

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 next issue.

Wanted.—Mill supply firms or any other similar business houses to act as sole agents in their respective territories for the sale of Fossil Meal Composition, the well established non-conducting covering for steam pipes, boilers, etc. (See adv., page 141.) Liberal commission. References given and required. Communicate with Fossil Meal Company, 48 Cedar St., New York.

Cotton, Rubber, and Leather Belting, Cotton Hose, Linen Hose, Rubber Hose. Greene, Tweed & Co., N. Y. Patent for sale cheap, or let on royalty. Adding Machine. See page 102.

For Sale.—Steel Figs., \$1. S. M. York, Cleveland, O. Lightning Screw Plates, Labor-saving Tools, p. 78.

25' Lathes of the best design. Calvin Carr's Cornice Machinery. G. A. Ohl & Co., East Newark, N. J.

Brush Electric Arc Lights and Storage Batteries. Twenty thousand Arc Lights already sold. Our largest machine gives 65 Arc Lights with 35 horse power. Our Storage Battery is the only practical one in the market. Brush Electric Co., Cleveland, O.

Best Squaring Shears, Timbers', and Cannery Tools at Niagara Stamping and Tool Company, Buffalo, N. Y.

Lathes 14 in. swing, with and without back gears and screw. J. Birkenhead, Mansfield, Mass.

The Best.—The Dueber Watch Case.

Sets of Test Lenses and Instruments for oculists. Send for catalogue. Queen & Co., Philadelphia.

If an invention has not been patented in the United States for more than one year, it may still be patented in Canada. Cost for Canadian patent, \$40. Various other foreign patents may also be obtained. For instructions address Munn & Co., SCIENTIFIC AMERICAN Patent Agency, 361 Broadway, New York.

Guild & Garrison's Steam Pump Works, Brooklyn, N. Y. Steam Pumping Machinery of every description. Send for catalogue.

Nickel Plating.—Sole manufacturers cast nickel anodes, pure nickel salts, polishing compositions, etc. Complete outfit for plating, etc. Hanson & Van Winkle, Newark, N. J., and 92 and 94 Liberty St., New York.

Lists 29, 30 & 31, describing 4,000 new and 2d-hand Machines, ready for distribution. State just what machines wanted. Forsaith & Co., Manchester, N. H., & N. Y. city.

For Power & Economy, Alcott's Turbine, Mt. Holly, N. J.

"Abbe" Bolt Forging Machines and "Palmer" Power Hammers a specialty. Forsaith & Co., Manchester, N. H.

Railway and Machine Shop, Equipment.

Send for Monthly Machinery List to the George Place Machinery Company, 121 Chambers and 103 Reade Streets, New York.

"How to Keep Boilers Clean." Book sent free by James F. Hotchkiss, 84 John St., New York.

Wanted.—Patented articles or machinery to make and introduce. Gaynor & Fitzgerald, New Haven, Conn.

Water purified for all purposes, from household supplies to those of largest cities, by the improved filters manufactured by the Newark Filtering Co., 177 Commerce St., Newark, N. J.

Latest Improved Diamond Drills. Send for circular to M. C. Bullock Mfg. Co., 80 to 88 Market St., Chicago, Ill.

Ice Making Machines and Machines for Cooling Breweries, etc. Pictet Artificial Ice Co. (Limited), 142 Greenwich Street. P. O. Box 3083, New York city.

Drawing Instruments, Drawing Paper, and Drawing Materials. The largest stock in the United States. Send for catalogue. Queen & Co., Philadelphia.

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

Machinery for Light Manufacturing, on hand and built to order. E. E. Garvin & Co., 139 Center St., N. Y.

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

Supplement Catalogue.—Persons in pursuit of information on any special engineering, mechanical, or scientific subject, can have catalogue of contents of the SCIENTIFIC AMERICAN SUPPLEMENT sent to them free. The SUPPLEMENT contains lengthy articles embracing the whole range of engineering, mechanics, and physical science. Address Munn & Co., Publishers, New York.

