

HINTS TO CORRESPONDENTS.

Names and Address must accompany all letters or no attention will be paid thereto. This is for our information and not for publication.

References to former articles or answers should give date of paper and page or number of question.

Inquiries not answered in reasonable time should he repeated; correspondents will bear in mind that some answers require not a little research, and, though we endeavor to reply to all either hy letter or in this department, each must take his turn.

Buyers wishing to purchase any article not advertised in our columns will he furnished with addresses of houses manufacturing or carrying the same.

addresses of nouses manufacturing or carrying the same.

Special Written Information on matters of personal rather than general interest cannot be expected without remuneration.

Scientific American Supplements referred to may be had at the office. Price 10 cents each.

Books referred to promptly supplied on receipt of price.

Minerals sent for examination should be distinctly marked or labeled.

(10603) C. S. says: Kindly let me know what substance or combination of chemicals will change its appearance or color under the action of a current of electricity. A. There are many solutions that will do this. Make a solution of potassium iodide and immerse two platinum poles connected to source of direct current. The positive pole will turn

(10604) J. O. G. says: Are our battleships equipped with lightning rods? If so, in what way are they so equipped? I have heard that they were, but plead ignorant for my part, and any information you will publish will I think benefit more than one of the exercise of special skill. A number of your readers. Would a dynamo, direct-curtypical methods of holding work, as well as rent, 4 amperes, 110 volts, run an arc light some fixtures and jigs, are shown, as a general such as used in a moving picture machine?
Said dynamo will run 12 lights 16 candle power. A. The whole battleship is a lightning rod. What better could you want than steel stacks and masts with a ground connection always moist? A dynamo 4 amperes is hardly large enough for a very bright arc lamp. These lamps take from 15 to 50 amperes at 50 volts when used for projection.

(10605) K. H. says: I have an iron clad fan motor, formerly 220 volts. When I got the motor the armature windings were completely burned out. I have rewound the armature with No. 26 magnet wire. I find that this wire is so coarse that the motor becoming so strong with this large wire on the armature that they hold the armature make it revolve. Before the present windings were on the armature I had it wound with wire the same size as the wire which was on it originally, about 34. With this wire on it the motor ran very nicely, but it took such a large voltage to run it that it was not of much use to me. What I want to know is what size wire to put on the fields and how much of it to make my motor run on a voltage somewhere between 50 and 120, the exact voltage I am not particular about. I desire it to run at a high enough speed to be a good fan motor. The motor is series wound. A. Wind your armature with No. 31 wire if many turns as there were before. For the department devoted to more elaborate decoralarge as the one originally used, and put on one-half as many turns. This ought to make the motor run at its original speed on 110 volts. Since you have given us so little information, we cannot help you further.

(10606) L. M. C. asks for a formula goods, ribbons, etc., one cannot do better than employ a soap containing a certain amount of ox-gall, a product that is not surpassed, if indeed it have an equal, for the purpose. In making this soap the following directions will subject been placed in such form so as to be be found of advantage: Heat 1 pound of readily accessible. This volume does not give cocoanut oil to 30 deg. R. (100 deg. F.) in a any method for preventing the disturbances copper kettle. While stirring vigorously add since too many factors depending upon local 1/2 pound of caustic soda lye of 30 deg. Bé. conditions enter into the problem. It describes, In a separate vessel heat ½ pound of white Venice turpentine, and stir this in the soap in the copper kettle. Cover the kettle well. and his own difficulty by merely adapting the let it stand mildly warmed for four hours, knowledge gained to the local conditions. when the temperature can be again raised until the mass is right hot and flows clear; then add the pound of ox-gall to it. Now pulverize some good, perfectly dry grain soap, and stir in as much of it as will make the contents of the copper kettle so hard that it will give little to the pressure of the fingers. From one to two pounds is all the grain soap required for the above quantity of gall soap. cooled cut out the soap and shape into bars This is an indispensable adjunct to the dyer and cleaner, as it will not injure the most delicate color.

(10607) J. W. asks for a varnish for tin boxes. A. In 75 parts of alcohol dissolve 15 parts of shellac, 2 parts of Venice turpentine, and 8 of sandarac.

(10608) P. J. D. asks for a formula for bookbinders' varnish. A. In 90 parts by shellac of light yellowish shade.

NEW BOOKS, ETC.

Engineering in the United States. Report to the Electors to the Gart side Scholarships on the Results of a Tour in the United States in 1904-05. By Frank Foster. Man-chester, England: The University Press. 8vo.; cloth; 114 pages.

A report on American engineering methods written from the English standpoint by a "Gartside Scholar" of the University of Man-

SANITARY CONSTRUCTION IN BUILDING Edited by Paul N. Hasluck. With numerous engravings and diagrams. Philadelphia: David McKay. 16mo.; cloth; 160 pages. Price, \$1.

