed in a pickle composed of water 100 parts, oil of vitriol 100 parts, nitric acid (specific gravity 1·3). 50 parts, hydrochloric acid 2 parts. It is well also to coat the surface with a thin film of mercury. This is effected by means of a solution of 1 oz. mercury in sufficient nitric acid, with three times the quantity of water, diluted to one gallon; there will form a gray or blackish deposit over the surface, which, on brushing softly, gives place to a brilliant coating of mercury; the object should be transferred to the depositing cell the instant this is obtained.

(14) J. McJ. asks: What will remove dried collodion from white cotton, without injuring the fabric? If there is anything that will decompose it, it will be preferable to a solvent. A. Try steeping the cloth in cold water, and then rubbing it together so as to break up the films.

(15) A. C. says: How thick should the copper and zinc plates be, and of what thickness should the wire be, of the galvanic battery mentioned on p. 234, vol. 34? A. The plates may be made of any convenient thickness. No. 14 or 16 copper wire is used for the connections. 2. How should the zinc be suspended? A. From a wooden or metallic frame resting on the top of the jar.

(16) G. B. McC. asks: Is it possible for the water to be carried out of the boiler through the pump? We were sawing with a portable steam mill, and shut down at night with the usual amount of water. In the morning there was no water in the boiler, and we had to fill her up through the safety valve. There is a check valve on the feed pipe close to where the pipe connects with the boiler. A. It would not be possible, if the check valve were tight, which, judging from your account, might not have been the case.

(17) A. H. asks: 1. Please give me full directions for making a good condenser for an induction coil. A. Cut tinfoil up into sheets of the desired size, and make of them two piles like the leaves of a book, one pile containing one more sheet than the other. Upon the extreme end of each of these piles place a tinned wire or strip of metal, and by means of a soldering iron run all the edges together so as to make a perfect metallic connection. Cut sheets of paper large enough to allow a margin of at least an inch round three sides of the foil. The paper should be thin, not highly glazed, and should show no acid reaction by reddening when moistened with a neutral solution of litmus; it should be baked thoroughly dry, placed in a vessel of paraffin kept well over its melting point, and then drained sheet by sheet as smoothly as possible. A well baked piece of wood somewhat larger than the paper is laid upon a table, its face soaked with paraffin and a sheet or two of paper laid upon it; upon this is laid the largest pile with its soldered end projecting, and all its leaves turned back except the lowest one, which is to be rubbed smoothly out on the paper: lay over this two sheets of the paper, and on top of this the other book of foil, so placed that it lies exactly over the first sheet except for the margins at the opposite ends; turn back, as with the other, all its leaves except the first, and upon this place two sheets of paper; continue this process, laying back, upon the paper, sheets of foil from the books alternately, and between each foil two sheets of paper. When all are in place, cover with two or three sheets of paper and a board like the first; the whole should then be compressed by clamps and warmed up to the melting point of paraffin, increasing the pressure to drive out all excess. The first board should be provided with a binding screw at each end, and the wire of the corresponding foils should be soldered to it 2. Which will produce the best result, 3 lbs. silk-covered wire No. 37, or 5 lbs. No. 32? A. Three pounds of No. 37 will give the longest spark.

(18) A. D. asks: 1. Does the addition of glass to lead make it ring like silver? A. The product is quite sonorous. 2. Will glass combine with lead? A. Oxide of lead is soluble in molten glass.

(19) L. B. & Co. asks: What will hold up soapstone in solution? A. Such rocks can only be rendered soluble by fusion with alkalies or alkaline carbonates in excess, and subsequent treatment with boiling water and acids. The rock (in small quantities) may be partially decomposed and dissolved by means of strong hot solutions of hydrofluoric and sulphuric acids.

(20) S. asks: What degree of heat is necessary to make brass malleable, so that it can be hammered or drawn out? A. It is generally drawn cold, being previously annealed.

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

We have received minerals as follows, in packages without names of senders: Two specimens of micaceous red hematite, an excellent ore of iron. Two specimens of clay of good quality, a mixture of finely divided silica and silicate of alumina, which might be employed in polishing, in making some varieties of vitrified wares etc.—A. E.—It is augite, and contains some oxide of iron. —W. E. T.—They are both iron pyrites, and contain no precious metal.—N. V. C.—It is brown coal.

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 Centennial Awards. By G. B.
On Sound. By J. A. F.
On Foul Air in Wells. By M. B. O'N.
On the Moon. By J. D.
On Cutting Speeds. By T. J. B.
On Trisecting an Angle. By J. McM.
On Smoky Chimneys. By F. G. W.

Also inquiries and answers from the following: B. D.—G. B. P.—L. H. E.

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.

Enquiries 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 sells paraffin? Who sells gutta percha? Who sells crude India rubber? Who sells proprietary stamps? Who sells the best astronomical telescopes? Whose is the best aneroid barometer?" 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

October 17, 1876,

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.

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