Improved Skinner Portable Engines. Erie, Pa.

Woodwork'g Mach'y. Rollstone Mach. Co. Adv., p. 92.

Steam Pumps. See adv. Smith, Vaile & Co., p. 93.

Drop Forgings. Billings & Spencer Co. See adv., p. 109.

Fossil Meal Composition, the leading non-conducting covering for boilers, pipes, etc. See adv., p. 141.

The Sweetland Chuck. See illus. adv., p. 110.

Catalogues free.—Scientific Books, 100 pages; Electrical Books, 14 pages. E. & F. N. Spon, 35 Murray St., N. Y.

Am. Twist Drill Co., Meredith, N. H., make Pat. Chuck Jaws, Emery Wheels, Grinders, automatic Knife Grinders, American Fruit Drier. Free Pamphlet. See ad., p. 126.

Soapstone Packing, Empire Gum Core, and all Engine Packing. Greene, Tweed & Co., 118 Chambers St., N. Y.

Brass & Copper in sheets, wire & blanks. See ad., p. 152.

The Chester Steel Castings Co., office 407 Library St., Philadelphia, Pa., can prove by 20,000 Crank Shafts and 15,000 Gear Wheels, now in use, the superiority of their Castings over all others. Circular and price list free.

Diamond Drills, J. Dickinson, 64 Nassau St., N. Y.

The Improved Hydraulic Jacks, Punches, and Tube Expanders. R. Dudgeon, 24 Columbia St., New York.

Gear Wheels for Models (list free); Experimental Work, etc. D. Gilbert & Son, 212 Chester St., Phila., Pa.

Tight and Slack Barrel Machinery a specialty. John Greenwood & Co., Rochester, N. Y. See illus. adv. p. 124.

Hollar's Safe and Lock Co., York, Pa., manufacturers of improved Fire and Burglar-proof Safes, Bank and Safe Deposit Vaults and Locks. See adv. p. 126.

Philosophical and Chemical Apparatus and Materials. Send for catalogue. Queen & Co., Philadelphia.

Combined Concentric and Eccentric Universal and Independent Jaw Chucks. The Pratt & Whitney Co., Hartford, Conn.

Our goods rank first for quality, safety, and durability. Please compare them with any other make, and it will not be found better and cheaper, quality considered, we will bear the expenses of the trial. Lehigh Valley Emery Wheel Co., Lehighton, Pa.

Straight Line Engine Co., Syracuse, N. Y. See p. 92.

NEW BOOKS AND PUBLICATIONS.

STEEL SQUARE PROBLEMS. Illustrated by sixty engraved plates. By Lucius D. Gould, author of other technical books. Published by Lucius D. Gould, New York.

In the preface the author says that the book is intended to give explicit directions for an easy solution of the many problems that frequently vex builders in the prosecution of their work; such as finding the lengths and angles for cutting braces and rafters, mitering "hoppers" of any number of sides and degrees of elevation, finding polygonic angles, mitering to a level from a raking, assistance in determining width of stairs and heights of risers, and other annoyances, occurring not only in the architect's calculations, but in the carpenter's and joiner's practice. As an aid to the use of the solution of the problems the ordinary steel square is used as the basis of all calculations and the means of their solution and practical use. The book is an eminently practical one.

ACCENTED FIVE-FIGURE LOGARITHMS FROM 1 TO 99,999, WITHOUT DIFFERENCES. By Louis D'A. Jackson. W. H. Allen & Co., 13 Waterloo Place, Pall Mall, S. W., London.

In this volume, the preface says, the principle of accentuation is so applied as to enable calculations with five figure logarithms to yield results to five figures of numbers without using differences, proportional parts, or anti-logarithms, the simple device of denoting mean values of 0, 3, more or less, by a dot or a dash fitting the logarithm to one number only in one case, thus removing the doubt and avoiding the inaccuracy in the ordinary mode. It is claimed also that this accentuation enables logarithms of trigonometrical ratios to yield more accurate result in angles. The book is a volume of more than 270 octavo pages, and the tables are pagged in dictionary style so as to make reference easy and facile.

