(32) I. P. H. asks how to manufacture the gas and inflate some 3 or 4 dozen rubber toy balloons? A. Place a few ounces of clean scrap zinc in a stout half gallon bottle and pour over it a cooled mixture of 1 part oil of vitriol and 5 parts water. Stop the mouth of the bottle with a rubber stopper through which has been fixed a short piece of glass tubing of size suited to fit the mouth of the balloon. Exhaust the bag of air and tie it on the glass tube. When sufficiently dilated tie the mouth with thread and flow the dilated bag with a thin alcoholic solution of colored wax, collodion, or resin.

(33) E. J. S. asks how to preserve the feet and external parts of stuffed animals? A. Dissolve about ½ oz. corrosive sublimate in 1 pint alcohol and apply with a soft brush. If it leaves a white precipitate dilute with alcohol until it does not. A correspondent strongly recommends this recipe.

(34) H. L. W. writes: You say apply muriatic acid diluted with 5 or 6 times its quantity of water, and after a minute or two wash with clean water. I have tried it and could not make it work. How shall I apply it so it will? A. The recipe referred to the common—gallo-tannic iron—inks. Inks containing Prussian blue, indigo, logwood, chromium salts, and coal tar dyes are more or less indelible. You may try the following solvents in the order named: Water, alcohol (hot and cold), citric acid, oxalic acid, dilute (pure) muriatic acid, strong muriatic acid, strong water of ammonia, solution of potassium ferrocyanide, strong chlorine water or hydrogen peroxide, solution of potassium cyanide. The liquids are traced on with a glass pen, and after standing a sufficient time, it is covered with warm (dry) tripoli powder (infusorial silica) or pipe clay, which absorbs the liquid or ink solution. 2. You also say a solution of oxalic acid, citric acid, and tartaric acid may be applied where there is printing, as it will not attack the printed text. Do you mean all the acids equally, or either one reduced with water? A. The solid organic acids—citric, tartaric, oxalic, etc.—are dissolved in a small quantity of warm water.

(35) N. L. gives the following method of truing an emery wheel without a diamond: Hold a piece of white chalk against the wheel while in motion. This will show you the high places. Then take a pick of the kind used to dress millstones, or make one of a file about five inches long, wedged in a stick like a miller's pick. Hack the chalked places and keep chalking and hacking, rubbing over with an old file each time before chalking, until the wheel is true and the chalk touches all around.

(36) E. P. O. asks (1) the mode of constructing an electric engine of 3 horse power? A. You will find a description of an electric engine on p. 184 of our issue of September 22, 1877. 2. How many cells of Daniell's battery, also how many plates of Smee's battery, would be required to run the engine so constructed? A. The amount of battery power required will depend on so many details that we cannot give an opinion. 3. What sized wire and how long must I have for helix? A. If you make an engine on a scale six times the size of the cut Fig. 1—then about 30 lbs. of No. 16 copper wire, cotton-covered, would be a good size and quantity to wind on the iron cores, D, and 40 lbs. of No. 12 copper wire, cotton-covered, for the cores A A. Let the width of the engine (as seen by a plan view) be such that the wire may be disposed so as to occupy about the same relative space as it does in the cut.

(37) M. A. N. sends the following problem: A heavy stick of timber is to be carried by three men. One man is to carry one end, and two men are to use a lever at a certain distance from the other end. At what distance from the shorter end must the lever be placed that each man may carry an equal part of the weight, no allowance being made for the weight of the lever? A. Supposing the stick to be uniform in section, the man at the end applies his force at the end of a lever equal to half the length of the stick: and as the other two men apply twice as much force they must apply it at the end of a lever one half as long as the preceding, or at one fourth the length of the stick from the other end.

(38) E. C. N. asks: If I should wind a few feet of wire around a strong magnet, can I get a current of electricity so I could run a relay? The other night while I was testing some electro-magnets I received a very sharp shock by taking up one of the wires of my battery while the other wire was at least 10 feet from me on the brick floor. A. Not unless you open and close the magnetic circuit by means of an armature, or in some way continually disturb the relative position of the magnetic field of the permanent magnet, on which the wire is wound. The shock you received is frequently felt under similar circumstances by the battery men who have the care of a large number of cells, used for the purpose of supplying the telegraphic lines with galvanic electricity.

(39) A correspondent sends a recipe for a gold lacquer for brass: Dissolve in about 12 ozs. alcohol ½ oz. shellac, 1 drachm dragon's blood, and ¼ drachm turmeric root. It is sometimes necessary to filter the varnish. It is applied as usual. At first the varnish will seem to be a failure, but in a short time it will have a beautiful gold color.

(40) J. S. H. asks how to prepare a jet black enamel? A. Black enamel is thus made: Peroxide of manganese 3 parts, zaffre 1 part. Mix and add as required to white enamel, which is: Washed diaphoretic antimony 1 part, fine glass, free from lead, 3 parts. Mix wet, pour into water, powder, melt again, and repeat this three or four times.

(41) W. E. A. incloses a piece of "magic paper," and asks its composition. On being touched with fire it entirely disappears, ashes and all. A. It appears to be nitro-cellulin—made directly from a pulp of gun cotton, or converted after coming from the paper machine by digestion for a few minutes in a mixture composed of equal parts of fuming nitric and fuming sulphuric acids, or fuming sulphuric acid mixed with pure dry saltpeter, and washing in water made slightly alkaline with soda. It is a dangerous article to keep in store.

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

J. G. P.—No. 1 contains ferric sulphides and a trace of gold—tellurides not present in sample. No. 2 is a quartzite containing magnetic pyrites, but no silver or bismuth. No. 3 will probably prove a rich silver ore—the sample contains argentiferous galenite and a little copper.

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 Progress of Engineering.
On Drawing on the Blackboard.
On Telephonic Communications. By T. F. W.
On the Calendar.
On Golden Relics. By C. F. R.
On the Manufacture of Surface Plates. By O. C. G.

HINTS TO CORRESPONDENTS.

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

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

Inquiries relating to patents, or to the patentability of inventions, assignments, etc., will not be published here. All such questions, when initials only are given, are thrown into the waste basket, as it would fill half of our paper to print them all; but we generally take pleasure in answering briefly by mail, if the writer's address is given.

WANTS AND BUSINESS INQUIRIES.

Almost any desired information, and that of a business nature especially, can be expeditiously obtained by advertising in the column of "Business and Personal," which is set apart for that purpose subject to the charge mentioned at its head.

We have received this week the following inquiries, particulars, etc., regarding which can probably be elicited from the writers by the insertion of a small advertisement in the column specified, by parties able to supply their wants:

Who makes hand presses for toilet soap?

Who makes musical bells for parlor use, chimed to give notes and half notes?

Who makes machinery for kiln-drying corn?

Who makes surveyor's instruments, graded according to metrical measurement?

Who sells cuca leaves?

OFFICIAL.

INDEX OF INVENTIONS

FOR WHICH

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

December 4, 1877,

AND EACH BEARING THAT DATE.

[Those marked (r) are reissued patents.]

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

Animal black, artificial, P. G. L. G. Designolle... 197,834
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