

(24) B. B. S. says: I have never succeeded in making a perfect ink or fluid from any recipe, either with extract of logwood, nutgalls, or a combination of both. How can I make a bright, limpid, and bluish green at first, turning black on drying? A. Try the following: 12 ozs. nutgalls, 8 ozs. each sulphate of indigo and copperas, a few cloves, 4 or 5 ozs. gum arabic, for a gallon of ink. The addition of the sulphate of indigo renders the ink more permanent and less liable to mould. It is blue when first written with, but soon becomes an intense black. It is a true solution, and in composition nearly resembles that of P. & J. Arnold.

(25) C. O. O. says: I am using tin for plating; it works well for a time, but becomes hard by being heated so often. What can I do to make it flow more freely? A. This is probably due to impurity in the bath. You should state what are the character and the composition of the articles plated.

(26) R. S. W. asks: How can brass be melted on a small scale, by amateurs? A. The operation is rarely at first accomplished by amateurs without considerable difficulty. It requires a good furnace, capable of fusing copper, and a crucible capable of withstanding the high temperature. For this latter reason black lead crucibles are generally employed. The crucible is placed in the newly made fire, so as to heat up gradually. When well heated, place in your copper in small pieces, and force your fire until the copper is just fluid: then place in your zinc, stirring the fused alloy meanwhile. Do not allow the temperature to rise too high, as in this case a great part of the zinc will be volatilized, and, coming into contact with the air, will become ignited and converted into a copious white vapor of oxide of zinc. It is advisable to keep the surface of the fused metal covered with a quantity of chloride of ammonium (sal ammoniac), in order to preserve the surface free from oxide and clean.

(27) H. T. C. asks: Is there any scientific method by which to ascertain the depth to water underground, without digging or boring? A. No.

(28) W. A. D. asks: 1. Is there an article of the nature of oilcloth, or thin rubber cloth, that can be put over a frame about 3 feet square, and heated, from underneath, to a temperature of from 100° to 140° or 150° Fah., and will admit of a shower of water being thrown on immediately after the discharge of heated air, without injury to the covering or any disagreeable odor from the material? It must needs be airtight and watertight. A. Try a suitable modification of asbestos cloth. 3. What material could I get for heating the space in the manner described? A. Try gas manufactured from a suitable light coal oil.

(29) J. A. says: I have seen an argument that the centrifugal and centripetal forces at work in the earth's rotation not being equal, the earth is consequently hollow. What are the centrifugal and centripetal forces in this connection? A. Consult "Sketches of Creation," by Professor Winchell, pp. 36-60.

(30) A. E. says: I have been troubled for a long time with my well water. The well is over 40 feet deep; the water is delicious, clear, and cool; and yet, on holding a glass of it between you and the sunlight or lamplight, you can see minute living creatures. I have discovered two species. There are also earth worms occasionally drawn up in the bucket. Will you tell me the cause of these appearances? A. It is very unusual for animal life to be developed in water of such a character as you describe. The earth worms have probably gotten in accidentally, and the living creatures may not have come from germs present in the water itself. 2. Is wholesome water ever found in this condition? A. If you fill a quart bottle half full of the water, close it with a good cork, put it in a warm room, and then after a week's time find on opening the bottle there is no smell, the water is probably wholesome.

(31) J. J. O. asks: 1. Why will not aniline yellow (lemon) and aniline blue mix? A. They are used separately—first the blue, and finally the yellow—in order to obtain the desired shade of green. 2. What colors can I take that will make any shade of green ink I may want? A. Verdigris dissolved in acetic acid gives an elegant green.

(32) W. H. B. asks: Is there any way to remove printed matter from postal cards, sufficiently to allow the surface to be legibly written over? A. Remove the printing by means of a sharp steel eraser, and polish with a good bone or ivory paper knife.

1. How can I make a liquid preparation to apply to cuts and bruises, such as will quickly dry and form an artificial cuticle? A. Use collodion. 2. Is collodion dissolved in ether a good preparation for this purpose? A. Yes. 3. Can collodion be dissolved in alcohol? A. Collodion is a solution of negative cotton in ether, or a mixture of ether and alcohol. Gun cotton is insoluble in alcohol alone.

