

A NEW SCIENTIFIC WORK.

We have received from Professors R. H. Thurston and Richard H. Buel, their prospectus, issued from the Stevens' Institute of Technology, Hoboken, N. J., for a new and popular work, to be descriptive, in detail, of some of the most important of recent inventions and discoveries in mechanics and engineering. The idea is an excellent one, and we have no doubt, from the eminent ability of the editors, that the work will be of much value. If it were to be a sensation novel it would go with a rush, and a hundred thousand copies would quickly be called for. But, confined as it is to subjects that require study and intelligence in their mastery, no such rapidity of demand is, in the ordinary course of things, to be expected; scientific books generally have but a limited circulation. The editors have, however, adopted a special expedient to secure large sales. They propose to publish descriptions of good improvements, provided the holders thereof will furnish, at their own cost, first class essays accompanied by the best possible engravings. In addition thereto, each applicant is expected to pay to the editors, in cash, the sum of seventy-five dollars for each page occupied by his essay—which is equivalent to six hundred dollars, besides the cost of essay and engravings, for a space equal to one page of the SCIENTIFIC AMERICAN. At first blush, this outlay seems large; but it is only a seeming, for in return, the applicant is to receive twenty-five copies of the work free of charge, for every page of space he has paid for. Thus he receives the full *quid pro quo* for his money, and secures the additional benefits of the publication. We wish every possible success to the editors in this novel undertaking.

WILL YOU FAVOR US?

Will subscribers to the SCIENTIFIC AMERICAN, who have duplicate copies of No. 1, 2, or 3, of this volume, or others who do not preserve their numbers for binding, re-mail back to this office what they are willing to spare?

At the commencement of the year, we printed several thousand more copies of each number than we had subscribers for, and as many as we anticipated a demand for; but subscriptions have come in so much faster than we expected that the first three numbers are nearly exhausted. The publishers will be obliged to any of their patrons if they return all or either of the above numbers. Address SCIENTIFIC AMERICAN, New York.

Examples for the Ladies.

Miss Adelaide Perry, Bloomington, Ill., says: We have had our Wheeler & Wilson Machine in use eleven years without repairs, and it runs as well as the day it was bought. Last year I earned with it \$485.35, besides doing the sewing for a family of eight persons, and considerable other work.

Mr. George W. Nelson, (machinist,) Alleghany City, Pa., says the Wheeler & Wilson Machine in his family has been used for thirteen years without repairs; and he will warrant it for ten years more, and that any Wheeler & Wilson Machine will serve a family for a life-time—an important fact, particularly to girls who make their living by the needle.

"The best" is a term always applied to *Burnett's Preparations*. They deserve the title.

Business and Personal.

The Charge for Insertion under this head is One Dollar a Line. If the Notices exceed Four Lines, One Dollar and a Half per Line will be charged.

The paper that meets the eye of manufacturers throughout the United States—Boston Bulletin, \$4 00 a year. Advertisements 17c. a line. Best and Cheapest—The Jones Scale Works, Binghamton, N. Y.

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Save your Boilers and Save Fuel. Use Thomas's Scale Dissolver, price 5c. per lb., in barrels 300 lbs. Remit to N. Spencer Thomas, Elmira, N. Y., and will ship by cheap freight.

New Pat. Quick and easy way of Graining. First class imitations of Oak, Walnut, Rosewood, &c. Send stamp for circular. J. J. Callow, Cleveland, Ohio.

Foot Lathes and Castings for small Engines. E. P. Ryder, 252 Plymouth St., Brooklyn, N. Y.

The "Railroad Gazette" will be sent three months for \$1.00. Address at 72 Broadway, New York.

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Grindstones—Founded A.D. 1810—J. E. Mitchell, Phila., Pa.

Machinists' Grindstones, a specialty—J. E. Mitchell, Phila., Pa.

Sperm Sewing Machine Oil, in Bottles, Cans, and Barrels. W. F. Nye, New Bedford, Mass.

State Agents Wanted—Inventors' Co-operative Manufacturing Company, 21 Park Row, New York. Send for circular.

A valuable Patent will be disposed of cheap. Address Peterson, care of Inventors' Co-operative Manfg Co., 21 Park Row, N. Y.

For Sale Cheap—A Fitchburg Air Compressor, 10 inch cylinder, at No. 73 Exchange Street, Worcester, Mass. John Goulding.

H. E. Towle & Co., Engineers, London, attend to business at the London International Exhibition, &c. New York Office, 176 Broadway.

Read letter on Wheel Moulding. *Scien. Amer.*, Feb. 3, p. 93.