DIO LEWIS'S MONTHLY, No. 1, VOL. I. Clarke Brothers, 68 Bible House, New York.

The professed object of this periodical is assistance to physical and mental health by giving information, stating facts, and suggesting habits. Some idea of the character of the publication—which is on heavy, uncalendered paper and illustrated—may be obtained from a glance at the table of contents: Horse Riding for consumptives, Insane Asylums, Outdoor Life for Girls, Health for Women, Forgotten Girls, Prenatal Impressions, Weight of Brains, Hygiene, Rabies, Function of Sunshine, and articles of a domestic and homelike character. The personality of the editor is apparent, but besides his contributions there are a number from writers more or less known.

DIE ELEKTRISCHEN UHREN UND DIE ELEKTRISCHE FEUERWEHR TELEGRAPHIE (ELECTRICAL CLOCKS AND FIRE ALARM TELEGRAPHS). By Dr. A. Tobler. Wien, Pesth, Leipzig, 1883. Pp. 194 and 87 illustrations. Price 3 marks—80 cents.

Not the least important of the uses to which electricity is employed is that of regulating our time pieces. The author describes the mechanisms employed for this purpose, with illustrations of each kind. He divides electrical clocks into three classes: first, those which are moved and actuated by a current from the central regulator, so that only a dial and hands are required in addition to the electro magnets. The second class, which are in more general use here, have a complete set of works, but are corrected daily, or hourly, by a current from the normal clock. In the third class a battery furnishes the motive power, instead of weights or springs. They are not regulated by the standard clock, and have no advantage in this respect over any other clock. Half of the book is devoted to the various kinds of fire alarm systems, and describes those in use in Amsterdam, Berlin, Boston, Caen, Frankforton the Main, Gotha, Leipzig, London, Paris, Stuttgart, and Zurich. Although containing much that is of interest to the general reader, many technical details are also given which will render it of practical value to those engaged in their construction. This work forms vol. xiii. of Hartleben's Electro-Technical Library.

DIE ELEKTRISCHEN LEITUNGEN UND IHRE ANLÄGE FÜR ALLE ZWECKE DER PRAXIS (ELECTRICAL CONDUCTORS AND PRACTICAL DIRECTIONS FOR PUTTING THEM UP). By J. Zacharias. Wien, Pesth, Leipzig, 1883. Pp. 230 and 72 illustrations. Price 3 marks—80 cents.

In the present state of electrical activity the subject of conductors becomes one of primary importance. This little book contains a complete description of the different wires used, both aerial and subterranean, for telegraphic, telephonic, and illuminating purposes, the method of insulating them, etc. The number and size of poles required for land wires and their probable cost are given, the precautions to be taken against fire from electric lighting wires are described, and many other points of practical interest are given. Then follows a description of how to put down subterranean cables, how to splice the ends and test the connection, precautions to be taken against damage from atmospheric discharges, how to join the cable to the land wire, and how to lay cables on bridges, in tunnels, and under water. Full particulars are given for testing cables and for locating breaks and injuries where the line is not accessible. There is also a short chapter on lightning conductors and earth connections. In the appendix are some useful tables. This book cannot fail to prove invaluable to all who use electricity. It forms volume xvi. of Hartleben's Electro-Technical Library. Copies may be ordered by mail direct from the publisher in Vienna.

AN INTRODUCTION TO THE STUDY OF ORGANIC CHEMISTRY. By Adolph Pinner, Ph.D., Professor of Chemistry in the University of Berlin. Translated and revised from the fifth German edition, by Peter T. Ansten, Ph.D., F.C.S. New York: John Wiley & Sons, 1883. Pp. 403. Price \$2.50.

