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.

For Sale—One Payne engine and boiler. Automatic cut-off. In first class order. But little used. W. P. Davis, Rochester, N. Y.

Presses & Dies. Ferracute Mach. Co., Bridgeton, N. J.

6 Spindle Turret Drill Presses. A.D. Quint, Hartford, Ct.

2d hand drills and shapers. Amer. Tool Co., Clev., O.

Mixing machinery. J. H. Day & Co., Cincinnati, Ohio.

For pile driving engines. J. S. Mundy, Newark, N. J.

Portable and Stationary Cylinder Boring machines. Pedrick & Ayer, Philadelphia, Pa.

Wanted—Second-hand Woodward Pumps. P. O. Box 60, N. Y. City.

Wanted—2d hand Nash gas engine, 1 H. P. 2d hand Gap lathe, small size. W. K. R., Drawer 442, N. O., La.

Steam Hammers, Improved Hydraulic Jacks, and Tube Expanders. R. Dudgeon, 24 Columbia St., New York.

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

Centrifugal Pumps. Capacity, 100 to 40,000 gals. per minute. All sizes in stock. Irvin Van Wie, Syracuse, N.Y.

Patent for sale or partner wanted. Leuzinger clothes line pulley, patent, May 12, 1891. For description, see page 98.

Wanted—2 steam jacket kettles, 35 to 70 gallons each, lower drain. G. W. Hoffman, 69 E. Wash. St., Indianapolis.

Guild & Garrison, Brooklyn, N. Y., manufacture steam pumps, vacuum pumps, vacuum apparatus, air pumps, acid blowers, filter press pumps, etc.

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

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

Competent persons who desire agencies for a new popular book, of ready sale, with handsome profit, may apply to Munn & Co., Scientific American office, 361 Broadway, New York.

Magic Lanterns and Stereopticons of all prices. Views illustrating every subject for public exhibitions, etc. ☞ *A profitable business for a man with small capital.* Also lanterns for home amusement. 220 page catalogue *free*. McAllister, Optician, 49 Nassau St., N. Y.

☞ Send for new and complete catalogue of Scientific and other Books for sale by Munn & Co., 361 Broadway, New York. Free on application.

Notes & Queries

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 be repeated; correspondents will bear in mind that some 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.

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.

(4007) M. L. asks: 1. What is a good charge for tin assays? A. Tin ore 5 grammes, potassium cyanide in powder 25 grammes. Besides this the crucible is lined with a layer of the cyanide, and the charge is covered with the same. Fuse and keep fused for 10 minutes. The cyanide is one of the worst poisons known, but this gives about the best results of any of the fire assays. A non-poisonous charge is: Tinore 5 grammes, charcoal 1 gramme (mixed with the ore), 12·5 to 15 grammes black flux, 1 to 1·25 grammes borax glass. Cover with salt and a small piece of coal. Fuse three-quarters to one hour. 2. Is it possible for mercury to soak through a copper plate in a mill so as to ooze out in drops underneath? A. Yes. 3. Why are old plates so valuable? A. On account of the precious metal they retain. 4. It is stated that horse power will be furnished (or can be) over the distance from the Niagara to Chicago for about half the cost of steam power. Is this true? A. The exact proportion cannot be given. The interest on the installation and cost of maintenance will probably make it impossible. 5. What size current is necessary and how is it used to remove superfluous hair by electrolysis? See our SUPPLEMENT, Nos. 176, 353, 834.

(4008) A. E. G. writes: In the SCIENTIFIC AMERICAN for August 1, Professor Henry Rowland is quoted as saying "the voltage of stroke of lightning is roughly estimated at about 6,000,000,000 volts." What is the amperage of a stroke as nearly as may be judged by a similar estimate? A. Carl Hering, in his "Dynamo-Electric Machines," says that the E. M. F. of lightning is 3,500,000 volts, and the current is about 14,000,000 amperes. The energy is estimated to be equal to a 100 horse power engine working 10 hours. 2. Where can I learn the tonic sol-fa notation or system of writing music? I would like to buy a book to learn it from. A. In most schools where music is taught. 3. As the patent laws are now, can any one make a patented article or machine, if they make it themselves and use it exclusively for their own benefit, without becoming liable for infringement? A. No. 4. How is the carbon deposited on carbon paper? A. It is applied with a brush or sponge, the carbon or other pigment being mixed with glycerin or vaselin, with a mixture of beeswax and oil or some similar medium. 5. When a metallic spring is compressed it contains latent energy, representing the power expended in compressing it. If it is dissolved in acid while still in a compressed state, what becomes of the latent mechanical energy it contained? A. The energy expended in compression is given out in heat, which is dissipated.