The advertiser can put in from \$3000 to \$4000 into some Business or Agency, if he sees his way clear to making something worth while. Address A. Roberts, Buffalo, N. Y.

To Ascertain where there will be a demand for new Machinery, mechanics, or manufacturers' supplies, see *Manufacturing News of United States* in Boston Commercial Bulletin. Terms \$4.00 a year.

L. & J. W. Feuchtwanger, 55 Cedar St., New York, Manufacturers of Silicates, Soda and Potash, Soluble Glass, Importers of Chemicals and Drugs for Manufacturers' use.

Walrus Leather, for Polishing Steel, Brass, and Plated Ware. Greene, Tweed & Co., 18 Park Place, New York.

A Correspondent wanted, who understands the erection of works for, and the manufacture of, Malleable Gas Fittings, with the view of an engagement. Address, Lock Box 1321, Titusville, Pa.

Improved Foot Lathes, Hand Planers, etc. Many a reader of this paper has one of them. Selling in all parts of the country, Canada, Europe, etc. Catalogue free. N. H. Baldwin, Laconia, N. H.

Edson's Hygrodeik is the best Hygrometer in use. Send for circular. Geo. Raymond, Fitchburg, Mass., Gen'l Agent for United States.

We will remove and prevent Scale in any Steam Boiler, or make no charge. Geo. W. Lord, 232 Arch street, Philadelphia, Pa.

Rubber Valves—Finest quality, cut at once for delivery; or moulded to order. Address, Gutta Percha & Rubber Mfg Co., 9 & 11 Park Place, New York.

Hydraulic Jacks and Presses, New or Second Hand, Bought and sold, send for circular to E. Lyon, 470 Grand Street, New York.

Williamson's Road Steamer and Steam Plow, with Thomson's Tires. Address D. D. Williamson, 32 Broadway, N. Y., or Box 1309.

Boynnton's Lightning Saws. The genuine \$500 challenge. Will cut five times as fast as an ax. A 6 foot cross cut and buck saw, \$6. E. M. Boynnton, 80 Beekman Street, New York, Sole Proprietor.

For Hand Fire Engines, address Rumsey & Co., Seneca Falls, N. Y.

Over 800 different style Pumps for Tanners, Paper Makers, Fire Purposes, etc. Send for Catalogue. Rumsey & Co., Seneca Falls, N. Y.

Grist Mills, New Patents. Edward Harrison, New Haven, Conn.

"Practical Suggestions on the Sale of Patents." Send for circulars. W. E. Simonds, Hartford, Conn.

Standard Twist Drills, every size, in lots from one drill to 10,000, at $\frac{1}{2}$ manufacturer's price. Sample and circular mailed for 25 cents. H. E. Towle, 176 Broadway, New York.

Taft's Portable Hot Air Vapor and Shower Bathing Apparatus. Address Portable Bath Co., Sag Harbor, N. Y. Send for Circular.

For Steam Fire Engines, address R. J. Gould, Newark, N. J.

All kinds of Presses and Dies. Bliss & Williams, successors to Mays & Bliss, 118 to 122 Plymouth St., Brooklyn. Send for Catalogue.

Brown's Coal Yard Quarry & Contractors' Apparatus for hoisting and conveying material by iron cable. W. D. Andrews & Bro, 414 Water st., N. Y.

Presses, Dies, and Tinners' Tools. Conor & Mays, late Mays & Bliss, 4 to 8 Water st., opposite Fulton Ferry, Brooklyn, N. Y.

Over 1,000 Tanners, Paper-makers, Contractors, &c., use the Pumps of Heald, Sisco & Co. See advertisement.

Boiler and Pipe Covering manufactured by the Chalmers Spence Non-Conductor Co. In use in the principal mills and factories. Claims—Economy, Safety, and Durability. Offices and Manufactories, foot E. 9th street, New York, and 1202 N. 2d street, St. Louis, Mo.

For Best Galvanized Iron Cornice Machines in the United States, for both straight and circular work, address Calvin Carr & Co., 26 Merwin St., Cleveland, Ohio.

Dickinson's Patent Shaped Diamond Carbon Points and Adjustable Holder for dressing emery wheels, grindstones, etc. See Scientific American, July 21 and Nov. 20, 1869. 64 Nassau st., New York.

Railway Turn Tables—Greenleaf's Patent. Drawings sent on application. Greenleaf Machine Works, Indianapolis, Ind.

Blake's Belt Studs. The cheapest and best fastening for Rubber and Leather Belting. Greene, Tweed & Co., 18 Park Place, N. Y.

