as the Waring system, his name has obtained wide currency among suburban residents. He himself, on page 215, says that the term "Waring system " is a misnomer. He says that it would be better to call it Mr. Field's system. But the author's qualifications for speaking of sewage, sewage irrigation and sewage farms give the book an especial value and a peculiar timeliness at the present day, when suburbs are known to offer so important a field for the work of the sanitary engineer. An excellent in dex is an important feature of the book.

CAVALRY LIFE IN TENT AND FIELD. By Mrs. Orsemus Bronson Boyd. New York: J. Selwin Tait & Sons. 1894. Pp. 376. Price, cloth, \$1.

This excellent account of cavalry life in the American army will, no doubt, make interesting reading formany. The prefacealone, describing the trials of Captain Boyd, the husband of the authoress, at West Point, in itself describes a curious episode in West Point life. In the appendix, written by Richard H. Savage, the same episode is referred to, and the infamous persecution to which as a boy the authoress' husband was subjected at West Point is described. Not the least interesting part of the book is Mrs. Boyd's description of her own life in the field, and the trials which she has been obliged to go through

BEFORE THE GRINGO CAME. By Gertrude Atherton. New York : J. Sel-win Tait & Sons. Pp. 306. Price, cloth, \$1; paper, 50 cents.

Eleven stories of old California in the days before the discovery of gold, gathered from different magazines make up this work, which will, no doubt, be found interesting reading for many.

Any of the above books may be purchased through this office. Send for new book catalogue just published. MUNN & Co., 361 Broadway, New York.

SCIENTIFIC AMERICAN BUILDING EDITION

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 n elegant plate in colors, showing a Colonial residence at Portchester, N. Y., recently completed for Geo. Mertz, architect, Portchester, N. Y.
 bate in colors showing a residence recently completed for R. H. Robertson, Esq., at Southampton, L. I. Two perspective elevations and floor plans.

 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 This is for our information and not for publication.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.
 In quiries not answers require not a little research, and, though we endeavor to reply to all either by letter or in this department, each must take his turn.
 Bu yers wishing to purchase any article not advertised in our columns will be furnished with addresses of houses manufacturing or carrying the same.
 Special Writen Information on matters of personal rather than general interest cannot be expected without remuneration.
 Scientific American Supplements referred

 1. An elegant plate in colors, showing a Colonial resi-
- 2. Plate in colors showing a residence recently com-A picturesque design and an admirable model for a seashore cottage. Mr. R. H. Robertson, architect, New York City
- 3. Residence of Frederick Woollven, Esq., at Rosemont, Pa. Two perspective elevations and floor plans. A neat design in the Colonial style. Cost co \$4,800. Mr. J. D. Thomas, architect, Philadelphia, Pa.
- 4. A cottage at Roger's Park, Ill,, recently erected for Edward King, Esq. Two perspective elevations and floor plans. A unique design. Mr. Geo. W. Maher, architect, Chicago, Ill.
- 5. Cottage at Hollis, L. I., recently completed for the German-American Real Estate Co. Two perspective elevations and floor plans. Cost complete \$3.200. Mr. Edward Grosse, builder, same place.
- 6. Perspective elevation with ground plan of Saint Gabriel's Chapel, recently erected at Hollis, L. I. A unique and most excellent plan for a small chapel. Cost complete \$6,500. Mr. Manly N. Cutter, architect, New York City
- 7. Two perspective elevations and an interior view, also Orange, N. J., for Homer F. Emens, Esq. Mr. the diameter of the driving wheel by the quotient. Frank W. Beall, architect, New York City. A pleasing design in the Colonial style.
- 8. Perspective elevation and floor plans of a cottage recently erected at Flatbush. L. I., for F. J. Lowerv. Esq. Cost complete \$4,600. Mr. J. C. Sankins, architect and builder, Flatbush, L. I.
- 9. A residence at Yonkers, N. Y., recently completed for Mrs. Northrop. A very unique design for a hillside dwelling. Perspective elevation and floor plans. Messrs. J. B. Snook & Sons, architects, New York City.
- 10. Club House of the Sea Side Club, Bridgeport, Conn. A good example of Romanesque style. Perspective elevation and floor plans, also an interior view. Messrs. Longstaff & Hurd, architects, Bridgeport Conn.
- 11. A residence at Hinsdale, Ill., recently erected for C. E. Raymond, Esq., at a cost of \$7,000 complete. Perspective elevation and floor plans. Mr. J. H. Shannon, architect, Hinsdale, Ill.
- 12. The Castle of Bonnetable. Half page engraving.

Business and Personal.

The charge for Insertion under this head is One Dollar a line for each insertion ; about eight words to a line. Advertisements must be received at publication office as early as Thursday morning to appear in the following week's issue

"U.S." metal polish. Indianapolis. Samples free. Shorthand by mail by W. G. Chaffee, Oswego, N. Y. Ill. catalog tools, 15c. Frasse, 19 Warren St., N. Y.