(4009) L. M. C. asks (1) how to make a storage battery suitable to run a ½ or ¼ candle power electric light in a necktie and small enough to carry in a coat pocket? If this subject has been discussed in any of your papers, will you please refer me to such? A. We expect to publish a description of a storage battery suited to your purpose at an early date. 2. What is the fluid used in those "electric inhaler" bottles? Consist of a small bottle with a screw top, and a piece of copper separated from a piece of zinc by a strip of flannel. The fluid completes it. When placed near the nostrils a strange sensation is felt, extending to the back of the head. A. Oil of mustard is the principal ingredient. 3. Is there any acidproof paste that can be mixed like cement and will harden in a few minutes? A. For weak acids use oxide of zinc and a solution of chloride of zinc. Chloride of zinc is poisonous, but the cement is inert after hardening and washing. For strong acids melt together pitch 1 part, resin 1 part, and plaster of Paris 1 part; all the ingredients must be dry. 4. Will you please tell me how to compute the quautity of wire required to get the greatest magnetism out of a bar of soft iron? A. For this information we refer you to Sloane's "Arithmetic of Electricity," $1, and Thompson's "Electro-magnets," $6, by mail.

(4010) Subscriber wishes to know the following: At his place of business there is a 20 horse electric motor, 500 volts. The writer while thoughtlessly adjusting brushes caught hold of all the lower brushes and pressed them upward, this having the desired effect. He also took hold of the upper set and was quickly thrown backward. Now what amount of current passed through me, the machine running a load of about 12 horse power? After catching hold of brushes I felt nothing except the after effect, which was a slight shaking of the hand and a slight soreness of finger ends. A. It is impossible to form any idea from the data sent as to the amount of current passing through your body, as it is wholly a question of resistance. The condition of your hands may have been such as to have prevented anything more than a small fraction of the current from passing through you. For instance your hands may have been very dry or very oily. On the other hand, your hands may have been moist and the contact with the brushes good, in which case you would have received the amount of current due to the normal resistance of your body, which would have been only a fraction of the output of the machine.

(4011) H. W. G. asks how to construct a steel triangle to be used in lieu of a bell. I want it with sides from 3 to 4 ft. long. Please state what kind of steel to use? What shape, whether square or round? Proper form of construction, and should angles be bent sharp or rounding? How should it be hung, and with what should it be struck to obtain the best sound? I am informed that to strike a bell with wrought iron will ruin the bell. Is this true, and would the same effect be produced upon a triangle by use of a similar striker? A. For a steel triangle with sides as stated, use a square bar of tool steel one inch diameter and from 10 to 12 feet long. Balance the bar in two loops of strong twine about one-third of its length from each end. Strike the bar between the end and one of the strings. Move both strings toward the center a little at a time to get the tone that suits you, and when the proper bearings are found, mark them with chalk and bend to a triangle at the marked points with an easy bend. A wrought iron hammer would not injure a triangle more than a hammer of any other metal.

(4012) J. E. H. writes: I wish to make a storage battery. Battery is to have 10 plates 6 inches long and 8 inches wide; plates are to be of lead one-twelfth inch thick marked in squares of one-eighth inch, with holes punched at each corner of squares and covered with a coating of red lead paste made by mixing red lead with diluted sulphuric acid. In what proportions with water will I dilute the sulphuric acid? A. Use 1 part of acid to 10 of water. 2. About how much current will such a battery yield for three hours, working constantly, after being charged? A. About 20 amperes. 3. How many gravity batteries should I use in forming the plates and afterward in charging the battery? I only wish to use storage battery once in two days. The zinc and copper of the primary battery each has an active surface of about 18 square inches. Sulphate of copper and sulphate of zinc are used in charging the cells. A. The forming as well as the charging may be done with four cells. The forming however could be facilitated by the use of four times that number.

Replies to Enquiries.

The following replies relate to enquiries recently published in SCIENTIFIC AMERICAN, and to the number therein given:

(3889) Referring to Notes and Queries No. 3889, C. E. H. has no cause for alarm, as the milky appearance in the water from his hot water boiler is caused by a foaming from the air it contains. This is readily shown by drawing a tumblerful and holding it up to the light, when it will be seen that the water clears from the bottom, and what appear to the eye to be white particles rises instead of falls.—W. G. BLISH.—[It is well known that the vesicles of air and steam rise in the clearing of water drawn from the hot water faucet. This does not account for the sediment that settles from hot water drawn from a galvanized iron boiler. This goes to the bottom every time.—ED.]

C. A. G. asks for a black ink.—J. H. G. asks for an acid-proof cement for nickel-plating tanks.—L. B. asks for a receipt to give a steel-blue on brass.—A. O. asks for a receipt for fining wine.—T. T. M. asks how to make and ink typewriter ribbons.—A. C. G. asks for a cement or mucilage to stick labels to tin.—C. W. F. asks for a stain for Russian tan shoes.—G. E. P. asks for a good bay rum and sea foam.—G. F. L. asks for pastes for mounting photographs.—F. C. C. asks how to make a dipping solution for silvering.

Answers to all of the above queries will be found in the "Scientific American Cyclopedia of Receipts, Notes and Queries," to which our correspondents are referred. The advertisement of this book is printed in another column. A new circular is now ready.

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