Peck's Patent Drop Press. For circulars address the sole manufacturers, Milo, Peck & Co., New Haven, Ct.

For Solid Wrought-iron Beams, etc., see advertisement. Address Union Iron Mills, Pittsburgh, Pa., for lithograph, etc.

Mining, Wrecking, Pumping, Drainage, or Irrigating Machinery, for sale or rent. See advertisement, Andrew's Patent, inside page.

Notes & Queries.

1.—PRESERVING NATURAL FLOWERS.—Will some one furnish me with directions for preserving natural flowers?—R. A. L.

2.—COPPER DIP FOR IRON CASTINGS.—Will some one give me a recipe for making this fluid?—S. D. R.

3.—HYDRAULIC CEMENT.—Will some one tell me how hydraulic cement is made, and of what material?—J. A. T.

4.—CEMENT FOR CROCKERY.—Will some of your readers inform me how to make a permanent cement for mending broken crockery.—B. F. T.

5.—HARDENING STEEL.—In the process of hardening steel, does a chemical change take place in the nature of the steel? If so, what is that change?—A. K. S.

6.—CRACKING OF LEATHER.—What is the cause of the leather, used for the front boards of wagons, cracking? I have tried to find a solution of this mystery and also a remedy for it.—E. G. V.

7.—MELTING GLASS.—Can any one tell me how I can melt glass in small quantities, getting it sufficiently liquid to pour freely?—C. F.

8.—MIXING PAINT.—Could any one inform me how to mix up paints, and what varnish is best to use in getting up Venetian blinds, so that they will neither blister nor crack?—D.

9.—EXPANSION OF MILLSTONES.—Can any one tell me if, and how much, French burrstones are expanded by the heat generated by friction in grinding?—J. C. B.

10.—IRON SHIP BUILDING.—I wish to know who made the first iron boat, and when it was constructed.—W. C.

11.—CONCRETE FLOOR.—I wish to know what will make the best concrete floor for a cellar, without the use of gravel.—J. A. S.

12.—IGNITION OF COTTON YARNS, ETC.—What degree of heat, created by dry air from a furnace, will cotton yarns or cloth stand before igniting, the yarns or cloth being placed in a chamber, and the hot air driven through by a fan?—J. R. K.

13.—RHUMKORFF COIL.—What is the method of constructing the coil of a Rhumkorff induction apparatus? I particularly wish to know the sizes of wire when covered, and the method of securing the most efficient insulation. I have seen described the Ritchie method of winding the wire, but it was very unsatisfactory, being too indefinite for any one, not already well informed, to understand.—J. J. S.

14.—JOURNAL BOXES.—What is the best material for journal boxes for a water meter, where the pressure is against the end or small point of the shaft, which is of brass or some other material that will not corrode? The lubrication is with the water. How do brass and hard rubber run together?—I. C.

15.—RELATIVE WEIGHT TO HORSE POWER OF ENGINE.—Can any one tell me the lightest weight of engine, to each horse power, that can be obtained by the best modern construction?—O. T. H.

16.—ELECTROPLATING WITH ALLOYS.—Can an alloy be deposited by electricity, on a metal surface, as gold, silver, and other metals are done, if the ingredients of the alloy are good conductors?—R. T.

17.—STEAM ENGINE PHENOMENON.—Last summer, I was running my engine after dark. The boiler was well filled with water, and the steam gauge indicated 30 pounds pressure. Casting my gaze toward the top of the boiler, I saw a pale yellow light, at a small leak in a connection of the steam pipe; being alarmed lest the building was on fire in the story above, I seized my lamp, hastened up stairs, and satisfied myself that all was safe up there. I returned to the engine room and saw the light as before, not only where I first saw it, but at different points where steam was escaping in jets. The lights disappeared when the lamp was brought near them. When my hand or some other substance was brought in contact with the jet of steam near the point of issue, the light seemed to attach itself to the hand or other substance. This continued for about forty minutes. What was the cause?—J. A. L. A.

18.—PRESERVING RUBBER BOOTS.—Is there any preparation to preserve gum boots from cracking? I find that always, after wearing awhile, they lose that fine gloss which they have when new, and get full of fine cracks. Can any one tell me how I can patch them in case they get torn, so as to make them waterproof again?—J. R. M.

19.—COKE FOR IRON MANUFACTURE.—Has coke, similar to our gas house coke, been used for melting iron in this country to any extent, and, if so, with what results? Does it melt iron as rapidly as coal, and does it have any chemical action on the metal? I am aware that it has been used in England, but I would like to know whether that coke is similar to our gas house coke.—G. W. C.