Handle turning machinery. Trevor Mfg. Co., Lockport, N. Y. We make absolutely a perfect loose pulley oiler. Krid-

ler Mfg. Co., Grand Rapids, Mich. Send for circular Distance Reading Thermometers.-See illus. advertisement, page 159. Ward & Doron, Rochester, N. Y.

Screw machines, milling machines, and drill presses The Garvin Mach. Co., Laight and Canal Sts., New York.

Centrifugal Pumps for paper and pulp mills. Irrigating and sand pumpingplants. Irvin Van Wie, Syracuse, N.Y.

Split Pulleys at Low prices, and of same strength and appearance as Whole Pulleys. Yocon Works, Drinker St., Philadelphia, Pa. Yocom & Son's Shafting

The best book for electricians and beginners in elec tricity is "Experimental Science," by Geo. M. Hopkins. By mail, \$4; Munn & Co., publishers, 361 Broadway, N.Y.

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HINTS TO CORRESPONDENTS.

Names and Address must accompany all letters, or no attention will be paid thereto. This is for our

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.

(6248) W. S. F. writes: In a late number of the SCIENTIFIC AMERICAN, vol. 70, page 86, there was published a formula for solidifying petroleum, pressing into block and baking it. This product was intended for burning, and it was stated that it had many advantages over coal. I followed out the formula, and got the oil in a solid state. On baking it, however, it all crumbled to pieces, rendering it of course unfit to handle or transport it, and on burning it a very dense, black smoke was emitted. Will you please give me some advice on this subject ? A. Possibly you baked at too high a temperature or for too long a time. Try the addition of sawdust and clay.

(6249) E. J. asks how to get the gear of bicycle. A. Count the teeth on the two sprockets. Divide the number on the large or crank shaft sprocket by floor plans, of a residence recently erected at the number on the driving wheel sprocket and multiply

(6250) L. V. H. says: Will you give me a formula for sticky flypaper? A. Resin 1 pound, mo-lasses 31/2 ounces; linseed oil 31/2 ounces. Boil until thick enough. 2. Also how to treat old files with acid, so they will be partly useful again ? A. Boil the files in strong soda and water to clean off all grease, oil or gum. Then dip for a few minutes in a bath of nitric acid 1 part, water 4 parts; the length of time being less on fine ance? A. Allow 2.35 feet to one ohm. Multiply the files, as your experience may suggest. 3. Will you also state if there is any difference in the working power of a | 1175 feet in your case. 2. How many lamps are required windmill, in hot or cold weather, the barometer pressure to be placed in a circuit to have a motor run from 100 v. and velocity of the wind being the same at each trial ? A. There would be little, if any, difference,

(6251) H. C. S. asks how to make a stage dimmer for 30 or 40 lights alternating current. A. Use No. 6 or 7 wire made into a coil with a movable laminat_d core. The size required depends on the frequency.

(6252) S. T. W. asks for a receipt for t paper, canvas or leather aking a cement that w ll'cem

the starch and use while hot. Sufficient bluing may be added to the water, previous to the boiling, to overcom the yellowish cast of the starch, if necessary. Sperma-ceti may be used in place of paraffin. Starched linen can only be properly finished by hard pressure applied to the iron.

(6254) C. H. T. says: Will you kindly etmeknow in your Notes and Queries of a cheap fixa tive for charcoal drawing ? A. 2 tablespoonfuls of rice boiled in 1 pint or 11/2 pint of water ; strain, and pass the drawing quickly through the liquid; use a large flat dish for the liquid.

(6255) G. W. C. says: Will you please give me the formula of a solution to remove corns ? A. Caustic potassa, 1 drachm ; alcohol, 1 fluid ounce. Mix, in a stoppered phial, and agitate until solution is complete. The corns are either moistened with the above or a small piece of lint, or rag, of the size of the corn, is moistened with them and then bound on, care being taken, particularly with the last one, that the liquid does not touch the surrounding parts.

(6256) J. G. R. asks: 1. How many cubic feet of hydrogen and how many cubic feet of oxy gen gas can I get in one hour by decomposing water with a battery of 3 volts or 10 volts ? A. The gases generated depend on the amperage, not on the voltage directly. The voltage of course is concerned as being the cause of the amperage, the latter depending on the voltage and the resistance of the circuit. 2. If water is decomposed by passing steam through red hot iron tubes, is the oxygen free or will the oxygen unite with the iron ? A. The oxygen unites with the iron, and hydrogen only is evolved. 3. If water is heated to such a degree that it B will decompose through heat only, will not the mixture 'B of gas unite with a terrific explosion as soon as they are liberated (because the heat is over its kindling point) ? A. The gases will unite when the temperature falls below the point of dissociation. They may however be separated to some extent by diffusion through a porcelain diaphragm. 4. Is a living milk white raccoon more valuable than when of common color ? A. We should imagine so. Address some menagerie or dealer in wild animals.

