

Notes & Queries

HINTS TO CORRESPONDENTS.

No attention will be paid to communications unless accompanied with the full name and address of the writer.

Names and addresses of correspondents will not be given to inquirers.

Renewal of 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 do not appear after a reasonable time should repeat them. If not then published, they may conclude that, for good reasons, the Editor declines them.

Persons desiring special information which is purely of a personal character, and not of general interest, should remit from \$1 to \$5, according to the subject, as we cannot be expected to spend time and labor to obtain such information without remuneration.

Any numbers of the SCIENTIFIC AMERICAN SUPPLEMENT referred to in these columns may be had at this office. Price 10 cents each.

Correspondents sending samples of minerals, etc., for examination, should be careful to distinctly mark or label their specimens so as to avoid error in their identification.

(1) W. M. asks: 1. How many miles per hour will water run in a ditch or race with one-quarter of an inch fall per rod; said race being (we will say) 4 feet wide on top, 2 feet 6 inches on the bottom, and 3 feet deep, and conveying about 400 inches of water; said race having several moderate curves per mile? A. Making moderate allowance for friction of bends, 2 1/2 miles per hour. 2. How much fall should such a race have per rod in a tolerably tenacious subsoil, so as not to cut the sides? A. Should not exceed about 90 feet per minute.

(2) W. E. asks: 1. How is phosphorus dissolved, to be used in making parlor matches? Can you give us formula for mixing the ingredients? A. By referring to the SCIENTIFIC AMERICAN for January 27, 1883, a composition is given which is prepared as follows: The glue, broken in small pieces, is soaked in water till soft, added to the water, and dissolved by means of a water bath. The vessel is removed from the fire, and the phosphorus is gradually added, the mixture being constantly agitated with a suitable stirrer. When a uniform emulsion is obtained, the other substances are mixed in, one after the other, in the order in which they are named above, and the stirring is continued until the mixture is nearly cold. 2. What is the amount of revenue per hundred or thousand matches? A. One cent per 100 matches. Consult SCIENTIFIC AMERICAN SUPPLEMENTS, Nos. 87 and 853. 3. Also, what is the best temperature for preserving eggs in a cold storage room? How long can they (eggs) be safely kept? A. Consult article on "Preservation of Eggs" in SUPPLEMENT, No. 317.

(3) D. T. G. asks: 1. Is gas or coal tar good to preserve fence posts, and how is it applied to the posts? A. Coal tar is one of the agents most commonly employed for preserving wood on a large scale for pavements, etc.; but unless the wood is first thoroughly dried by means of hot air or steam, the superficial coating of tar has a tendency to confine the moisture in the center of the block. It is applied by painting it on or dipping the post into the mixture. 2. Can a telephone line be worked successfully without a battery a half mile? A. Yes.

(4) W. T. asks: In making good hard soap what proportion of caustic potash and sal soda are used in proportion to the fat or oils, and of what density should the potash be? A. The proportion of caustic potash and sal soda varies according to the fat or the oil which is used in the manufacture of the soap. Consult "A General Treatise on the Manufacture of Soaps," by Dussauce, which is probably the best work extant, in English, on the subject.

(5) M. W. M. asks: 1. Would a telephone, such as is described in SUPPLEMENT, No. 142, using No. 40 wire, work enough better than one using No. 36 to pay for the difference in cost of wire? A. No. 36 will answer very well. 2. What size office wire would it be necessary to use for connections on a dynamo electric machine, such as is described in SUPPLEMENT, No. 161? A. No. 14 or 16. 3. Is the new form of transmitting telephone shown in SUPPLEMENT, No. 163, page 2563, Fig. 4, shown full size? If not, what of full size? A. It is about half size. 4. Please give a recipe, if you can, for an oil backing for boots and shoes—one that will shine when rubbed with a shoe brush. A.

- A. Molasses..... 1 pound.
Ivory black..... 1 1/4 pounds.
Sweet oil..... 2 "

Rub together in a Wedgwood mortar till all the ingredients form a perfectly smooth homogeneous mixture; then add a little lemon juice or strong vinegar—say the juice of one lemon, or about a wine glass of strong vinegar—and thoroughly incorporate, with just enough water added slowly to gain the required consistency.

- B. Ivory black..... 2 pounds.
Molasses..... 1 pound.
Olive oil..... 1/4 "
Oil of vitriol..... 1/4 "

Add water to gain required consistency.

(6) E. S. S. asks: 1. When the atmosphere is the lightest—in clear or damp weather? A. The atmosphere is generally lightest in damp or wet weather. 2. Will the condensation in a whistle pipe return to the boiler while there is a pressure of steam on the boiler? A. If the whistle pipe rises directly from the boiler, so that there are no traps to prevent the water from easily flowing back to the boiler, there will be dry steam in the pipe below the valve.

(7) E. G. T. asks: 1. Must the coils of magnets, as, for instance, in a telephone, be wound as perfectly and neatly as a spool of thread, or will they answer if made more roughly? I find it difficult to wind them neatly on a common foot lathe without special appliances. A. It is not absolutely essential to the working of the instrument, but on many accounts it is preferable to have the wire carefully wound. 2. Is common iron rod, such as may be found at a blacksmith's, suitable for electro-magnets? A. If soft, it will answer. 3. To make the strongest electro-magnets, should cells of the battery be connected for quantity or intensity? A. It depends on the construction of the magnet. See query 1, p. 91, current volume.

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

J. G. S.—The sample is simply silicious sand, containing slight quantities of the oxides of aluminum and iron, with traces of magnesium and calcium oxides. It is of no special value unless it contains some of the precious metals. The sample sent was too small to examine for gold or silver, and from its appearance we do not believe that it contains either.—C. H. D.—Both samples are specimens of badly weathered limestone. They contain various minerals in a disintegrated state, with nearly all of the limestone dissolved by exposure. It is very likely that there is considerable iron and manganese among other minerals. Analysis would be necessary to determine its value, if any. For certain soils, powdered limestone is a valuable fertilizer. If desirable, an analysis could be made, which costs from \$10 to \$25, according to the ingredients present.

(OFFICIAL.)

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

February 13, 1883,

AND EACH BEARING THAT DATE.

[Those marked (r) are reissued patents.]

A printed copy of the specification and drawing of any patent in the annexed list, also of any patent issued since 1866, will be furnished from this office for 25 cents. In ordering please state the number and date of the patent desired and remit to Munn & Co., 261 Broadway, corner of Warren Street, New York city. We also furnish copies of patents granted prior to 1866; but at increased cost, as the specifications, not being printed, must be copied by hand.

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