20.—VALVE FOR MINING ENGINES.—Can any reader, who is using Davis' piston valve, tell me if it is suitable for an engine used in the shafts of deep mines? I am using the common slide valve, and the empty car, in descending, acquires considerable velocity and overcomes the friction of the engine, causing an unpleasant rattling of the valve and wear on the threads of the spindle. I think Davis' valve will answer the purpose, but it is comparatively unknown in this country; and I should like the opinion of some one well acquainted with it.—F. L.

21.—TRISECTION OF AN ANGLE.—Mr. N., of Ind., sends us the construction of a geometrical problem to trisect any angle of less than ninety degrees; and he ends his communication with the question, customary in such attempts, "if not, why not?" The point which has so long defied the powers of the best geometers is the solution and demonstration of the problem by elementary geometry, and this Mr. Naylor leaves to his readers. The practical trisection of an angle has long been understood; the demonstration Mr. Naylor leaves just where he found it.

22.—SEPARATION OF GASES.—I wish to know if there is any simple way of separating the different elements of the air from each other.—L. M.

23.—TRANSIT OF THE PLANET VENUS.—Is there any reliable rule for computing the transits of Venus?—C. E. P.

Answers to Correspondents.

SPECIAL NOTE.—This column is designed for the general interest and instruction of our readers, not for gratuitous replies to questions of a purely business or personal nature. We will publish such inquiries, however, when paid for as advertisements at 10¢ a line, under the head of "Business and Personal."

ALL reference to back numbers must be by volume and page.

GEARING FOR SAWS.—In reply to query No. 2, January 20, I beg to say, for the information of A. K., that it is practicable to run circular saws with bevel gearing. There is a circular saw mill in our town running at the present time (and has been for the last ten years) with bevel gearing, a crown wheel, on upright water wheel shaft, four feet six inches diameter, 2 inch pitch, $6\frac{1}{2}$ face, pinion 1 foot 6 inches diameter. I have made several mills on the same principle by substituting a mortise crown wheel and chipping and filing cogs in pinion.—W. H., of Ontario, Canada.

BLUEING IRON.—"Gun Barrel" will find the information he requires in this column.

GENERATING STEAM.—J. H. McC. is referred to pages 55 and 58 of our current volume.

S. T. A. E. C. E.—You will find an answer to your question in any elementary work on physics.

FACE WORMS.—Let H. E. A., query No. 4, January 20, try the water cure and keep his face washed clean.—K., of N. Y.

J. M. C., of Honolulu.—We know of no reason why the albumen from sea birds' eggs should not be as good as that of domestic fowls: Dix & Morris, 58 Cedar street, are dealers in the albumen. The price is about \$1.25.

STAINING CANES.—Query 10, January 6, 1872.—Dragon's blood dissolved in water or alcohol, with burnt umber added until the desired shade is obtained, is the right thing. Apply with sponge. To get a matted appearance, make a second application in spots. Polish with shellac.—E. F. H., of Iowa.

WEARING OF SLIDE VALVES.—I would state, for the benefit of W. C., that the concavity is attributable to two causes: First and mainly, to the center of the seat being in constant wear, while the ends are worn only alternately; secondly, to the unequal distribution of the wearing surface.—A. K. S., of Neb.

COPPER SALTS.—L. H. B. is in error in stating that copper salts have been recommended for cleaning statuary. A wash of nitrate or sulphate of copper on stone work has been suggested as a preservative the object being to fill the surface pores of the stone with the metallic copper. The salt should be dissolved in water, and the hands kept from contact with it.

CRYSTALLIZATION OF HONEY.—Strained honey, if scalded and skimmed, will keep any length of time without change. The scalding will slightly alter the flavor, but will not impair it materially.—J. H. P.

A. W. P. S., of O.—A fall of 17 feet will give a rise, in a fountain, of 17 feet, minus the loss of head due to friction and the resistance of the air to the jet. The material of the conduit will not make very great difference in friction, but the larger it is the less will the friction interfere with the height of the jet.

RED SPIDER.—How can the minute red spiders, which are found upon house plants and around windows in great numbers, be destroyed?—A. F. W. Answer: It is very difficult to get rid of the red spider. The florists sell certain soaps, intended for that purpose, which are to be dissolved in water and applied with a syringe. These insects flourish where it is warm and dry. But they cannot stand wet. Treat them to as much moisture as possible.

CAUSES OF CHANGE OF COLOR IN THE STARS.—C. B.'s theory is probably correct, but it is no new discovery. Mr. Proctor, we believe, has already written to the same effect.