(33) F. A. H. asks: Can a good durable white ink be made? If so, what are the ingredients? A. Shake up a little finely ground oxide of zinc with a small quantity of gum water. This, we think, will answer your purpose.

(34) M. S. S. says: How do you compound nitric acid with water so as to give galvanized iron the snowflake finish? A. Use muriatic acid 3 parts, nitric acid 1 part, and water 3 parts; wash immediately afterward with pure water. Why does metal blister after it comes out of the water, immediately after galvanizing? A. This may be due to the fact of the metallic surface not having been perfectly clean, or on account of the too rapid cooling of the surface.

(35) C. W. B. asks: How can I crystallize alum, so that it will adhere readily, in quantity and in regular forms? A. Make a concentrated

solution of the salt in boiling water, and set it aside to cool slowly.

(36) C. L. C. says: A grain of corn consists of the heart or soft part (the germ) and a hard portion; which of these would produce the most spirits, starch, and sugar, respectively? What difference is there in the chemical composition between the hard and soft parts? A. We do not find any published statement that furnishes the desired information, and an experimental investigation would require considerable time.

(37) J. S. asks: Is there anything that can be mixed with glue to make it harder? A. Try the following: Melt together equal parts of common pitch and gutta percha. Apply hot.

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

J. C. B. F.—It is sulphide of iron.—C. B. K.—It is a rock composed of felspar and hornblende. The brilliant yellow metallic particles are sulphide of iron.—D. H.—It is decomposed potash mica. For a possible advantageous use of such mica, see an article by Professor Leeds in the Gardener's Monthly for August, 1875.—E. A. H.—You are right. A further examination, however, shows that these specimens contain a small percentage of lime and silicic acid. It is largely used in the manufacture of paints, for which the mineral sent would answer.—M. M. C.—It is difficult to account for the presence of such a mass of the mineral which you send, at the bottom of a well. It is sulphide of iron. Such concretions sometimes occur, but the fact of one being in a well may be due to accidental circumstances.

COMMUNICATIONS RECEIVED.

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

- On Large and Small Wygon Wheels. By S. L. M.
On Tens and Hundreds. By W. S. H.
On Weather Predictions. By M. O'R.
On the Keely Motor. By F. K.
On Railroad Cars. By S.
On Natural Phenomena and Temperatures. By J. K.
On Mouse Traps. By C. R.
On Repairing Bells. By T. K. A.
On the Relation of Time and Movement. By A. W.

Also inquiries and answers from the following: G. V. B.—J. G. R.—R. S. W.—J. T. F.—B. S.—H. D.—W. B. W.—J. G. A.—J. C. W.—J. S.

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 makes an air or steam engine suitable for driving a sewing machine? Who sells podometers? Who sells machines for making matches? Who sells steel drills, used in riveting crockery and glass? Who sells mica in sheets?" 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 September 21, 1875, AND EACH BEARING THAT DATE. [Those marked (r) are reissued patents.]

Table listing inventions and their patent numbers, including items like Addressing machine, Bale-rolling attachment, Bale tie, Bed bottom, etc.

Main table listing inventions and their patent numbers, including items like Car, sleeping, E. Wheeler, Car starter, L. C. Parkes, Car stock, J. R. McPherson, etc.

Table listing inventions and their patent numbers, including items like Pump buckets, endless chain, J. S. Manly, Pump, rotary, W. Lyon, Punch, hydraulic, J. B. Barnes, etc.

DESIGNS PATENTED.

Table listing designs patented, including items like Toy Bank, C. W. Crôteau, Philadelphia, Pa., Pipe, C. D. Grimm, Glenwood, N. J., etc.

SCHEDULE OF PATENT FEES.

Table listing patent fees, including items like On each caveat, On each Trade mark, On filing each application for a Patent (7 years), etc.

CANADIAN PATENTS.

LIST OF PATENTS GRANTED IN CANADA, September 20 to 28, 1875.

Table listing Canadian patents granted, including items like J. G. Martin, Cobourg, Ont. Washing machine, Sept. 20, 1875, C. J. Riply, Cumberland, Ont. Tug pins for vehicle shafts, Sept. 20, 1875, etc.