A comprehensive, clearly written treatise on Sanitary Construction as applied to building. It contains instruction in various questions that have to be met by those who are doing construction work.

MODERN MILLING MACHINES. Their Design, Construction, and Working. handbook for practical men and en gineering students. By Joseph G. Horner. With 269 illustrations. New York: The Norman W. Henley Publishing Company. 8vo.; cloth; 304 pages. Price, \$4.

Milling machines have become highly special ized and the work of milling is now subdivided between different groups of workmen, according to its difficulty, so that no apology is necessary for work which treats of but this single department of machine-shop practice. The sections which offer no special difficulties have been lightly dealt with, while special space is devoted to the manufacture of cutters and to the work of the machines that call for guide to the machine attendant. Some of the latest improved machines are illustrated in detail, and special attention has been given to the question of speeds, and of feeds.

TOOLS FOR MACHINISTS AND WOODWORKERS. Including Modern Instruments of Measurement. By Joseph G. Horner. Illustrated with 456 engravings. New York: The Norman W. Henley Publishing Company. 8vo.; cloth; 340 pages. Price, \$3.50.

An account of the tools commonly used by engineers and woodworkers, written chiefly from the standpoint of the men who use them, and who wish to understand the principles will not run on account of the field magnets underlying the forms in which these tools are found. Practical instructions for their employment have been added. The work is more comstill regardless of the windings which tend to prehensive in its scope than any which has preceded it, the subject of instruments of measurement being treated in a very full manner and freely illustrated.

> MORTARS, PLASTERS, STUCCOS, ARTIFICIAL MARBLES, CONCRETES, FORTLAND CE-MENTS AND COMPOSITIONS. Prepared, compiled, and edited by Fred. T. Hodgson. Profusely illustrated. Chicago: F. J. Drake & Co. 12mo.; cloth; 520 pages. Price, \$1.50.

A practical treatise on the various kinds of cements, taking up their use from the period of mixing through all the various stages to the original size was 34. Put on one-half as the production of the finished building. The field use a wire that has an area twice as tive construction should prove very serviceable to all who use this material.

> STRAY CURRENTS FROM ELECTRIC RAILways. By Dr. Carl Michalke. Translated and edited by Otis Allen Ken-yon. New York: The McGraw Pub-lishing Company. 12mo.; cloth; 101 pages. Price, \$1.50.

> The electrolysis of pipes and other metallic objects due to leakage of electric currents is a serious problem. A great deal has been written about it in different technical periodicals, but never before has information on the though, all the principles upon which leakage

CYCLOPEDLA OF AMERICAN AGRICULTURE. A Popular Survey of Agricultural Conditions, Practices, and Ideals in the United States and Canada. Edited by L. H. Bailey. In four volumes. Vol. I., Farms. With 100 full-page plates and more than 2,000 illustrations in the text. New York: Macmillan Company. Quarto; cloth; 618 pages. Price, \$5.

The "Cyclopedia of American Agriculture" was announced several years ago, but unavoidable delays kept back its publication until this year. It collects and presents the most signifi cant facts and opinions now current with respect to agriculture, rather than pointing ou new, and perhaps untried, ways. The subjects chosen are general in their character, mingling the scientific and the exact with the practica weight of alcohol dissolve 12 parts of Venice turpentine and 30 parts, also by weight, of four headings—"Regions," "Soils," "Farm Plans," and "Atmosphere."

CASSELL'S CARPENTRY AND JOINERY. Comprising Notes on Materials, Processes, Principles and Practice. Including about 1,800 engravings and 12 plates. Edited by Paul N. Hasluck. Philadelphia: David McKay. 8vo.; cloth; 567 pages. Price, \$3.

An exhaustive practical work on handicrafts, from which theory has been excluded, except where it was necessary for the explanation of some method or process. Although the work is written mainly to meet the needs of those actually practising carpentry and joinery, students preparing for examinations will find this a textbook of great importance, covering minutely the subjects of timber, joints, timber roofs, doors and door frames, skirtings, dadoes, panelwork, linings, and a number of related subjects.

TELEGRAPH SECONDARY CELL INSTALLA A Practical Work on the Charging and Management of Accumulators. By Arthur Crotch. London: Guilbert Pitman. 12mo.; cloth; 178 pages; 100 illustrations. Price, **\$1**.

The installation and maintenance of secondary cells require the knowledge of many principles far beyond those of telegraphy. This volume contains directions on generators, measuring apparatus, charging arrangements, care of secondary cells, and the use of the gas engine, so that the ordinary operator could easily fit himself in the details of battery management by studying its pages.

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