 $|\mathbf{c}|$

(6257) F. W. W. asks : 1. With a current of 500 volts, how to make an electro-magnet that will lift 1000 pounds. That is, the size of helix and of core, and size of wire. A. You should say " potential of 500 volts"-a volt is not a unit of current. A magnet core two inches thick and two feet long would answer. Wind with 20 or 30 layers No. 24 wire: use at least 20 pounds of wire. For magnetic traction calculations and others see Sloane's "Arithmetic of Electricity," \$1 by mail. 2. Suppose a bar of soft iron were to be placed so as to rest as an armature upon two or more electro-magnets, would the bar become a magnet throughout its length of equal power as magnet? I presume this would depend on distance between magnets. If so, how far apart may the magnets be placed and retain uniform power of mag net throughout length of bar? A. By placing two north or two south poles in contact with the bar, you can establish consequent poles in its center; the whole bar will show some polarity, but the center will show the most. 3. At what distance from such a magnet would its power be available? You will confer a favor by answering the above. A. Distance reduces the power of a magnet very rapidly. At an inch the attraction would be greatly reduced. No exact answer can be given.

(6258) J. N. P. asks how to separate gold from rubber and the materials to use. It is pure rubber, used to clean from my work waste gold leaf, that I use. A. We would suggest metallic mercury to remove and save your gold. An amalgamated copper plate might be used. Scrape off the amalgam from time to time, distill off the mercury, and gold will be left.

(6259) W. J. H. asks what effect an inductive load has upon the speed of a Shallenberger meter, such as is used in houses on incandescent light circuits. Westinghouse A. C. system. A. The Shallenberger meter indicates the amperage of the current. Anything which reduces the current will reduce its speed.

(6260) H. S. B. asks: What is the potential necessary to cause a spark of 1/2 iuch ? A. Perhaps 12,000 volts. No really reliable figure can be given.

(6261) C. B. W. asks: 1. How much No. 26 magnet wire is required to give 50 ohms resistohms desired by this, and the product gives the feet 10 amperes if the motor is wound for 50 volts ? A. You must give the amperage of the motor. For each ampere required for the motor, use four 100 volt lamps in parallel

(6262) W. J. W. asks: 1. Why is peroxide of manganese, also chloride of lime, placed around the carbon in the Leclanche cells? A. To act as a depolarizer and dispose of the hydrogen which tends to ac-

cumulate on the carbon. 2. Does it make any difference if a zinc rod is used in place of a sheet and which is electrical point of view. 3. Why is water so conductive to an alternating current, and offers such great resistance properly speaking, to one than to the other. 4. What is the object in having such great variations in the resist-F F line. A line of high resistance requires higher resistance FOCOCOCC instruments. 5. Please state the number of volts and amperes generally carried on an electric street car line ? of cars operated at once.

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The Scientific American Architects and Builders Edition is issued monthly. \$2.50 a year. Single copies, 25 cents. Forty large quarto pages, equal to about two hundred ordinary book pages; forming, practically, a large and splendid MAGAZINE OF ARCHITEC TURE, richly adorned with elegant plates in colors and with fine engravings, illustrating the most interesting examples of Modern Architectural Construction and allied subjects.

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to a wood or iron pulley to keep belts from slipping. A. | best? A. A rod is less liable to corrode and fall into railways, Cincinnati, Ohio, illustrated.—The fireoughly, so that there are no bright or smooth places. Then swab the surface with a solution of nitric acid, 1 part; water, 4 parts; for 15 minutes; then wash with to a continuous one ? A. Water is no more conductive, boiling hot water. Having prepared a pot of the best tough glue that you can get stir into the glue a half ounce of a strong solution tannic acid, oak bark, or ance of telegraph instruments, being all the way from 20 gallnuts, as convenient to obtain, to a quart of thick to 200 ohms? A. It depends on the resistance of the glue; stir quickly while hot and apply to the paper or pulley as convenient, and draw the paper as tightly as possible to the pulley, overlapping as many folds as may be required. By a little management and moistening A. 500 volts; amperes variable, depending on the number of the paper, it will bind very hard on the pulley when dry, and will not come off or get loose until it is worn out. Use strong hardware wrapping paper.

1 (6253) W. L. S. says: Please let me knowwhatis the best thing to use on collars, cuffs, and shirts to make them stiff and glossy. A. Starch, 1 ounce; paraffine, about 3 drachms; white sugar, tablespoonful; table salt, tablespoonful; water, q. s. Rub upthe starch with soft water into a thick, smooth paste, add nearly or solved in it, and, having dropped in the paraffin, boil for at least half an hour, stirring to prevent burning. Strain (6253) W. L. S. says: Please let me

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