Many teachers of organic chemistry, who are familiar with Dr. Pinner's little book in the original, have long been waiting for an English translation that they could place in the hands of their pupils, and Professor Ansten deserves their thanks—his chief reward—for having performed that task. The original, which has been received with such favor in Germany, follows as closely as possible the summer course of lectures which Professor A. W. Hofmann delivers in the University of Berlin, some points being added to make it a complete text book. Although Professor Hofmann's name does not appear in the German editions, it is the custom among many of his hearers to keep an interleaved copy of "Pinner" before them while listening to his lectures. In many German universities students commit to memory this little book when preparing for an examination, so complete is it in the essentials and ground principles, so free from unnecessary verbiage and multiplicity of examples. As the translator says in his preface, it is believed that a student who has carefully studied and faithfully recited this book will be able to take up understandingly the larger works. Professor Hofmann's system, which is followed in this book, differs from that of Fownes and others in taking up in succession all the compounds that are or may be derived from a given hydrocarbon, showing their relation to each other, and briefly describing their properties before taking up the next hydrocarbon. Thus in the methyl group we have methyl-hydride (marsh gas), then the chlorides and iodides, the hydrate (alcohol), oxide, (ether), formic acid, amines, amides, etc. The cyanides are also taken up here, because they contain but one atom of carbon. Compounds that contain two atoms of carbon constitute the second group, including ethyl, with its alcohol, ether, acid, etc. Those with three atoms the third group, and so on. In the retrospect beginning on page 174, the compounds already studied are classified as alcohols, ethers, aldehydes, ketones, acids, etc. This arrangement seems to us more scientific, as well as better for the learner, than the order generally adopted. The translator has carefully and faithfully followed the original, in some cases perhaps too closely. The nomenclature is that adopted by the London Chemical Society, and some of the terms, not yet being in general use here, sound rather strange. Several important recent discoveries have been introduced, such as the synthetic production of citric acid, of indigo, and other bodies. In the appendix the best practical methods of ultimate organic analysis, of determining vapor densities and the constitution of compounds are given. A very full table of contents and an exhaustive index greatly enhance the value of the book.

COEDUCATION OF THE SEXES IN THE PUBLIC SCHOOLS OF THE UNITED STATES. Washington, 1882. Pp. 30.

This pamphlet forms No. 2 of the "Circulars of Information" issued by the Bureau of Education. It gives a list of 144 towns and small cities (under 7,500 population), also 177 larger cities, that practiced coeducation in 1882, with their reasons for doing so. There is also a list of 19 cities and towns that practice partial or entire separation of the sexes in their public schools, with their reason for so doing.

R. UNIVERSITA ROMANA. SCUOLA D'APPLICAZIONE PER GLI INGEGNERI. Annuario per l'anno scolastico 1882-83. Roma, 1882. Pp. 180.

From this rather bulky catalogue we learn that the University of Rome possesses a school of engineering that has some dozen professors, ordinary and extraordinary, six "incaricati," and eight assistants. There is a three years' course of mathematics, chemistry, geology, mechanics, etc. The number of students in 1881-82 was 65. Lectures continue from the middle of October to the middle of June, each year.

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.

Were new 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 the 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) J. M. M. writes: We have a lot of white lambskin, that has become soiled by use and spotted with tobacco spit. Will you please be kind enough to inform me how I can remove the spots and

dirt, and make them white like new, without injuring them? A. The following, which is used to clean chamois leather, is worthy of trial: Make a solution of weak soda and warm water, rub plenty of soft soap into the leather, and let it remain in soak for two hours, then rub well until quite clean. Rinse well in a weak solution of soda and yellow soap in warm water, but not in water only, else it dries hard. After rinsing, wring it well in a rough towel and dry quickly, then pull it about and crush it well until soft.

(2) J. F. writes: As one of the "solutions" used in making a "chemical barometer" you order 38 drachms saltpeter and 38 drachms salammoniac, in 9 drachms water. Can this be, or should the solids be grains? A. There is evidently a mistake; the solution should be:

Camphor	2½ drachms.
Alcohol	11 "
Water	9 "
Salt-peter	38 grains.
Salammoniac	38 "

(3) J. C. W. asks how to make a paste of flour that will not smell and sour. A. The addition of a small quantity of carbolic acid or oil of cloves which making will prevent its becoming sour.

(4) R. S. M. writes: In your issue of August 4, A. complains of small white insects in his cistern. These insects generally appear in cisterns when the water is admitted, or caught, in warm weather. If a small quantity of lime be put in the cistern, they will disappear. (If the lime used be small in amount, its use cannot be considered objectionable.—ED.)

(5) A. M. asks if iron pyrites can be utilized in any other way besides the manufacture of sulphuric acid, and could it be manufactured at paying rates three or four hundred miles from any large commercial center. A. The only use to which iron pyrites can be put is the manufacture of sulphuric acid, and that is not an economic success in this country.

(6) T. P. H. writes: Following the suggestion of the item of Trouve's experiment of carbon battery for incandescent light, for one lamp I made a battery of 4 cells, the carbons 6 inches square and zinc the same. I found that the lamp would not show up. I then doubled up my zincs with like result. I have added the third zinc, and still no further on. Will you please make suggestions, and should the battery be built for quantity or intensity, and how to do it? A. You do not state what kind of incandescent lamp you use, but it is probable its resistance is too great for your battery. In such case it would be necessary to increase the number of cells. The battery should be connected for intensity.

(7) A. C. L. asks: 1. How much weight will a cubic foot of the gases of decomposed water lift? A. One cubic foot of hydrogen will lift about 442 grains, or a little less than one ounce. 2. Could not the French bronze once mentioned in your paper (composed of ferrous-manganese and copper) be used to make electrotypes? A. No.

(8) N. G. B. asks: How can I kill the taste of the cement in the cistern water without injuring it for domestic purposes and drinking? I built a new cistern last spring, but the water tastes so strong I can scarcely use it? A. The best plan for your purpose would be to filter the water through a charcoal filter. Any attempt at modifying the cement by coating it with something else would be too expensive. The addition of half a grain of iron chloride per quart to the water, with a further addition of 1½ grains soda per quart, is used to purify waters for household purposes.

(9) A. G. writes: In heating a drying room for drying match sticks, should I use the heat direct from the boiler or steam, and how should the connection be made? What size flues or pipes should I use, room 14 x 14 feet, by 12 feet high? A. A brick flue from the boiler along the floor of a drying room is often used, and is economical where only a little heat is needed. A steam coil is much better where efficiency is required. One square foot of outside pipe surface to 10 cubic feet of space in the drying room is sufficient for match splints. One inch iron pipe is preferred for such coils.

(10) E. P. B. asks for a cheap boiler or steam pipe covering. I have heard say it could be made of clay, salt, and other cheap ingredients, and put on by any one and answer a good purpose. A. Asbestos and clay as a covering for boilers is much used. Good hair felt with asbestos lining is the best and cheapest, if the economy of heat saving is considered. All clay mixtures are better conductors of heat than hair felt.

(11) C. W. E. asks: 1. What will remove moles from the face without injury? A. The method recommended on page 2582, SCIENTIFIC AMERICAN SUPPLEMENT, No. 162. Croton oil in the form of pomade or ointment is used. 2. What will keep cider sweet? A. When the cider has reached the desired condition of taste, fermentation must be arrested. The addition of 1½ tumblers of horse radish (grated) to each barrel, and thoroughly shaking, is said to accomplish this result. Then, after allowing it to stand for several weeks, rack off, and bung up closely in clean casks. A method is also given on page 4,991, of SCIENTIFIC AMERICAN SUPPLEMENT, 313, in article on "How to make good cider and how to keep it."

(12) A. H. W. H. asks how to make fusee strings used in making powder crackers, and also for touching off small cannons. A. The following are given among the "Firework Formulae" in SCIENTIFIC AMERICAN SUPPLEMENT, No. 317:

1. Mealed powder	16 parts.
Niter	2 "
Sulphur and charcoal	1 " each.
Mixed and loosely twisted in thin paper.	
2. Niter	2 oz.
Sulphur	1 "
Mealed powder	16 "
Charcoal	4 "
Mixed and packed in slender continuous paper tubes.	